5th SEMANTIC INTEROPERABILITY FOR E-GOVERNMENT CONFERENCE	
Expert	**Top-5 Lists of Semantic Applications**

Jeff Pollock Oracle	(1) Enterprise Information Management (EIM) – many sub-technologies here to benefit from SemTech but the overall theme is that semantics are great for managing enterprise information because they/it natively handles the changing and uncertain nature of data while still providing a management heuristic. (whereas relational/XML only tech is too rigid and google is too loose) - one category w/in EIM in particular to watch for is MDM - Master Data Management, which is ripe for semantics. (2) SOA Metadata - here I am referring to the many kinds and types of metadata used for SOA bindings and transactions and change mangement, mostly for the operation of the SOA itself. Witness the recent market activities (acquisitions) around SOA Governance, Registry & Repository systems - there is tremendious potential here for semantics to vastly improve the inherent flexibility of a SOA infrastructure. (3) Enterprise Content Management - closely tied to #1 EIM, but here I make the distinction in order to emphasize the value of a loosely coupled metadata layer for business documents (held w/in CMS), which has immense latent potential to unify heterogeneous content stores and vastly improve the coherent categorization of business documents/media. I would also include the MMS (media management system) & ILM (information lifecycle management) spaced under the general ECM heading here. (4) Enterprise Search - I include search as a priority application not for the search itself, but for the categorization and contextualization of search results, which still has miles of room for improvement in the general search space. This could also subsume the space for annotation and extraction of unstructured content into well organized ontology. (5) Compliance, Governance & Audit (Overall, applies to #1-4) - A real driver for the main benefits of semantic technology (flexibility, precision, repeatability, intelligence) is of course the increasing business pressures around the verifiability and traceability of data movement and data relationships - which SemTech provides for in spades.
Dave McComb Semantic Arts	(1) Semantic Based Vocabulary Editor -- a tool to use in business vocabulary projects that prompts analyst types to build their defintions using DL (2) Semantic Message Model Tool -- for building SOA message based architectures (3) Dynamic Message Broker -- classifies and dispatches messages in real time based on properties and current knowledge base (4) Dynamic User Interface -- UI dynamically reconfigured based on what is asserted and what can be inferred about a given individual (5) Compliance Monitor -- classifies documents and transactions according to whether

5th SEMANTIC INTEROPERABILITY FOR E-GOVERNMENT CONFERENCE	
Expert	**Top-5 Lists of Semantic Applications**

Elisa F. Kendall Sandpiper Software	1. anything related to semantic web services, since the current WS-* and other standards are not sufficient to support true dynamic service discovery, invocation, and composition - this is low hanging fruit in my view 2. richer search, collaboration, and business analysis capabilities, including the notion of semantic wikis, blogs with semantics, and ultimately the kind of automated personalized assistant, for example, that some of the DARPA/CALO work Deb is involved in is targeting 3. related to the collaboration & search idea, cross-disciplinary multimedia applications of any kind, leveraging fairly rich metadata -- consider new ways of deploying content a la Madi Solomon / Disney ... I'm not sure where that will go but if you blend that with Web 2.0, etc. ... 4. next generation software development (i.e., my MDA/ODM view of the world, where you separate the vocabulary from the software and rules to leverage patterns, increase interoperability, increase reuse, get to executable models, autonomous computing / grid / massive scale, etc.) 5. context aware, policy based applications that can be deployed in a grid / on a massive scale (here is where I think the rubber will meet the road - but we need more infrastructure to support this)
Susie Stephens Oracle	I see the following as important application areas for semantic technologies: (1) Data integration within a company (including many data types) (2) Collaborative data integration with one other organization or a strongly developed community (3) Web Search, e.g. faceted navigation (blogs.oracle.com/otn/2006/09/08) (4) Enhanced Business intelligence using composite applications (5) Knowledge management, with preservation of context, IP protection
Chuck Rehberg Semantic Insights	(1) Real-time Document Analysis (2) Semantic Wiki (3) Personal Assistant (4) Real-time Semantic "RSS" (5) Collaboration and Reconciliation through Ontology harmonization (6) Contextual access to vast amounts of stored information via Semantic Search

5th SEMANTIC INTEROPERABILITY FOR E-GOVERNMENT CONFERENCE	
Expert	**Top-5 Lists of Semantic Applications**

Sam Chance SAIC	As for my picks for high priority applications for semantic technology, from a national security perspective, the fundamental need is to shrink our decision cycle and to "go through" the decision cycle; that is, we need more effective and efficient information operations. Currently, we simultaneously enjoy and suffer from an abundance of data. We must turn this abundance of ever-growing data into actionable intelligence. Our current methodologies are not sufficient. Semantic technologies will aid our ability to more rapidly perceive, process, analyze and act. From sensor to shooter semantic technologies will pervade. Semantics closer to sensors will reduce "noise" and thus the glut of data. Semantics in information repositories will increase query precision and recall. Semantics in messaging between software components will increase automation and interoperability. Semantics in system health data will facilitate autonomic system behaviors. Semantics in security processes will facilitate inter-agency/multi-level sharing. Semantics in data will facilitate "deep" interoperability among otherwise disparate systems and organizations. The following are my picks for high priority applications of semantic technology. (1) Unstructured data management (2) Service Oriented Architecture (3) Complex event processing (4) Workflow Management (5) Multi-agent systems The keys to securing funding for any of these includes the following. - DEMONSTRATE value on existing projects that include semantics - INCORPORATE semantics into existing projects *and* DEMONSTRATE value - Walk before we run. That is, design and build INCREMENTAL value from semantics. Don't try to implement too much to quick. In other words, a little semantics and a lot of knowledge can go a long way. - ARTICULATE value of semantics from "needs to solutions." For example, we must explain how semantic technology will improve national security.
Richard Benjamins ISOCO	0. One-stop-shop window for citizens, integrating local, regional and national governments. Many government services require interaction with several authorities, requiring duplication of data and effort. 1. Bringing administration closer to citizens, allowing easy access by not requiring citizens to speak government language 2. Big brother: integrating back offices of different authorities (e.g. police, city, banks; which would allow to pay traffic fines online in a transparent manner) 3. A public, understandable, extensible ontology of eGovernment

5th SEMANTIC INTEROPERABILITY FOR E-GOVERNMENT CONFERENCE	
Expert	**Top-5 Lists of Semantic Applications**

Ajit Kapoor	"Semantic technology" should be implemented as a common knowledge infrastructure which should be used as a "service". We will publish it, define it, and allow for usage based on a SLA. This way the funding issue is addressed and is not a burden. Initially forward thinking organizations are always keen to spend, but the bulk of the organization are followers and usually come when others create a competitive challenge for them. The SLA based pricing model charges on use basis rather than a forced burden on all. Remember that most organizations are at best mediocre; they excel in it. There are a few leaders who truly excel. (1) So how would I describe the driving applications? Not as silos of few localized applications, but as a horizontal capability that will enable the business to become a. Agile b. Do more with less (boy this should get the bean counter happy) c. Reduce Operating costs (maintenance and support) so as to invest in the emerging services infrastructure-like semantics (2) Semantic technologies should be deployed as ad hoc applications. They are not KM products that you can buy from a vendor. They should be architected, not purchased as a set of products that will be integrated later- first as a horizontal infrastructure, akin to the thinking behind "security" (3) Architecture should not be isolated but looked upon as continuum of: vertical layers; Business process; Data/information; application/services; Infrastructure to support of service paradigm (4) These layers of EA must be fortified by semantic technologies, security, and systems/service management as horizontal infrastructure that support all the vertical EA layers (5) Semantic should be evolved as a "ontology information base" where data, applications, services are capable of providing "autonomic" interoperatability (6) This is different from point data standards like STEP in that its developed for machine to machine or inter systems interoperability (7) This will be one of the key building blocks that will make SOA real, It dies not need WS separate standard-W3C recommendations must be adhered to build upon XML layers of RDF/RDFS, and OWL- (8) We need to start building an enterprise ontology information base that is developed in a service paradigm. Funding must be provided as a use base remittance that users will pay based on SLAs. These SLAs are being developed using the telco OSS model for the converged network-IP based. Does it sound like the makings of NCES for GIG?

5th SEMANTIC INTEROPERABILITY FOR E-GOVERNMENT CONFERENCE	
Expert	**Top-5 Lists of Semantic Applications**

Rex Brooks Starbourne	The Semantic Interoperability Service-Oriented Architecture Pilot group I head is working on a Web Services Registry of Standards, SDOs and organizations whose products/services implement these standards in the domains of Emergency Management and Health Informatics implementing both The OASIS UDDI and ebXML Registry-Repository standards. This group is exploring funding possibilities through both the Federal Business Opportunities listings, various grant programs, and SBIR/STTR. We have responded to one Department of Homeland Security Program for which we thought we had an excellent proposal comprised of a number of added scoring bonuses for small, disadvantaged businesses, a woman-owned business and a disabled veteran-owned business amongst the collaboratory participants. However, it was withdrawn before a decision was announced. In addition, we are working on two proposals for the DoD Health System based on semantic services delivered through the interface to the registry. We are focusing on geospatially-indexed services related to emergency management and health informatics for situational awareness, rapid response and critical decision-support.
Marc Wine GSA/HITOP	(1) HITOP is scheduled to meet with ONC to update their office on pilots recommended for testing and funding. We are preparing exactly the response to you question. (2) Mike Cummens and his team of Northrup Gruman whom I believe you may have met at a recent Collab Workshop presented for HITOP the NHIN Semantic Interoperability Project, which will be the top priority suggestion for our meeting with ONC (3) Rex Brooks of Starbourne, an expert advisor to HITOP, is developing a registry for semantic interoperable programs and ontologies. This will be another top proposal to ONC. (4) I am including them because they are helping to lead HITOP's update and recommendations. Mike and Rex - would it be possible for you to summarize for Mills how these pilots are fundable and the benefits they should provide?

5th SEMANTIC INTEROPERABILITY FOR E-GOVERNMENT CONFERENCE	
Expert	**Top-5 Lists of Semantic Applications**

Gordon Chang SemanTEQ	SemanticTechnology is applicable in the following fundamental technology areas: - Databases - Semantic Interfaces - Semantic Protocols - Software Engineering - Information Search / Extraction - Information Classification Automatic Tagging - Service-Oriented computing - Systems Integration - Agent based Architecture - Automated processing of Web information by software agents Semteq is seeing the following applications as the most immediate candidates: (1) Semantic Blogging (2) Enterprise Data Integration (3) Telecommunications (4) Personalized information retrieval (5) eLearning
Lee Lacy DRC	High Priority Applications: (1) neutral interchange files between tools (e.g., discrete event simulation packages) (2) context-sensitive link recommendations (e.g., related advertisement in commercial world – semantic version of Google AdSense) (3) semantic wikis and blogs (4) semantic descriptions of web services (5) distributed information – possibly referenced in a registry (e.g., car for sale ad instance on someone's own webpage/server instead of a centralized site) How will they get funded? ✸ People have to see a business case – a reason that the technology makes their job better, faster, or cheaper. ✸ I don't think we can rely on the Government to fund standards development efforts any longer. ✸ Consortiums must collaborate to develop the standards (e.g., Simulation Interoperability Standards Organization) and industry must see a way to make money applying the technology

5th SEMANTIC INTEROPERABILITY FOR E-GOVERNMENT CONFERENCE	
Expert	**Top-5 Lists of Semantic Applications**

Dean Allemang TopQuadrant	#1: Federal Enterprise Architecture. A great deal of good work has already gone on to document and model the FEA. The benefits of EA modeling are subtle, but we see a need for them all over. One example is in public health; the CDC wants to certify compliance for health care networks, to be able to respond better to emergency situations (e.g., Katrina/Rita). They find themselves re-inventing big chunks of FEA. Semantic Web is a natural technology (some say, essential) for making enterprise architecture modeling work on a large scale. #2: Policy modeling. Issues like privacy, security, IP rights, etc. require lightning fast response by legislature to keep up with new challenges brought about by emerging technologies. Modeling such policies, merging them from different sources, checking for inconsistencies, etc. is a natural application area for the semantic web. Modeling policy in this way makes it possible for legislatures to keep abreast of ramifications of complex interacting policies. #3. Scalable data inferences. Fundamental to many semantic applications is the connection of inferencing to scalable data store. The industry to-date has focused either on data-backed solutions (leveraging database technology) or inferencing solutions, or a hybrid of two solutions, one from each source. An essential technology enabler is a solution that exploits the synergies between these two approaches, to build a scalable data store that is tuned to the performance of an inference engine.
Mark Helleman Modus Operandi	Rather than a top 5 list, we see the generalization of applications best handled via a semantic technology approach as being discovery-centric. Characteristics of discovery-centric applications: ✸ Cannot predefine all queries at design time. ✸ Mostly ad-hoc queries vs. parameterized queries. ✸ Searching for information (structured and unstructured) is a primary goal. ✸ Discovering relationships in the data using semantic reasoning is necessary to tie together disparate information where explicit relationships (i.e., links) do not exist. ✸ Progressive refinement of queries is necessary to achieve the desired results. ✸ Potentially massive data sources and query results. We have seen demand for discovery-centric applications in DoD, Intelligence Community, and Pharmaceutical market verticals.

5th SEMANTIC INTEROPERABILITY FOR E-GOVERNMENT CONFERENCE	
Expert	**Top-5 Lists of Semantic Applications**

Mathew Hettinger Mathet.com	Top-5 priorities by "granularity" of capability: **Basics** (not in any particular order) (1) (real-time) System-System Interoperability (heterogeneous and distributed data stores, applications, processes, services [SOA], organizations such as government agencies): semantic technology is *required*.particularly for cooperation / collaboration (2) Data Quality (including meta data) (3) Natural Language Processing (interpretation, concept extraction, etc.) (4) Dynamic negotiation, mediation, etc. including semantic negotiation, mediation, etc.. (5) (Formal) Ontology development **Applications** -- All of which may be used for (not in any particular order) (2) Knowledge Management (discovery, acquisition, reasoning, etc.), (3) Document, Content, Records Management (search, discovery, presentation, development, etc,) (4) Portals, Wikis (collaboration tools) (5) Inter- and Intra- Agency Process Definition and Execution (6) Software, Data Store Implementations **Agencies** -- All of which are important for (not in any particular order) (1) Homeland Security, Emergency/Disaster Response and Management (2) LOB interoperability / collaboration (3) Legislative, Executive, Judicial branch interactions (4) Service Provisioning (e.g. fulfilling legal obligations as specified in statutes) (5) Global inter-governmental communications **Funding**: Start with pilot projects that build / compose / orchestrate systems that use semantic technology as components whose output provide immediate value to some set of organizations: ✸ is of relatively low risk ✸ has high visibility ✸ exhibits multiple capabilities of semantic technology ✸ value of semantic technology can be measured, and can be measured relative to the value of the output of the application using semantic technology Sources of funding may be known funding sources such as NSF, NIH, any set of agencies willing to buy into the pilot project

5th SEMANTIC INTEROPERABILITY FOR E-GOVERNMENT CONFERENCE	
Expert	**Top-5 Lists of Semantic Applications**

Steve Hamby	1. **Major information sharing / integration frameworks**, specifically in the service, Intel, and defense / security sectors. Some examples are DoD's DCGS Integration Backbone (DIB) and the IC's Information Management Framework (IMF). There are many initiatives that are already funded to provide these frameworks; some already have semantic capabilities and others do not. Given the funding allocated to some of these, I believe it is simply an exercise to show the customers and prime contractors the value of semantics to these initiatives. I think you could also add grid-based or net-centric applications, such as DoD's NCES, NGA's NSG (and GKB), and FBI's Sentinel to this list of applications. I would also add multi-level security (SCI, TS, Secret, unclass, etc) systems to this - I think some agencies refer to this as trusted networks - to this list; it would be smart to capture the rules of when and how to share information as data, instead of code, so that the rules could be shared across major infrastructures (like DIB and IMF). I had demoed the idea of adding an inference engine to Oracle Fusion for FBI's Sentinel project, and I believe this is the best answer. The SI that I worked with loved the idea, but they were not the winning SI for the project. I know this big list is very generic and covers several items, but basically any system that fuses data from multiple systems, operates over multiple user bases, or works with multi-level operational security schemes could benefit from semantic technologies. 2. **Class V Interactive Electronic Technical Manuals (IETMs).** To the best of my knowledge, there are no production-deployed Class V IETMs in any of the service branches or NASA, at least on a large scale. I think semantic technologies would be very valuable in creating Class V IETMs that actually assist the user to perform maintenance based on similarities of defects, historical repairs, and maintenance and other items on hand. I think this would be useful for DoD and NASA, specifically, but other agencies that struggle with maintenance of equipment that could result in fatalities if not repaired correctly and quickly. I do not have the answer on getting this one funded; I know there are current projects that are deploying XML-based Class IV IETMs to the Navy fleet and Army tanks (different projects); maybe there will be demand for Class V IETMs once these are successful. 3. **Air Safety projects**. I know of three projects that used semantic technologies in this space that were considered successful. Yet, I don't think any are in production. AFRL did a project for clearances (Ed DePalma was the lead on this I think) and another one that involved weather data and more (can't find the info on the name, but remember this one). NASA Air Safety did a project that involved modifying flight plans in flight for anticipated weather vs. actual weather and FAA airport safety data; this system would be a more flexible adaptation of an existing code-based system. I know the NASA project (I was the lead on the project) was considered a huge success, but could not grow legs due to funding issues. I am not sure why the AFRL projects did not get promoted to production status; I remember that the clearance documented an outstanding tangible ROI. With much media coverage of air safety issues in the last few months, maybe there will be funds sent this way.

(steve hamby…)	4. **Compliance** is one of my top picks. The ability to use semantic technologies to prevent user access to systems, data, or other resources by simply defining access rules and mapping that to various security systems is a relatively easy and inexpensive endeavor with great value delivered. By further adding transactional recording and rules that determine if fraudulent or other "bad" behavior is occurring makes the use of semantics that much more valuable. 5. **Knowledgebases** -- Another generic one...but, any knowledge base should be looking into semantic technologies. Some quick examples would be the KB that JPL (Jayne Dutra) did with Siderean that was very successful, NGA's GKB, NASA HQ started a centralized KB about a year ago (they were looking at semantic technologies, but I haven't kept abreast of their progress), and HHS was investigating a KB that merged NEDDS data with CDC STARRS.
Roy Roebuck Commitent	(1) Desktop vocabulary inventory tool, that goes beyond the current search tools to provide the desktop user's: a) term table (i.e., with nouns, verbs, phrases, acronyms, and abbreviations and links back to the containing sources) with term definitions and synonym set via lookup from WordNet or via manually entered definition conformant with the LDOCE simple definition criteria discussed by Pat Cassidy in ONTAC; b) taxonomy of user's terms categorized into broader/narrower groupings; c) user thesaurus of preferred and alternate terms showing "preferred equivalent" terms paired with "alternate equivalent" terms; d) from each thesaurus term a directed-labeled-graph (DLG) representation of triples present in the user's content sources that are directly and indirectly related (i.e., inferred) from the selected thesaurus term. These would provide the user's desktop vocabulary inventory as a concept-map type interface of the user's controlled vocabulary and their desktop content searches. (2) Desktop ontology inventory tool that leverages item 1 above to provide an aggregated concept/triples map that enables inventorying and identification of semantic threads (across item 1's taxonomy and thesaurus) that exist in the aggregated concept map. (3) Desktop search which leverages item 2 to provide Internet/intranet search based on the inventoried user aggregated ontologies. (4) Desktop process inventory which extracts the triples and semantic threads from items 2 and 3 that have a "relation" indicating sequence, flow, dependency, versioning, variance, scheduling, and other time relations to provide the "process models" present in their aggregated ontologies. (5) A mechanism to aggregate and unify a user's selected ontology and process inventories into larger group, organizational, and community ontology and process inventories.
Carey Daniel BAH	One thing that was brought up a couple of times at DAMA is that, compared to relational databases, semantic technology deals well with incomplete or duplicate information. Human Resources data and medical data are rife with those problems. So I think those would belong in a top-five list.

5th SEMANTIC INTEROPERABILITY FOR E-GOVERNMENT CONFERENCE	
Expert	**Top-5 Lists of Semantic Applications**

Mike Uschold Boeing	(1) **Application and Database Integration**: semantic mediators which use semantic metadata and mapping. (2) **Compliance to Regulations and Policies**: Regulations can be government, corporate, or at business unit level. A semantic approach in which formal models encode the policies and the conformance (3) **Role-Based Security Access and Control**: Semantic encoding of multi-faceted info about persons and computer agents can be used to create and enforce highly flexible and role-based access and editing policies. Formal techniques can assist in testing the a priori consistency of the domain models and policies themselves; also, general purpose inference engines can be applied to the policy enforcement task, increasing reliability and reducing the need to implement special purpose policy-enforcement engines. (4) **Search (but in a limited context).** It is definitely NOT true that in general, semantic search is better than non-semantic search, or else Google would be out of business by now, or already using it. Where I believe it is better is in a limited domain, where you have a steady stream of highly structured information coming in, where the semantic metadata is applied automatically in the background. E.g. filling in forms, where the form is backed by an ontology (I first saw an idea related to this in a paper by Hendler in 2001, I think of it as semantic metadata for free, it happens as a side effect). Chris Welty has demonstrated with empirical studies that having an ontology to structure IBM's web site gave significatn improvement in search measurse. He also showed that having an OntoCleaned ontology did even better still, measurably so. Also, here are some thoughts, from a Boeing Colleague: Bill Murray (5) Formal verification techniques for semantic technologies (e.g., ACL-2 certified books to extend the ACL2 theorem prover for OWL, and the same for other theorem provers), allowing formal verification of mapping techniques, extensions to OWL, etc., in those provers (6) Semantic technology applied to emergency crisis management where the unexpected nature of the crisis requires rapid access to unanticipated semantic linkages (e.g., route accesses, building occupancy limitations, terrain elevations for flooding, power supply capabilities, vaccine supplies, food and water supplies) (7) Semantic technology applied to education allowing new explorations of knowledge and new unanticipated semantic linkages to be explored (e.g., linkages in time and space of artists or other artifacts, best example is the Multimedia E-Culture Demonstrator at http://e-culture.multimedian.nl/demo/search) (8) Geo-spatial reasoning for automated course-of-action decision support tools, e.g., tools to mark key terrain, likely enemy approach routes, likely ambush areas, kill sacks, good observation areas, good covered and concealed routes, and so on. These tools would be used as adjuncts to help battalion staff in planning COAs in MDMP the military decision making procedure, which occurs at the battalion and higher levels.

5th SEMANTIC INTEROPERABILITY FOR E-GOVERNMENT CONFERENCE	
Expert	**Top-5 Lists of Semantic Applications**

David Jones Boeing	Top-5 list – from our wiki… (1) Integration and Interoperability (2) Improved Search/Information Overload (3) IP protection/Compliance (4) Making SOA more agile/cost effective (5) Interoperability of Business Rules/Rule Engines
Tore Christiansen DNC (Norway)	From some thinking (and talking) related to semantic technologies in the maritime and oil&gas industries as I (we) know them here in Norway, important areas (top picks) relate to how semantic technology can help us manage (1) physical assets (ships, platforms, plants, etc.) and (2) intellectual assets (plans, activity, records). Thus, two sets of developments that would be welcomed are summarized below. Not precisely defined or thought through, but I think you get the idea. If not (and in any case) do keep in touch with your thoughts and ideas. (1.1) **Standardized light-weight semantics for defining artifacts** in terms of - that they are (identity) - what they are (definition/classification/description of the physical object) - how they are (status info from sensors) - where they are (geo-location coordinates) - when they are (temporal coordinates) Representing the above semantics in a lightweight syntax that allows simple and configurable encoding. Implementing the representation in RFID tags that hold the above information, plus one or more URIs to additional information. (1.2) **Deploying the RFIDs on artifacts in the field** (this will turn the artifacts in intelligent artifacts - "smartifacts" if you like ;-). (1.3) Using (1.1) and (1.2) above to greatly enhance the effectiveness of maintenance planning, condition monitoring and documentation of technical status for systems and components on ships, offshore platforms or petrochemical processing plants, based on **- using networked computers for remote access** during maintenance planning, or **- using handheld computers (with RFID readers) for in-situ access** during inspection.

Tore…cont.	Mapping of process information onto spatial locations" (2.1) **Standardized light-weight semantics for defining activities** in terms of - that they are (identity) - what took (or will take) place (definition/classification/description of the task/event) - why thy took place (the reason for the task/event) - where they took place (geo-location coordinates) - when they took place (temporal coordinates) Representing the above semantics in a lightweight syntax that allows simple and configurable encoding. Implementing the representation in RFID tags that hold the above information, plus one or more URIs to additional information. (2.2) **Deploying the information as messages tied to their own geo-spatial coordinates** (located in some server - but "linked" to the place where the activity actually happened) (2.3) Using (2.1) and (2.2) above to enhance the effectiveness of process planning, tracking of progress and documentation of progress for projects and administrative processes, based on **- using telecom technology to place messages** (instructions) about things that shall happen, such as instructions for executing processes; or **- using wireless technology to access messages** (records) that are located "in the place where they happened" during validation and verification.
Webster Mudge Time	Top five picks: (1) "Social networking" and relationship pattern recognition (2) ETL, esp. when coupled with #1 (3) Distributed inferencing (4) Fulfillment processing (5) Metadata management

Todd Pehle Northup Grumman	**Top 5 picks** of semantic tech. I'm assuming that since this is an e-Gov conference my picks should focus on top 5 government investments in semantic technology. So, in no particular order: 1) The ***US science agencies*** such as NASA, USGS, NOAA, etc. could benefit from the "sharing" of information and its meaning. Other govt. agencies could then benefit from the "repurposing" of this data. An example may be FEMA repurposing weather information for disaster response. Efforts among the earth sciences have begun with the development of NASA's SWEET ontologies. 2) There are 20+ govt. agencies that utilize ***spatial data***, thus the integration and exchange of spatial data would vastly increase performance of many govt. agencies. A map, by its very nature, is the integration of various layers of information. Thus spatial data is a natural candidate for semantic technology. Tim Berners-Lee has made similar statements as well. 3) ***Homeland security*** also appears to be a very viable candidate for semantic technology. A lot of data is needed to paint a coherent picture of situational awareness. Thus, the opportunity to be flooded with irrelevant information looms large. Unified, context relevant pictures (via ontology) of a given situation or problem domain would be very useful when time is of the essence. This could utilize information from a large number of govt. agencies from DoD to Intel to Dept. of Energy to Dept. of Transportation to Immigration to Port Security, etc. 4) ***Organization Management*** could be another key component. This would be a social network, perhaps borrowing from FOAF, of the organizational structure of government. This would simply map out "who knows who", "who knows what", "who works for who" & "who works on what". Since the US govt. is the largest employer, keeping track of these relationships could benefit greatly from the use of ontology. Sometimes it's not about finding the right digital information, but about just trying to find out who you could ask. 5) ***Asset Management*** seems to be another candidate for semantic technology. Again, in a large employer such as the US govt., keeping track of "what belongsTo what", "what belongsTo who" & "what has which properties" could provide much improved efficiency. This could be seen as the logistics aspect of government. **Funding**: As far as funding for each of these, I'm not sure. I do think we need help from above, though. As in, some kind of mandate that forces each agency to make information available. Not on some portal or website or ftp site, but perhaps standing up a set of web services for their data. Obviously, SPARQL services would be nice, but just having an XML-based SOAP service would be a nice starting point since SOA has some momentum. The semantics could then be layered on top of these services to showcase the reuse and repuposing of data. Mash-ups and other services could then begin to emerge similar to the way user-driven content has fueled Web 2.0. In the end, I think the technology enablement is there to enable sharing & reuse. Unfortunately, we'll need a strong change of political thinking to get people in the mood for sharing. We have to show them that it's a "you scratch my back & I'll scratch yours" kind of environment so that if you do your part and share your information, the favor will be returned.

5th SEMANTIC INTEROPERABILITY FOR E-GOVERNMENT CONFERENCE	
Expert	**Top-5 Lists of Semantic Applications**

Eric Monk	(1) Information sharing - ability to share data across internal or external organization boundaries. Semantics are used to provide a common model and vocabulary for information sharing. ✸ Funding - Using semantics will increase the cost of an initial point-to-point interface but will drastically reduce cost for n-to-n interfaces. (2) Information discovery - ability to find information via searching or browsing. Information assets encompass both structured and unstructured data. Searching and browsing are enhanced by relevant semantic information. (Searching can include query refinement for instance, browsing can use semantics for faceted navigation). ✸ Funding - Using semantics will increase the cost of searching a single data source, but will drastically reduce cost for n data sources. Reduces knowledge worker workload - more time spent on analysis than information retrieval. (3) Information encoding - encoding data upon entry or translating text based data into semantic concepts. Increases accuracy and quality and enables other semantic technologies. ✸ Funding - Creates ability for autonomous processing of information reducing human workload. (4) Information analysis - Reasoning over semantically encoded content to perform analytical tasks. Semantically encoded content could range over a set of heterogeneous data sources. ✸ Funding - Analytical results could provide competitive business or military advantage. (5) Autonomous Agents - Agents contain a domain level semantic model used to interact with their environment and perform tasks. ✸ Funding - Can be used to provide near real-time intelligence to provide competitive advantage. Also reduces human workload by offloading tasks to agents. (6) Human / Agent interaction - A semantic domain model is used to broker information between humans and agents. ✸ Funding - Enables humans to more effectively task and get information from agents. Provides skilled humans ability to control complex agent teams for increased productivity with lower human workload. Provides ability for humans with lower skillsets to perform higher skilled jobs. Reduces training cost. Note: Agents can be computer programs or autonomous systems (such as a Predator UAV)

5th SEMANTIC INTEROPERABILITY FOR E-GOVERNMENT CONFERENCE	
Expert	**Top-5 Lists of Semantic Applications**

Bob Smith USC & Ontolog Forum	As part of a panel at the 5th Semantic Interoperability for eGovernment conference next week you asked the Ontolog Forum to list their Top Five Ontology Driven Applications and the list is presented below. Kurt Conrad first compiled a list of about 30 potential applications, grouped into various categories and sub-categories. (see table below…) We submitted this list to the membership and asked them to simply rank from 1 to 5, 5 being their "highest priority". We then reversed-scored these results to determine a grand total for each application. Given the intent of this list of Top Five Ontology-Driven Applications, we are pleased to announce the results -- ranked from first to fifth place. The number in brackets is the grand score. You might find the actual patterns of interest in that the first place received attention from over half of the raters but was NOT their first choice. No application received more than 1 first choice vote. Thus, as you might well expect, there is not a lot of clear agreement about the future....but a consensus is observed about the importance of ontologies in standards development. 1st D2 - Using ontologies to align / translate among standards (terminology remediations) [20 points] 2nd D3 - Building ontologies from standards (translating standards into ontological representations that can be used by ontology-aware tools, e.g., inference engines) [14 points] 3rd D1 - An ontology of existing standards [10 points] 4th C2 - Standards in health informatics and emergency management [10 points] 5th B4 - Using ontology to improve data quality [9 points] **Ontolog Forum Inventory of Existing & Potential Ontology-Driven Applications (QKF)** This list was produced to enable Ontolog members to identify the top 5 ontology driven applications to submit to Mills Davis, per his request. See: http://ontolog.cim3.net/forum/ontolog-forum/2006-09/msg00031.html(QKG) Please rank the most important applications using the provided ID numbers and submit your rankings by posting a message to the Ontolog Forum mailing list. Rankings will need to be posted by Thursday, 2006.10.05, to enable a consolidated list to be forwarded to Mills Davis, in time for his conference.(QKH) **A0 - OWL RFC references(QKI)** A1 - Web portal (QKK) A2 - Multimedia collections(QKN)

	A3 - Corporate web site management (QKO) A4 - Design documentation(QKP) A5 - Agents and services(QKQ) A6 - Ubiquitous computing(QKR) **B0 - Using ontologies in database design (QKS)** B1 - Databases to hold ontologies - from simple catalogues to First Order Logic. (QL0) B2 - Using ontology for data retrieval and HCI (QL1) B3 - Ontology mediation between databases (QL2) B4 - Using ontology to improve data quality (QL3) B5 - Procedures to develop model-specific ontologies to support data profiling, reconstruction, and repurposing (QKT) **C0 - Health care (QKU)** C1 - Web services registry of standards (QL4) C2 - Standards in health informatics and emergency management (QL5) C2a - Alerting / warning(QL6) C2b - Information gathering at county, regional, state, and federal levels (QL7) C2c - Emergency data exchange language (QL8) C2d - Common alerting protocol (QL9) C2e - Resource messaging(QLA) C2f - Hospital availability exchange (QKV) **D0 - Standards development(QKW)** D1 - An ontology of existing standards (QLC) D2 - Using ontologies to align / translate among standards (terminology remediations) (QLD) D3 - Building ontologies from standards (translating standards into ontological representations that can be used by ontology-aware tools, e.g., inference engines) (QKX) D4? Creating the next generation of standards as Ontologies **E0 - Other (QKY)** E1 - Predictive data mining, particularly in the area of intelligence (QLE) E2 - SOA-based applications, such as (OASIS's) ebSOA-based business and safety / security / emergency preparedness cases (QLF) E3 - Semantic Agent-based paradigm application: such as traffic management system to also cater for information needs of agents in/out of traffic system. This could lead to value added services for, say, fleet management, ambulance dispatch and guidance, etc (QLG)

	E4 - Long-running process constructed on the fly. This involves discovery, mediation, composition, and execution of a sequence of (semantic) services to intelligently satisfy user requirements. (QLH) E5 - Decision-support systems(QLI) E5a - The use of weak semantics to improving collaborative filtering (QLJ) E5b - Cross-impact analyses(QLK) E6 - Conceptual interoperability among simulation systems (at multiple levels) (QLL) E6a - Neutral authoring (where a mid-level ontology can serve to control the access to common terms between applications) (QKL) Business Intelligence Reference Data Management