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McLean, VA

Federal OMB IT Dashboard Potential Application for IT Cost & Schedule Analysis

Daniel Harper April 2014

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1 IT Dashboard Analogy to Zillow

Zillow.com is a publicly available website that provides "Zestimates" and other real estate information. According to the website:

"The Zestimate (pronounced ZEST-ti-met, rhymes with estimate) home valuation is Zillow's estimated market value, computed using a proprietary formula. It is not an appraisal. It is a **starting point** (emp. Mine) in determining a home's value. The Zestimate is pulled from data; your real estate agent or appraiser physically inspects the home and takes special features, location, and market



conditions into account. We encourage buyers, sellers, and homeowners to supplement Zillow's information by doing other research such as:

* Getting a Comparative Market Analysis (CMA) from a real estate agent

* Getting an appraisal from a professional appraiser

* Visiting the house (whenever possible)



Figure 1-1. An example of Zillow services using the author's home

Notice the phrase "starting point." Much like Zillow is a starting point for estimating real estate, the OMB IT Dashboard is a starting point for estimating Government IT programs.

The figure above depicts data for a home occupied and sold by the author in 2008. The data is accurate although incomplete. For example, the website did not report that the home uses natural gas heat and electric air conditioning.

2 The Estimating Problem: A Data Deficit

Program managers and cost estimators often have to work with little or no hard data due to several factors including: Immaturity of the program; Limited or no access to existing data or program personnel/SMEs; an estimator awaiting security clearance, contract approval or other administrative issues. This "data deficit" is especially widespread in regards to estimating IT programs, and headlines like the one below are not uncommon:



Because of this data deficit, estimators need to be creative in finding analogous programs and/or cost factors. The federal IT Dashboard provides a wealth of useful historical cost information for this purpose. This completely free and public information is available to anyone with an Internet connection-the site doesn't even require users to register for a password to access the data. The data available can provide estimators with an additional resource to inform cost and schedule estimates this paper will demonstrate.

3 OMB Federal IT Dashboard Background

The <u>IT Dashboard</u> (https://www.itdashboard.gov/) is a web-accessible database enabling federal agencies, industry, the general public and other stakeholders to view details of federal information technology investments. The purpose of the Dashboard is to provide information on the effectiveness of government IT programs and to support decisions regarding the investment and management of resources. Originally launched in June 2009, the IT Dashboard provides:

"...the ability to view details of Federal information technology (IT) investments online and to track their progress over time. The IT Dashboard displays data received from agency Exhibit 53 and Exhibit 300 reports¹, including general information on over 7,000 Federal IT investments and detailed data for over 700 of those investments that agencies classify as "major." Agency Chief Information Officers (CIO) are responsible for evaluating and updating select data on a regular basis, which is accomplished through interfaces provided by the IT Dashboard.

"We launched the IT Dashboard to shine light onto the performance and spending of IT investments across the Federal Government. If a project is over budget or behind schedule, you can see by how much money and time, and you can see the person responsible--not just contact information but also their picture. The IT Dashboard gives the public access to the same tools and analysis that the government uses to oversee the performance of the Federal IT investments. The transparency and analysis features of the IT Dashboard make it harder for underperforming projects to go unnoticed, and easier for the government to focus action on the projects where it's needed most."²

A concise video primer is available at <u>https://www.youtube.com/watch?v=7sgzzJzJZ9Y</u>

4 Strengths and Weaknesses of IT Dashboard Data:

From an estimator's perspective, there are both strengths and weaknesses to the IT dashboard. Strengths include:

- Data is publicly available
- Downloadable to Excel
- Data comes directly from the program office Exhibit 53/Exhibit 300
- Data updated quarterly for each program
- 7000 federal IT investments including 800 classified by OMB as "major," includes DoD and civilian programs
- \$ 600 Billion in Federal IT Investments over the last decade

Weaknesses and challenges include the following:

- Data is usually high-level
- Data is not reported in a standardized format, i.e., inconsistent cost elements
- Data comes directly from the program office Exhibit 53/Exhibit 300 (i.e., a budget perspective versus a true "cost" perspective)
- Some inaccurate/incomplete records

¹ Exhibit 53. The purpose of the exhibit 53 is to identify all IT investments— both major and nonmajor and their associated costs within a federal organization. Information included on agency exhibit 53s is designed, in part, to help OMB better understand what agencies are spending on IT investments. The information also supports cost analyses prescribed by the Clinger-Cohen Act. As part of the annual budget, OMB publishes a report on IT spending for the federal government representing a compilation of exhibit 53 data submitted by the 26 agencies.

Exhibit 300. The purpose of the exhibit 300 is to provide a business case for each major IT investment and to allow OMB to monitor IT investments once they are funded. Agencies are required to provide information on each major investment's cost, schedule, and performance.

² <u>http://it.usaspending.gov/</u>

A September 2010 article by the Sunlight foundation ³ illustrates some of these weaknesses, claiming \$1.3 trillion in inaccuracies. However, as an anecdote to the contrary, IT Dashboard data matched actual earned value reports for s DHS program this author was estimating at the time. A pair of 2011 GAO reports⁴ acknowledge strong progress for the IT Dashboard, while still urging further improvements.

Despite its shortcomings, the IT Dashboard is a readily available resource for cost estimators to use as a starting point or for crosschecking their estimate, especially given the "money quote" highlighted by the red circle in the article below:



than the OMB number.

The fiscal 2013 request represents a real decline of minus 3.06 percent from fiscal 2012, based on OMB estimates of inflation during fiscal 2013, which starts on Oct. 1.

An Oct 2012 GAO Report (http://www.gao.gov/assets/650/649561.pdf) was critical of CIO ratings, e.g., "ratings did not appropriately reflect significant cost, schedule, and performance issues reported by GAO and others." This criticism was focused on the ratings, but not the

³ http://www.fiercegovernmentit.com/story/sunlight-foundation-finds-1-3-trillion-worth-inaccuracies-usaspending-gov/2010-09-09?utm_medium=nl&utm_source=internal

⁴ Information Technology: OMB Has Made Improvements to Its Dashboard, but Further Work Is Needed by Agencies and OMB to Ensure Data Accuracy (March 15, 2011); GAO-11-318SP: Opportunities to Reduce Potential Duplication in Government Programs, Save Tax Dollars, and Enhance Revenue (Dashboard discussed on p. 235)

underlying data, although previous GAO reports have cited cost & schedule data as being outdated because it lags so far behind current programs.

In short, though the data is imperfect, it's 1) all we have and 2) likely to continue to improve as GAO has already noted improvements from 2010 to 2012 (p.9, GAO-13-98 *IT Dashboard*).

5 Hypotheses for IT Dashboard

Estimators frequently run into situations where there is little to no data. Initial cost efforts typically become intense data mining and collection exercises. This data dearth demonstrates the need for further research to exploit the voluminous data in the Dashboard.

The remainder of this section will be broken out by each hypothesized research area as well as a discussion of preliminary findings and suggestions for further analysis.

The intention of this paper is to raise awareness about the IT Dashboard as a potentially powerful tool in the analysts' toolbox. By no means is it a *complete* presentation of cost estimating relationships and factors available; the goal is to create awareness and present potential ideas for further research. Admittedly some of these ideas may turn out to be merely rabbit trails, but I submit that further research would be beneficial to the cost estimating community.

5.1 Idea #1: Can the IT Dashboard tell me how costs-to-date for the program I'm estimating compares historically to other DHS USCIS programs?

Analysts and estimators often suffer from "tunnel vision" when working on a program. Rarely are they provided with an enterprise view of the organization they are working with. Often this is because estimators are on the front lines working the nuts and bolts of a problem, or they may be simply new to a program or organization, and unfamiliar with programs outside of the one they are working. Often they are doing everything they can simply to understand what's going on in their *own* program.

However this myopia can lead to a failure to leverage other programs for analogous cost and schedule information. For example, when I was working to determine the program scope for a Life Cycle Cost Estimate (LCCE) for DHS USCIS Verification Information System, we learned that VIS was required to enlist the services of an Operational Test Agent. This was the first we'd heard of an OTA, and we had no data on how to cost it. However, as I was examing other DHS programs on the IT Dashboard, we learned of an OTA recently performed for the USCIS *Transformation* program. This led us to a November 2011 GAO Report on DHS's Transformation program, which reported:



"Cost of an <u>operational testing agent</u>, who would be responsible for planning, conducting and reporting independent OT &E for Release A, was not included in the acquisition planning process. USCIS officials from TPO and OIT agreed that an OTA appeared to be a duplicative effort because TPO had already planned to conduct independent testing. However, DHS denied TPO's request for a waiver of the OTA. As a result, USCIS contracted with an independent OTA by Oct 2010, and as of June 2011, **TPO has awarded approximately \$1.8M towards this contract.**"

As our friend celebrity chef Emeril Lagasse might say, "BAM!"

While the report was very useful and gave a lot of information about USCIS *Transformation*, there was little in the report about *other* USCIS programs currently receiving funding. Using the *Portfolio* feature on the Dashboard, I selected DHS USCIS to see what information was available on the other USCIS programs. As can be seen in the figure below, I was able to download cost data for 11 USCIS programs:

Title	Agency	FEA Standard Segment	FEA Primary Function	Overall Rating	Total FY2011 Spending
USCIS - Baseline Automation Support Infrastructure for Citizenship Services (BASICS) (2012)	Department of Homeland Security	IT Management	Information and Technology Management	5.7	\$14.5 M
USCIS - Benefits Provision - Venfication Information System (VIS)/Employment Eligibility Venfication (EEV) (2012)	Department of Homeland Security	IT Management	Workforce Management	5.0	\$29.0 M
USCIS - Customer Service Web Portal (2012)	Department of Homeland Security	j.	Public Affairs	7.9	\$17.6 M
USCIS - FOIA/PA Information Processing System (FIPS) (2012)	Department of Homeland Security	IT Management	Information and Technology Management	7.8	\$4.3 M
USCIS - Immigration - CLAIMS 3.0 (2012)	Department of Homeland Security	IT Management	Homeland Security	2.5	\$14.3 M
USCIS - Infrastructure (End User Support) (2012)	Department of Homeland Security	5	Information and Technology Management	5.0	\$83.3 M
USCIS - Infrastructure (Enterprise) (2012)	Department of Homeland Security		Information and Technology Management	5.6	\$63.9 M
USCIS - Integrated Document Production (IDP) (2012)	Department of Homeland Security	IT Management	Homeland Security	6.4	\$46.2 M
USCIS - National File Tracking System (NFTS) (2012)	Department of Homeland Security	IT Management	Information and Technology Management	5.0	\$4.6 M
USCIS - Naturalization - CLAIMS 4 (2012)	Department of Homeland Security	IT Management	Homeland Security	5.0	\$14.3 M
USCIS - Transformation (2012)	Department of Homeland Security	IT Management	Homeland Security	2.5	\$304.9 M

Table 5-1. DHS USCIS Programs Currently Receiving Funding

Because the data was in *then-year/as-spent* dollars, I then normalized the data to Constant FY11\$s for an apples-to-apples comparison, as seen in figure below:



Figure 2 Spending to Date on USCIS Programs

5.2 Idea 2: Okay, so I know the total costs (to date) for these programs, but is further detail available?

The figures below show the type of information available on the IT Dashboard. Keep in mind, I was able to find out this information without providing so much as an e-mail address.



Figure 3 USCIS Customer Web Portal

Milestone ID	Description of Milestones	Start Date	Start Date Actual	Completion Date Planned	Completion Date Actual	Planned Total Costs(in Smillion)	Actual Total Costs(in \$ million)	Planned % Complete	Actual % Complete	Last Modified Date	Unique Project Identifier	Business Case ID	Agency ID	Agency Name
9103	Site Planning & Design	9/18/2006	9/18/2006	10/30/2006	10/30/2008	0.797	0.797	100	100	9/17/2010	024-30-01-	326	24	Departmen
9104	Acquisition of Content Subscription &	9/18/2006	9/18/2006	10/30/2006	10/30/2006	0.292	0.292	2 100	100	9/17/2010	024-30-01-	326	24	Departmen
9105	CRIS Design and Upgrade planning	10/1/2005	10/1/2005	9/30/2006	9/30/2006	0.136	0.136	5 100	100	9/17/2010	024-30-01-	326	24	Departmen
9106	E-Filing Planning	10/1/2005	10/1/2005	9/30/2006	9/30/2006	1.44	1.44	100	100	9/17/2010	024-30-01-	326	24	Departmen
9107	CRIS Software	10/1/2005	10/1/2005	9/30/2006	9/30/2006	0.394	0.394	100	100	9/17/2010	024-30-01-	326	24	Departmer
9108	E-Filing Software	10/1/2005	10/1/2005	9/30/2006	9/30/2006	0.94	0.94	100	100	9/17/2010	024-30-01-	326	24	Departmen
9109	Implementation of Contract Manageme	9/30/2005	9/30/2005	9/30/2006	9/30/2006	2.95	2.95	5 100	100	9/17/2010	024-30-01-	326	24	Departmen
9110	Migration of Current Site to New Enviro	9/30/2005	9/30/2005	9/30/2006	9/30/2006	0.5	0.5	100	100	9/17/2010	024-30-01-	326	24	Departmen
9111	Acquisition of BEA Software	9/30/2005	9/30/2005	7/15/2006	7/15/2006	0.175	0.175	5 100	100	9/17/2010	024-30-01-	326	24	Departmer
9112	Acquisition of Fast Datasearch	9/30/2005	9/30/2005	7/15/2006	7/15/2006	0.285	0.285	5 100	100	9/17/2010	024-30-01-	326	24	Departmer
9113	Preplanning for Phase II	9/30/2005	9/30/2005	11/30/2006	11/30/2006	0.79	0.79	100	100	9/17/2010	024-30-01-	326	24	Departmen
9114	CSWP Program: Legacy Site O&M (F	9/30/2005	9/30/2005	11/30/2006	11/30/2006	2.765	2.765	5 100	100	9/17/2010	024-30-01-	326	24	Departmer
9115	CSWP Program: Planning and Acquis	10/1/2005	10/1/2005	9/30/2006	9/30/2006	2.67	2.765	5 100	100	9/17/2010	024-30-01-	326	24	Departmer
9116	FY06 O&M of legacy web site	10/1/2005	10/1/2005	9/30/2006	9/30/2006	3.125	3.125	5 100	100	9/17/2010	024-30-01-	326	24	Departmen
9117	FY07 Planning and Acquis	10/1/2006	10/1/2006	9/30/2007	9/30/2007	8.5	8.5	100	100	9/17/2010	024-30-01-	326	24	Departmen
9118	FY07 O&M of legacy web a	10/1/2006	10/1/2006	9/30/2007	9/30/2007	6.85	6.85	5 100	100	9/17/2010	024-30-01-	326	24	Departmen
9119	FY08 Planning and Acquisitio	10/1/2007	10/1/2007	9/30/2008	9/30/2008	6.027	6.027	100	100	9/17/2010	024-30-01-	326	24	Departmen
9120	FY08 O&M	10/1/2007	1/2007	9/30/2008	9/30/2008	7.101	74 8	100	100	9/17/2010	024-30-01-	326	24	Departmen
	Notice we ge description of r	et a brie nilesto	ef nes	X	Т	otal ac	tual co	st of th	e task					
				1										
		Act	tual sta date	rt and co of the ta	mpletio sk	n								

Figure 4 USCIS - Customer Service Web Portal Raw Cost Data

Using the raw cost data provided above, I normalized the data into high-level common cost elements depicted below:

									FY	05	FY06		FY07	FY08		FY09)	FY10	FY11		
	Summary Page						Paylr	flation:	0.0	849006	0.876	153	0.897355	0.92	5893	0.98	81101	0.984758		1	
							Non-pay In	iflation:	0.0	372936	0.906	354	0.928135	0.95	5524	0.96	2571	0.983528		1	
USCIS - C	ustomer Service Web Portal														FY1	1\$M					
					Plann	ed															
			Actual	actual	Total		Actual Tota	a													
Milestone		Actual	Completion	duration	Costs	:(in \$	Costs(in \$													F	Y11\$M
D	Description of Milestones	Start Date	Date	(months)	millior	n)	million)		FY	05	FY08		FY07	FY08		FY09)	FY10	FY11	Te	otal
	Planning and Acquisition	_		-						16	\$ 7.	55	\$ 9.47	\$ 1	8.51	\$	-	\$ -	\$ -	5	ş –
9103	Site Planning & Design	9/18/2006		Com	m	or		et			\$ 0.	91									
9104	Acquisition of Content Subscription & Practice Test	9/18/2006		0011							\$ 0.	33									
9105	CRIS Design and Upgrade planning	10/1/2005								6											
9106	E-Filing Planning	10/1/2005		e	em	۱e	nts			' 0											
9114	CSWP Program: Legacy Site O&M (FY06)	0/30/2005		•	••••						\$ 3.	16									
9115	CSWP Program: Planning and Acquisition (FY08)	10/1/2005	0/00/2000	11.0		2.07		4.11			\$ 3.	16									
9117	FY07 Planning and Acquisition	10/1/2008	9/30/2007	11.0	\$ 8	8.50	\$	8.50					\$ 9.47								
9119	FY08 Planning and Acquisition	201/2007	9/30/2008	11.0	\$ 6	8.03	\$	6.03						\$ 1	8.51						
	Development 🖌								\$	5.05	\$ 0.	90	\$ -	\$	-	\$	-	\$ -	\$ -	- \$	š - š
9107	CRIS Software	10/1/2005	9/30/2006	11.0	\$ (0.39	\$	0.39	\$	0.46											
9108	E-Filing Software	10/1/2005	9/30/2006	11.0	\$ (0.94	\$	0.94	\$	1.11											
9109	Implementation of Contract Management	9/30/2005	9/30/2006	12.0	5 2	2.95	\$	2.95	\$	3.47											
9113	Preplanning for Phase II	9/30/2005	11/30/2006	14.0	5 (0.79	S	0.79			\$ 0.	90									
	Data Migration								\$	0.59											
9110	Migration of Current Site to New Environment	9/30/2005	9/30/2006	12.0	5 (0.50	S	0.50	\$	0.59											
	Software Procurement										\$ 0.	53	s -	\$	-	\$	2.23	S -			
9111	Acquisition of BEA Software	9/30/2005	7/15/2006	10.0	5 (0.18	S	0.18			\$ 0.	20									
9112	Acquisition of Fast Datasearch	9/30/2005	7/15/2008	10.0	\$ (0.29	\$	0.29			\$ 0.	33									
9124	FY10 CSWP Program: Software Purchases	10/1/2009	9/30/2010	11.0	5 2	2.04	S	2.15								\$	2.23				
	Legacy Site O&M								\$	3.68	\$ 7.	82	s -	\$	-	\$	-				
9116	FY08 O&M of legacy web site	10/1/2005	9/30/2006	11.0	\$ 3	3.13	\$	3.13	\$	3.68											
9118	FY07 O&M of legacy web site	10/1/2006	9/30/2007	11.0	\$ 6	8.85	\$	6.85			\$ 7.	82									

Figure 5 USCIS - Customer Service Web Portal "Normalized" & Allocated Cost Data

Using the normalized cost data above we have an idea of where costs to date are for the Customer Service Web Portal program at the "Level II" elements we created:



Figure 6 USCIS - Customer Service Web Portal Costs by Level II cost element

5.3 Idea #3: Could costs for different programs be mapped to common cost elements for comparison across programs??

From my observations so far, all of these Descriptions of Milestones can be mapped into the following High-Level "Level II" Cost Elements: Program Management; Planning, Development & Acquisition; Operations & Maintenance; or Other/Unknown. Many of these Descriptions of Milestones can be mapped into the following Lower Level/Higher-fidelity "Level III" Cost Elements:



Acquisition/Procurement	Infrastructure	Redesign				
	Services/support					
Ad Hoc Reporting	Identity Management	Requirements				
		Definition				
Certification & Accreditation	Independent Testing &	Security Development				
	Evaluation					
Contingency	Milestone/Decision Event	Security				
Funds/Management Reserve		Services/Support				
Conversion	Network Development	Security Accreditation				
Continuity of	Network Services/support	Site Installation				
Operations/Disaster						
Recovery						
Database Development	Operational Analysis	Site Operations and				
_		Maintenance (O&M)				
Database Enhancement	Operations & Maintenance-	Software Procurement				
	General					
Data Center	Operations & Maintenance-	Software Tools &				
Development/Acquisition	Government	Licenses				
Data Center Services/support	Operations & Maintenance-	Solutions Engineering				
	Contractor					
Data Migration/Transition	Other Direct Charges	Technical Refresh				

Table 2 IT Dashboard "Level III" Cost Elements

Design	Planning - General	Technical Support
Desktop Services/support	Planning, Development &	Telecommunications
	Acquisition	Services/support
Development-General	Planning - Capability	Training
	Development Plan	-
E-mail Services/support	Planning - Conops	Travel
Enhancement	Planning - Mission Need	Other/Unknown
	Statement	
Facilities (Contractor-	Planning - Operational	Video
Supplied)	Requirements Document	Services/support
Help Desk (initial Setup)	Planning - Project	Voice
	Management Plan	Services/support
Help Desk (services/support)	Planning - Risk	Wireless
	Management Plan	Services/support
Infrastructure Development/	Program Management	Working Capital Fund
establishment		
	Policy Compliance	

Granted it might take a little work--okay, a ton of work--but if cost data were to be mapped to all these different elements for the thousands of IT programs in the Dashboard you'd have a powerful database to compare your program against. If you were able to obtain parameters for some of these programs, e.g., number of users, you could also test for cost estimating relationships. But that's another research paper. In lieu of this analysis, I have been able to look up specific elements in the Dashboard. Examples follow:

5.3.1 Risk Management Plan

My client wants to know: how much should I pay for a Risk Management Plan? How long will it take? And can you provide me with an estimate by the end of the day?!?

The first step this to search for the term:

	PORTFOLIO	TOOLS	DATA FEEDS	FAQ
Home - A	dvanced Search			
Fill out in	y or all of the options	below to create	a custom search	
Search	Torne			
*risk r	nanagement plan			
Agenc	6			
All			*	
Birea	8			
AIL				4
Servic	e Geoups:			
Participan and	27718-1178-00			

As depicted below, the term "risk management plan" appears 38 times in the Dashboard.

Search Term: "risk	Investments 1 - 10 of 38						
GCBD: Business Deve 01-3004-00)	lopment Management Information	a System (BDMIS) (028-00-01-03-					
Agency:	Small Business Administration	n					
Description:	DME of Management Informati	on System for 8(a) and Small (View More					
Total IT Spending in FY 20	D11: \$481.0 K	\$481.0 K					
Match Found in:							
CIO Comments	No significant deviations from	planned cost and schedule.					
OFCCP - Federal Cont Agency:	ractor Compliance System (012-22 Department of Labor	-01-04-01-3470-00)					
Description:	The FCCS will replace OFIS improving	business processe <u>(View More)</u>					
Total IT Spending in FY 2011:	\$3.0 M						
Match Found in:							
CIO Comments	This investment's re-planning effort is g have been	going well however data reporting errors					

Examine each data point took approximately 2 hours. I then normalized the data. Many elements included not just the term "risk management plan," but other items such as a "Project Management Plan." This culling of the data yielded four *viable* data points. After I normalized costs into FY\$11, I had the following:

- Lowest: \$113 K, five weeks
- Highest: \$330 K, four months
- Average \$199 K. 2.8 months

Note it's not exactly statistical analysis, but it's four more data points than I had before! And I was able to get an approximate answer before the risk management expert I called had even had a chance to return my voicemail.

5.4 Idea #4: Could there be IT programs in the Dashboard analogous to the one I am currently estimating?

But how can I determine which systems are comparable? Would we have to have an understanding of the thousands of programs in the IT Dashboard? One possible solution would involve looking at how programs are classified in terms of *Federal Enterprise Architecture*⁵ categories. Since systems are all classified in the IT Dashboard according to their FEA Segment / Primary Function, maybe I could find programs of like classifications?

Segment: Segments are individual elements of the enterprise describing core mission areas, and common or shared business services and enterprise services.

⁵ Enterprise Architecture: a management practice for aligning resources to improve business performance and help agencies better execute their core missions. An EA describes the current and future state of the agency, and lays out a plan for transitioning from the current state to the desired future state (http://www.fsam.gov/about-federal-segment-architecture-methodology.php).

- Acquisition and Grant Management
- Budget Formulation and Execution
- Financial Management
- Geospatial Services
- Health: Health Care Administration
- Health: Health Care Delivery Services
- Health: Health Care Research and Practitioner Education
- Health: Population Health Management and Consumer Safety
- Human Resources Management
- Identity Credential and Access Management
- Information Management and Dissemination
- Information Security
- Information Sharing
- IT Infrastructure
- IT Management

For more about FEA

- <u>http://www.ndia.org/DoDEntArchitecture/Documents/DoD%20EA%20Conference%20P</u> resentation%20June_1%20v5_print.pdf
- http://www.fsam.gov/about-federal-segment-architecture-methodology.php
- http://en.wikipedia.org/wiki/Federal_Enterprise_Architecture



At this point you may be saying to yourself, "but I'm just a simple caveman, I don't know anything about *Federal Enterprise Architecture?*" That's okay. For simplicity sake, let's just call these "categories." The idea is if we can lump these "like" things together they can be normalized and compared.

The program I was estimating at the time of this research, the DHS Verification Information System (VIS), is assigned to the *IT*

Management FEA Segment, with the Primary Function being *Workforce Management*. There are 24 programs in the *IT Management* FEA Segment (21 of which are within DHS), and a total of 9 programs on the IT Dashboard classified as *Workforce Management*. When I compared VIS to those other programs, I learned that VIS shows up as the highest cost-to-date program, as depicted in the chart below.



Figure 7 VIS program costs to date as compared to other Workforce Management programs

Keep in mind that all of these programs are active (vs. complete) and in various stages of acquisition or maintenance, so we cannot conclude that VIS is the most "expensive." With that caveat in mind, I swerved into idea number 5:

5.5 Idea #5: could the IT Dashboard be used for benchmarking?



In the example above, when I looked at the ratings for the next two most expensive programs in the *Workforce Management* FEA category, I noticed that they were both given a high "green" rating. The thought occurred to me that a program manager might find it useful to study other programs being recognized as successful in order to benchmark or even perhaps leverage any best practices. In my example above, the first program was the *Job Corps Student Pay Allotment Management Information System (SPAMIS)*. The Dashboard revealed the following:

- Overall rating Green (8.4/10.0)
- Program description: About 103,000 young Job Corps students (citizens) benefit from the Student Pay Allotment Management Information System which provides data processing services that support academic and vocational training resulting in good paying jobs for graduates.
- Investment phase: operations & maintenance
- Contract Info: Time and Materials, Altech Services
- Investment start date: October 1, 2001
- Spending around \$9 million a year for maintenance

The chart below depicts where funding spent to date has gone:



Figure 8 SPAMIS Spending Categories

I also examined the Wage Determination System (WDS) program and found the following:

- Overall rating Green (10.0/10.0)
- Program description The WDS is a major application within WHD that supports two legislative acts: the Davis Bacon and related Acts (DBRA) and the McNamara-O'Hara Service Contract Act (SCA), in the mission to achieve and promote compliance with labor standards.
- Investment phase: operations & maintenance
- Contract info : Time & Materials
- Investment start date: October 1, 2001
- Spending around \$12-\$18 million a year for maintenance

The chart below depicts where funding spent to date has gone:



Figure 9 WDS Spending Categories Page 16

5.6 Idea #6: what can be found out about my own program?

Perhaps this should have been idea number one, but it didn't occur to me until later (remember I'm just a simple caveman). As discussed above, estimators are often starving for data while they await clearances and program documentation. The IT Dashboard is a quick and easy place for beginning research. Below is the Dashboard view for VIS:



USCIS - Benefits Provision - Verification Information System (VIS)/Employment Eligibility (2012)



Figure 10 VIS Dashboard

Further analysis revealed where spending has gone to date (as of May 2011):



Figure 11VIS Spending through May 2011

6 Real World Applications

It's one thing to have ideas for *potential* research, but over the last two years I've had several instances of success using the *IT Dashboard* to respond to short-turnaround data requests. The following are just some examples:

6.1 Security Accreditation

Below is my e-mail response to a request for data in regards to costs for security accreditation, originally sent as a broadcast request to an e-mail distribution list:

Jennifer,

I am responding in reference to your question about how much it costs (actual or estimated range) to implement any of the baselines from NIST SP 800-53 and/or CNSS 1253.

To do a full estimate we would need to get a better understanding of what exactly what you're trying to estimate. However, I will assume for now that a ROM/ballpark estimate is okay for now. I am working on a research project to better exploit cost data available publicly via the IT Spending Dashboard. The IT Dashboard includes cost data for 7000 federal IT investments including 800 classified by OMB as "major." The data comes directly from the program office Exhibit 53/Exhibit 300s.

Simply by querying the data available on the site, I found some potential analogies which I've pasted in the table below. I use the caveat possible analogy because I don't know enough about this program (or your program) to know if it would apply, but it at least is a starting point for you.

The strongest possible analogy I see is the ODA: Disaster Credit Management Modernization (DCMM), totaling \$197K (FY11\$), simply because of the specific reference to "NIST 800-53." I cannot confirm whether or not it accounts for tailoring or supplementing of controls, but it is at least a point of comparison.

Investment Title (Program)	Agency Name	Milestone Title	Start Date Actual	Completion Date Actual	FY17	ISM Cost
Commerce Business Systems (CBS)	Department of Commerce	FY10 - NIST	10/1/2009	9/30/2010	5	8.723
Commerce Business Systems (CBS)	Department of Commerce	FY11-NIST	10/1/2010		5	0.367
Commerce Business Systems (CBS)	Department of Commerce	NIST (including client bureaus) CBS Implementation Investment (Full Acquisition)	10/1/1998	9/30/2003	\$	31.146
Commerce Business Systems (CBS)	Department of Commerce	FY09 and Prior - NIST	10/1/1999	2/28/2009	5	49.648
Commerce Business Environment (CBE)	Department of Commerce	NST Data Migration Testing Completed	10/1/2010		5	0.034
OCFO - PeoplePower	Department of Labor	FY09 Activity - Security operation activities including evaluation of NIST, FISNA requirements, analysis of operating system to guarantee compliance, evalute and perform self-assessment, establish technical guidelines for security controls test	10/1/2008	9/30/2009	5	0.823
OCFO - PeoplePower	Department of Labor	FY07 Activity - Performance of all required security related activities including monitoring of NISTand FISMA standards, assessment of network system controls, perform security reviews and engage in proper testing of the system.	10/1/2006	9/30/2007	5	0.334
OCFO - PeoplePower	Department of Labor	FY08 Activity - Perform all required Security reviews, tests, evaluation of FISMA and NISTstandards; perform self-assessment, SSP updates and technical security control testing.	10/1/2007	9/30/2008	5	0.934
SR Mission Support Systems	Department of Energy	Security - Align site systems to EM eRAMS. Develop and implement NIST-based C&A processes and procedures.	4/2/2007	6/8/2007	\$	0.436
FEMA - Disaster Management E-Government Initiative	Department of Homeland Security	2.4 NIST 800-26 Evaluation	4/22/2004	5/5/2004	5	
ODA: Disaster Credit Management Modemization (DCMM)	Small Business Administration	PROJ: FY10 DCMM/DCMM-2010-1) - O&M Review - MST 800-53 R3 Implementation Q1	10/1/2009	12/31/2009	\$	0.019
ODA: Disaster Credit Management Modemization (DCMM)	Small Business Administration	PROJ. FY10 DCMM/DCMM/2010-1) - O&M Review - NIST 800-53 R3 Implementation Q2	1/4/2010	3/31/2010	5	0.050
ODA: Disaster Credit Management Modernization (DCMM)	Small Business Administration	PROJ: FY16 DCMM(DCMM-2010-1) - O&M Review - MST 800-53 R3 Implementation Q3	4/1/2010	6/30/2010	\$	0.065
ODA: Disaster Credit Management Modernization (DCMM)	Small Business Administration	PROJ. FY10 DCMM/DCMM-2010-1) - O&M Review - NIST 800-53 R3 Implementation Q4	7/1/2010	9/30/2010	\$	0.063

The table below summarizes the data I found on the Dashboard:

Figure 12 Security Accreditation Cost Data

In this case I was able to help out a MITRE colleague but it just as easily could have been a customer ultimately benefiting from the research.

6.2 Real-life application 2: Subject: EVM reporting on FP contracts

The next month the following message was sent to another e-mail distribution list:

```
To: omb-compliance-list OMB Compliance Issues & Solutions
```

```
Subject: EVM reporting on FP contracts
```

Hi All,

My sponsor has recently awarded a performance based, FFP/I contract for IT services. They are in a quandary over how to report EVM to OMB. I am looking to see how other government organization have approached reporting on FP contracts.

I have some ideas, and I have suggested they meet with their OMB liaison, but they are interested in how other Agencies and Departments were handling these situations, before approaching OMB themselves. With MITRE supporting many CIOs and the depth of knowledge with the OMB E-300 and IT-53, I wanted to reach out to this knowledgebase and collect some best practices.

Thanks in advance! Kathleen

My response below:

From:			Harper,			Dan	
Sent:	Tuesday,	April	05,	2011	9:19	AM	
To:			Kathleen			M.	
Subject: RE: I	EVM reporting of	on FP contra	cts				
Kathleen, I'm not sure	Kathleen, I'm not sure if the Dashboard itself has an answer, but you may be able to mine the						
Dashooard to	find programs u			initiact to large	contract trans.	111011.	
The spreadsheet I've attached includes costs and contracts data for all of the programs on the IT Dashboard. And no, that is not an April fool's joke! If you look at the tab entitled "contracts-CSV," you can see downloaded almost 6000 data points on the contracts used by federal IT programs. You could sort on column F, "contracts type used", to find all of the FFP contracts.						ns on the entitled used by ll of the	
Kathleen, I kn this tool can b	now that's a little be of assistance.	muddy, but	feel free to giv	ve me a call ar	ıd I can let you	know if	

I'm including Kathleen's final response to below to show how useful the data obtained from the IT Dashboard was in the situation:

This was the best help of all!

I see 6 FP/I contracts listed. And tracking one of them to the IT Dashboard, they reported cost and schedule data – how did they report cost data on a FP contract (??). Although I see planned = actual costs, is this something negotiated with the contractor? Or is it a something meaningless like dividing the FP by months and reporting a straightline?

Kathleen

6.3 Real-life application 3: Section 508 Compliance ROM

Again via an e-mail distribution list here is the original request:

Sent: Wednesday, August 10, 2011 10:36 PM To: cost-analysis-list Cost Analysis Tech Team Subject: costs associated with Section 508 compliance efforts

Hi,

I was asked to help develop a ROM for what it would cost to make several Air Force Logistics Systems Section 508 compliant. I'm looking for any past examples of costs associated with Section 508 compliance efforts, approaches taken, best practices, etc.

Thanks for your help, Erika

And my response:

I may have a possible (single data point) analogy-there was a Department of Energy program entitled EM CBFO (Carlsbad Field Office) WIPP (Waste Isolation Pilot Plant) Records Archive (WRA) which had a line item for " Implement 508 compliant features for web site."

Apparently they spent \$1.9 M on a \$20 M program.

Daniel

6.4 Real-life application 4: Schedule Analysis ROM

In this situation our team was trying to get a rough idea of how long it would take for certification of a Data Analytics COTS tool. The engineers on the team "guesstimated" three months. On a whim, I checked the IT Dashboard for points of comparison for certification and accreditation. The 9 data points I found indicated certification periods of between 6 and 11 months. We were low by at least100%.

6.5 ITIL implementations at federal agencies

Gina, one of my favorit with about 8 programs other information), you	e tools for this type of research is <u>nere</u> . If you look into each progr can find out whether or not it wa	s the IT spending dashbo am (there is a link to ea as actually an implemer	pard. I did a search on the term ITIL and came up ch program including budget exhibit data and station.					
Let me know if you hav	e any questions.							
Sincerely,								
Daniel Harper Investment Planning & Man Office 850-796-6512 🖂 :	agement-K461 The MITRE Corporatio	on (: Cell 703.629.1840						
From: owner-i list@lists.mitre Sent: Wednes To: it-service-i Subject: Data	t-service-mgt-interest-group-list org] On Behalf Of Moll a, Gina day, August 29, 2012 3:05 PM ngt-interest-group-list IT Infrast requestITIL implementations	:@lists.mitre.org [mailt M :ructure Library/ITI at federal agencies	o:owner-it-service-mgt-interest-group-					
ITSM COI members: Can you help? We have a data call to gather as much information as possible regarding our knowledge of ITIL implementations (partial or whole) within the federal government. If anyone knows of ITIL implementations (past or present), would you kindly add it to the list below? If you don't know the org unit, that's okay. We need this informatior by COB Thursday.								
Organization	Unit	Approximate Time Frame	Comments					
IRS	Enterprise Networks	2010-2012	They hired a consulting group to help them use a phased approach for implementing ITIL processes.					
U.S. Mint		2010	Did an 8 week pilot to implement change					

6.6 DoD/Army-specific exemplars of dashboards

Below the IT Dashboard helped in regards to request for DoD/Army-specific exemplars of dashboards:

From: owner-omb-compliance-list@lists.mitre.org [mailto:owner-omb-compliance-list@lists.mitre.org]

Sent: Wednesday, November 07, 2012 4:47 PM

To: bia-techteam-list Develop & Share Business & Investment Analysis; casa-pfm-coe-list Portfolio Mgmt Community of Excellence; it-cons-cop-list IT Consolidation Community of Practice; omb-compliance-list OMB Compliance Issues & Solutions; cioc-list CIO Cross Cutting; cio-list CIO Topics of Interest; enterprise-arch-eng-list Enterprise Architecture & Engineering C; itsm-program-planning-list ITSM Program Planning Team Members Li; itservice-mgt-interest-group-list IT Infrastructure Library/ITI

Subject: Looking for DoD/Army-specific exemplars of dashboards, balanced scorecards

Good afternoon folks,

I am working on a project that is looking at developing dashboards and voice of customer capabilities using Balanced Scorecard for senior leadership. We are looking for some good exemplars and current trends that have already been done ideally within DoD, particularly Army Commands level (AMC, MEDCOM, etc..), but could be outside of DoD.

My sponsor wants to explore what others are doing with balanced scorecards and dashboards, paying close attention to systems that have already been implemented to automate performance data collection, analysis, and updates of dashboards to monitor the current health of the enterprise in IT service delivery. Some interested areas are optimized service delivery, governance, performance management, and resource management.

If you are aware of any recently completed work or good exemplars, please let me know.

My response:

Tam,

I'm in the process of drafting a white paper which looks to exploit the publicly available OMB IT Spending Dashboard for information that may be useful to you. The IT Spending Dashboard displays data received from agency Exhibit 53 and Exhibit 300 budget reports, including cost and schedule information on over 7,000 Federal IT investments.

I did a quick search on the term "dashboard" and came up with the following data points:

Agency Name	Investment Title	Project Name	Project Description
Department of Commerce	USPTO Network and Security Infrastructure	ITSM Remedy Analytics and Dashboards	Setup of a Microsoft virtual platform to support the installation of the BMC ITSM Remedy 7.6.04 Analytics and Dashboards module.
Department of Energy	EM HQ Integrated Planning, Accountability, and Budgeting System Information System (IPABS-IS)	Dashboard	MPR/QPR Automation in Livecycle.
Department of Health and Human Services	FDA OC User Fee and Financial Reporting Systems	FDA OC Business Intelligence Reporting System	The Business Intelligence Reporting System (BIRS) is a mission critical system that is in production. Approximately 75% of its annual budget is for operations and maintenance. The remainder is budgeted for enhancements. Enhancements include response to Legislative actions related to User Fees, changes in the user fee regulations
Department of Health and Human Services	HHS Unified Financial Management System: Modernization	Dashboard and Business Intelligence (Crawl/Walk/Run)	The Dashboard and Business Intelligence project addresses the gap identified during the UFMS Deep Dive Assessment to improve reporting and decision support across HHS OpDivs and StaffDivs. This was a key short- term, high-impact recommendation specified in the

Agency Name	Investment Title	Project Name	Project Description
	Program		UFMS Deep Dive Assessment Final Report; it received the highest priority rating from points of contact for UFMS OpDiv and
Department of Health and Human Services	HHS Unified Financial Management System: Modernization Program	Expansion of Budget Tools (Crawl/Walk/Run)	This project leverages the already complete implementation of Hyperion budget tools at FDA, with a roll-out to benefit all the OpDivs within HHS. The project includes incorporating additional functionality in the system that supports the lifecycle management of budgets - from formulation through execution
Department of Health and Human Services	OS ASPA HHS Web Management Investment	OS Web Mgt - Web Content Management System Enhancements	Enhancing HHS's use of the WCMS by adding features and upgrading some of the out-of-the box modules to work with other systems/sites per stakeholder requirements. The project will result in the deployment of the Percussion CMS 7.03 and better functionality for
Department of Labor	OASAM - Departmental E-Business Suite (DEBS)	Agency Deployment	Agency Custom Dashboards.
Department of Veterans Affairs	Corporate 21st Century Core	Equal Employment Opportunity- Alternate Dispute Resolution (EEO- ADR) Dashboard	The Office of Resolution Management has a need to roll out an Equal Employment Opportunity/Alternate Dispute Resolution dashboard system that will interface with the CATS data source (Complaint Automated Tracking System) and ADR tracker in order to provide a national VA-wide solution
Department of Veterans Affairs	Corporate 21st Century Core	Project Management Accountability System (PMAS) Dashboard	Application to track and report PMAS project increment deliverable dates cost and status; content for Monthly Progress Reports, Artifacts Central Repository, centralized project scheduling tool and support automated updates to OMB IT Dashboard.
Department of Veterans Affairs	Medical Legacy	Nov 2011 Release DSS Extracts	The purpose of Decision Support System (DSS) Extracts is to provide support for yearly enhancements requested by the Decision Support Office (DSO). DSS package extracts managerial and workload data to be utilized by management, clinicians, and researchers to improve quality of care for the veterans. The DSS system is the main source of data for the BI-Dashboard and is critical to Corporate Systems. It is also the main source data for DSS Reports system as well as other data warehouses.
Department of Veterans Affairs	Medical Legacy	DSS Extracts- Event Capture 3-5	The purpose of Decision Support System (DSS) Extracts/ Event Capture Project is to provide support for yearly enhancements requested by the Decision Support Office (DSO)
General Services Administration	Regional Business Application (RBA)	Webservice over BPMS	Building off of work started in Phase 1, this project includes standard numbering, the integration of a business activity monitoring tool into the AAS portal, and the integration of the new Business Objects (Xir3) environment and (xcelsius) dashboard tools into AAS legacy environment
General Services Administration	Regulatory Information Service Center (ROCIS II)	ICR Dashboard	Develop and implement the ICR Dashboard consisting of interactive charts/graphs depict existing Information Collection Request (ICR) Reginfo.gov data.

Sincerely,

Daniel Harper

6.7 Cost of Incorporating IT Security

Linda,

I'm in the process of drafting a white paper which looks to exploit the publicly available OMB IT Spending Dashboard for information that may be useful to you. The IT Spending Dashboard displays data received from agency Exhibit 53 and Exhibit 300 budget reports, including cost and schedule information on over 7,000 Federal IT investments.

My paper is still very informal, but it gives you an idea of the potential for projects like yours.

Peruse section 6.1, which may speak to what you are trying to do. If it makes any sense at all, feel free to contact me and we can discuss further.

Thanks, Daniel Harper

Sincerely,

Daniel Harper

Become a member of the <u>ICE CHEST (IT Cost Estimating Cost Help in Estimating Starter Tools) Handshake</u> <u>Group</u>

 Investment Planning & Management-K461 | The MITRE Corporation |(: Cell 703.629.1840

 Office 850-796-6512 | : diharper@mitre.org

Fron	n: <u>owner-</u>	e520-risk	-manageme	nt-list@l	ists.mitre.	org [m	nailto:owner-e	520-risk-managen	nent-
list@	lists.mitre.	.org]	On	Beh	alf	Of	Rosa,	Linda	М.
Sent	:	Tuesday,	N	ovember	C	6,	2012	6:53	PM
To:	Granata,	Steve;	acquisition	-cell-list	Acquisitic	n Cel	l; e520-risk-ı	management-list	Risk
Mana	agement		&	Anal	ysis	Г	Гесh	Team	L
Subject: RE: FYI - a New DoD Instruction on the street: Protection of Mission Critical Functions									
to Ac	to Achieve Trusted Systems and Networks (TSN)								

Steve

I saw the new instruction the other day and perused it. The question that has been coming to mind in amongst this and other directives, etc. regarding SCRM and the topic of security is how do we calculate the cost of including all of these various security requirements in a program cost estimate. It is becoming difficult to press programs to include the overwhelming amount of tasking and such when they start looking at the cost in terms of dollars and schedules. So, I'm most interested in any analyses that look into this area. I am an advocate of pushing programs to understand how to evaluate the risks to their programs such that they can make informed

decisions regarding cost v risk and such. However, I'm seeing a lot of pushback from the AF customers especially when industry is showing up with their typical scare tactics of "this is going to cost a lot of money" or "you can't afford all of this stuff". In reality, I am a firm believer of building in the appropriate attributes of security in our overall requirements and not treating it as an add on. SCRM has a different flavor entirely. I'm still on board with the need but we must have something more tangible to support cost estimating, POM process, etc. I've not found much in the way of the cost of incorporating all this security so am most interested in any information we may have. And, I've found that when we say "risk management" to PMs, they think about traditional risk management from a program acquisition perspective and not from a security perspective. So our second need is for examples of how to integrate security risk management into our overall risk management process so that it can be taught as a holistic approach from the start.

Linda

6.8 Coast Guard Cloud Computing Development Costs Study

MITRE personnel were responsible for estimating cloud computing development for the Coast Guard. Using the IT Dashboard, determined useful analogies were the US-VISIT Cloud Model, NTIA (National Telecommunications and Information Administration, Department of Commerce) FSMS-Federal Spectrum Management System, and the United States Mint (Department of the Treasury) SaaS Cloud Model.

6.9 Internet Point of Presence cost

Glenn-I think I have a data point for you regarding Point of Presence:

1. The most granular reference I found on the IT Dashboard refers to a USPTO Network and Security Infrastructure which involved a "Boyers Internet Point of Presence (PoP)" described as "To procure and install the equipment and telecom infrastructure to provide an Internet Point of Presence (PoP) at Boyers." They spent \$842K from February 2010-January 2012.

2. The Department of Health and Human Services (HHS) Trusted Internet Connections (TIC) Project here was formed to comply with Office Management and Budget (OMB) Memorandum M-08-05, Implementation of Trusted Internet Connections•. The purpose of the TIC program is to optimize individual external connections, including Internet Points of Presence (PoP) currently in use by the federal government. The TIC Initiative establishes a basis for consolidated infrastructure to achieve interoperability and communication among operating divisions. In response to this initiative, HHS will adopt a network and security architecture that complies with the Department of Homeland Security (DHS) TIC requirements and reduces the total number of external connections to include Internet, inter-agency, partner, contractor, educational, health and research connectivity. Once implemented, the TIC environment will improve HHS's incident response capability; reduce the number of external connection points within HHS; and provide centralized monitoring of HHS network security controls. HHS TIC

aligns with the HHS 2007-2012 Strategic Plan for IT infrastructure consolidation. This strategy employs the sharing and reuse of common, standards-based materials and programs that support the business of computer technology. The contracts are broken out here, and may prove useful if you can suss out which was for the PoP.

3. HUD OIG is a law enforcement agency that creates independent and objective units to conduct and supervise audits and investigations relating to HUD programs and operations. HUD OIG has three components Office of Audit, the Office of Investigations and the Office of Management and Policy. HUD OIG provides leadership and coordination; and recommends policies for activities designed to promote economy, efficiency, and effectiveness in the administration. The HUD OIG Distributed Computing Environment (DCE) is a self contained general support system last accredited in September 2009.HUD OIG DCE provides the primary infrastructure that supports Information Technology (IT) services and resources including application and data management. It is the primary communication link between OIG Headquarters, 40 field offices and the HUD OIG user community. The HUD OIG DCE consists of circuits managed thought Verizon Business Multi-Protocol Label Switching (MPLS) network, routers, switches, servers, workstations, printers, wireless, mobile devices and specific internal applications. All network access is granted via Verizon Business managed services including access to the Central Server Facility, the Disaster Recovery Facility, and the Local Area Networks for Headquarters and field offices. Verizon also provides HUD OIG Point of Presence internet connection for all HUD OIG users. External users can connect to HUD OIG resources though Verizon managed Virtual Private Network (VPN).HUD OIG staff use the infrastructure together with other systems, to effectively meet OIG responsibilities for providing a means for keeping the head of the Department and Congress current and fully informed about problems and deficiencies relating to the administration of departmental programs and operations and advise on the necessity for, and progress of, corrective action. [The Verizon contract here GS01T11BKM0002 was Firm Fixed Price for 05/07/2011 - 05/06/2016 totaling \$1.5 M]

Sincerely,

Daniel Harper

From: Boyce Jr., Glenn W. Sent: Friday, December 07, 2012 9:49 AM To: Harper, Dan Subject: IT cost data

Dan,

Could you suggest a data source (available now) that I might use to estimate a new operations center for Cybercom.

As they are early in the process – except for building only – I am looking for fiber/copper cost (I am assuming all 300 ft runs).

Desk top (cubicle furniture) I have a ROM of \$10K, I have IT for desktops, monitor/keyboard/cpu/printers (less educated guess)

Bigger cost may be the basement data center with racks of IT HW for "processing", storage, switch (700+ seats), etc.

And what a typical (undefined) Point of Presence (POP) might cost – have heard \$10M per POP but that seems VERY high.

Have queried a few folks up here (EDAC), but am open to suggestion.

Regards,

Glenn

Glenn W. Boyce, Jr.

6.10 Average Telecommunication costs per user

Provided average telecommunication costs per user value under the Operational Performance Section of \$1,189 for the *Customs and Border Protection (CBP) Infrastructure investment*.

6.11 IT O&S Spending Benchmark

A colleague was doing research for a small government client that processes grants. They wanted to benchmark IT operations and maintenance spending. My colleague had some Gartner studies, but wanted to check it against actual government programs on the IT Dashboard.

According to the 2013 Report on Information Technology (IT) Spending for the Federal Government, spending on IT O&M was approximately 75% of total spending in the FY13 Continuing Resolution budget (by definition, since it was a continuing resolution, assume the same ratio for FY 12). The remaining 25% was spent on DME.

Note the 75% was on average figure, and can vary significantly from agency to agency. The lowest ratio by far was for the Department of Transportation, which allocated just 44.7% of its IT budget towards IT O&M. However, the next highest agencies were the Social Security Administration and the Department of Commerce, which both spent approximately 63% of their budget on IT O&M. Most agencies fell in the range of 70-90%. Only NASA, The National Archives and Records Administration, and the Smithsonian Institution allocated greater than 95%. The table below, culled from the IT Dashboard, depicts all the agencies:

Report on Information Tec	hnology	(IT) Spen	ding for	the Fee	deral G	Governn	nent	
Federal Agency	Count	2012 (PY) Actuals	2013 (CR)	DME 2012 (PY) Actuals	DME 2013 (CR)	O&M 2012 (PY) Actuals	0&M 2013 (CR)	O&M 2013 Ratio
Department of Agriculture	287	2,538	2,526	447	437	2,091	2,088	82.7%
Department of Commerce	136	2,474	2,449	854	903	1,621	1,547	63.1%
Department of Defense	2,924	35,032	34,123	10,534	9,712	24,498	24,411	71.5%
Department of Education	163	557	622	65	101	492	521	83.8%
Department of Energy	955	1,579	1,523	234	191	1,345	1,331	87.4%
Department of Health and Human Services	740	7,181	7,416	987	911	6,193	6,505	87.7%
Department of Homeland Security	345	5,558	5,674	1,249	1,125	4,308	4,549	80.2%
Department of Housing and Urban Development	45	353	461	107	113	246	348	75.5%
Department of the Interior	228	1,033	1,045	124	101	909	945	90.4%
Department of Justice	306	2,753	2,687	774	569	1,978	2,117	78.8%
Department of Labor	135	577	596	86	101	491	494	83.0%
Department of State	74	1,374	1,358	220	228	1,154	1,130	83.2%
U.S. Agency for International Development	37	133	165	23	59	110	106	64.4%
Department of Transportation	365	2,996	3,146	1,642	1,740	1,355	1,406	44.7%
Department of the Treasury	295	3,407	3,706	691	942	2,717	2,764	74.6%
Department of Veterans Affairs	33	3,168	3,267	643	586	2,524	2,681	82.1%
U.S. Army Corps of Engineers	46	535	483	30	34	505	448	92.9%
Environmental Protection Agency	120	422	419	58	57	364	361	86.3%
General Services Administration	82	537	549	96	101	441	449	81.7%
National Aeronautics and Space Administration	68	1,463	1,433	36	34	1,427	1,399	97.6%
National Archives and Records Administration	34	108	119	5	1	103	118	98.9%
National Science Foundation	17	103	99	19	19	84	80	80.6%
Nuclear Regulatory Commission	38	134	151	23	11	111	141	93.0%
Office of Personnel Management	56	82	85	18	21	64	64	75.1%
Small Business Administration	35	102	115	30	32	73	84	72.5%
Smithsonian Institution	20	65	67	1	2	64	65	96.8%
Social Security Administration	74	1,456	1,605	644	596	812	1,009	62.9%
Federal Grand Total	7,658	75,722	75,889	19,641	18,729	56,081	57,161	75.3%

Figure 13 2013 Report on Information Technology (IT) Spending for the Federal Government,

7 Data Visualization

This appears to be a classic "big data" problem. Using a product called Tableau, I played around a bit with IT Dashboard data to see what I could see. Tableau Desktop is based on breakthrough technology from



Stanford University that lets you drag & drop to analyze data. You can connect to data in a few clicks, then visualize and create interactive dashboards with a few more. Basically it's *Pivot tables on steroids*. With my limited training, I was able to come up with the following insightful visualizations:

Agency N.	investment Title	Project Name
Department of	ICE - Criminal Alien	ACRIMe Modernization
	Identification Initiatives	Automated Threat Priori.
curity	(CAB)	Status Determination S.
81167A - P	ICE - Detention and	EARM 3.0 Release 2
	Removal Operations	EARM 4.0
	Modemization	Risk Classification Asse
	ICE - DRO Electronic	eHR Acquisition & Depi.
	Health Record (EHR) S	eHR Acquisition & Valid.
	ICE - Enforcement	DPICS-2- Data Pattern I.
	Information Sharing (EIS)	LEISS: Law Enforceme.
	ICE - IT Infrastructure (Atlas)	Data Center Services
		Desktop Services
		Email Services
		Network Services
		Single Sign-On Services
		Video Services
	ICE - Student and Exchange Visitor Inform	SEVIS
		SEVIS 1
	ICE - TECS Modemizati	Core Case Managemen.
	NPPD - Critical Infrastructure Technology and Architecture (CITA)	Automated Ottical Asse.
		Infrastructure Informatio.
		infrastructure informatio
		Infrastructure Protection
		Infrastructure Protection .
		Infrastructure Protection.
		Protected Critical Infrast
		Protected Critical Infrast.
		Technical Resource for
		Web Emergency Operat.
	NODO FOR DIAL	



1	Columns SUM	tiluitesyste					
	Rows Inve	stment Title 1 Project Name 1 Project	Descrip.				
Solution -	Investment Title ABO - Common Operatorial Pucture (CO ABO - Homeland Security Information Nations (HSMI)	Project Name DNS COP entranced tenctionality suppliaties DNS COP infrastructure deployment @ DHS Data Tree Factor Authentication in Legacy HSIN 2 0 DNE	Project Description Indivanced Parchiceality Capabilities: Incident Masagement, Request For Information, Reporting, Auto-Inge Platform deployment: Complete build & deployment of dedicated COP infrastruction to DHS Data Center 2 Establishing a Two factor Automitication (in HSRL Legacy for acctive users Develop the HSIN 3 0 system shtting Agle development				
	CRD. Advance Desser	HS SUC Consolidation	Consolidation of the I&A HS SUC portails from an outside hosted vendor to HSIN Manager Countriand Executionality of Advance Execution Information Section	-			
CBP - Advance Passen CBP - Analytical Framework for Intelligen CBP - Actomated Commarcial		HSDN AFI System Task Order PROD Task Order ECOM	East aut of HSDM some actionary or Antimore recompart incommon system. East aut of HSDM some to all CBP at Field Offices, Sectors, and Air Manne Locations API Web-based Application Numbersance - TO FROD provides maintenance for the ACE production application and IT services for CS. Numbersance - Provide the support needed to meet ACE Carop Providen Veters Inference while achieve				
	Environment / International Trade Data System (ACE / ITDS)	M1 - e-Merifest Rai and Sea Cargo Control and Release Planning(ADE 2a/2b A ACE Infrastructure Support Deseasement Restructure	DME - Mt will improve cargo security, expedite cargo processing and trade facilitation, provide faster and e Planning - Deline Cargo Control and Release requestments and documentation in order to receive ADE-2a/ A3 of the ACE Infrastructure Support that is hardled by EDNE. These include BH of Materials, HWSW Ma				
	Targeting System (ATS).	Cargo teration Cargo maintenance releases.					
	CBP - Block 1	Operations Task Order (OMTO) Maint Task Order (OMTO)	Operations support activities for Block-1 infrastructure Maint, support activities for Block-1 infrastructure				
	CBP - Infrastructure	Windows 7	The Windows 7 Operational Test and Evaluation (OTE) will test Windows 7/Office 2010, the latest operation	1			
	CBP - Integrated Fixed Towers (FTs)	Construct and Deployment of FT System to Scrott Construct and Deployment of IFT System to Nogal Construct and Deployment of IFT System to Casa Accession Planners	Construction of sensor and commonication towers, and integration of individual IFTs to common operating Construction of sensor and communication towers, and integration of individual IFTs to common operating Construction of sensor and communication towers, and integration of individual IFTs to common operating Planning activities for contrast-based for all ACIB.				
	CBP - Land Border Inte	LSI Phase 1	Initial operating capabilities for pedestrian, outbound, and checkpoint. This project includes the piloteg of a	1			
	CBP - Mobile Burveillance Capabilities (MSC)	Valide Mantenance First Article Test of validies Deployment to Assona	Sustainment of the vehicle is for both the truck and sensor package that is reported in the truck. Testing of vehicles with the sensor package that is reported to the truck for each vehicle. Deployment of vehicle to Astoria				
CBP - N Inspects Program	CBP - Nosilittusiee Impection (78) Systems Program	Small Scale ARRA Nil Mantanance FY12 Nil Mantanance FY11	Deologment of NB Small Scale Technologies Connective Handware/Software Maintenance of NB Systems Program Connective Handware/Software Maintenance of NB Systems Program Decement of NA Technologies (NA Systems Program)				
		Ter Acquisition F 111 Large Scale F110 Large Scale F110 Large Scale ANRA	Deployment of Ni Large Scale Technologies. Deployment of Ni Large Scale Technologies. Deployment of Ni Large Scale Technologies.				
	CBP - Northern Border, Remote Video Surveille CBP - Remote Video S	Northern Bonder Project RVSS	Mantanance Phase for Remote Video Servellance Systems in Buffalo, NY and Detroit, Michigan. Operations: Phase for Remote Video Servellance Systems in Buffalo, NY and Detroit, Michigan. Planning activates Institute on SPT Planese and Contract Award.	1			
		(AMP) Research Protocols	รักษณ์ที่สามารถสาวที่ได้ พิษัทร์สามารถการสาว สาว และและหารสาวสาวสาวสาว	Ó	500	1000 Lifetyt	1550 de Cost

I also uploaded the data to <u>www.many-eyes.com</u>, an experimental site run by IBM Research and the IBM Cognos software group. The site allows users to upload raw data sets and experiment with different visualizations.



Figure 15 Many-Eyes Visualization: Tree Chart

The size of the squares above reflects the size of then Lifecycle Cost (\$M). the Bubble Chart below depicts the cost for each agency, with each wedge representing a specific Investment.







Figure 17Figure 14 Many-Eyes Visualization: Bubble Chart 2



Figure 18 Vendor Obligated Contract Funding by Agency (Oct 2013)

Big data tools such as Tableau have a lot of potential for analysis and visualization of IT Dashboard data. However, I've come to the conclusion that they cannot solve the biggest problem; normalization of the data. That painstaking work must be done by team of cost analysts.

8 Summary

As you can tell I was having a little bit of fun with this paper, but I do think the IT Dashboard has serious potential. There are many possible avenues of research with the IT Dashboard, and by now you can probably see why I've gone down so many "rabbit trail" hypotheses above.

These are just one estimator's ideas-you will probably have your own, or perhaps can crystallize some of the suggestions I've made. The goal of this paper is simply to make the cost community more aware of the *potential* of the IT Dashboard.

9 Reference/Bibliography

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