

Appendix A-i: FY 2014 HRIT Cost Analysis

1 Introduction to this Cost Analysis

1.1 Purpose

This Fiscal Year (FY) 2014 Cost Analysis of Human Resources Information Technology (HRIT) provides the most current estimate of HRIT spending across the Federal Government. This analysis is intended to be used in future studies of potential HRIT system cost savings across the federal employment lifecycle.

This cost analysis is a preliminary cost estimate based on the Office of Management and Budget (OMB) Exhibit 53 and related Human Resources Line of Business (HR LOB) HRIT Inventory inputs. This analysis is classified as a Level 4 cost estimate, which is generally based on limited information and used for activities such as project screening, determination of feasibility, and concept evaluation. This classification uses the cost evaluation classification system used by AACE International (AACEI).¹

Finally, this analysis includes investigations of overall HRIT spending and highlights six opportunities for future savings over the next 10 years.

1.2 Data Sources

The main data sources included in this report are the OMB's Exhibit 53 and the HR LOB's HRIT Inventory. Additional data sources include HRIT Transformation (HRITT) Passback data collected by OPM in FY 2014, as well as existing Shared Service Center (SSC) data and other publicly available data, such as OPM's FedScope data.²

OMB's Exhibit 53 data and the related HRIT Inventory data have several data quality issues. These issues include:

- Agencies do not submit data to OMB in a timely or complete fashion
- Agencies do not classify, define, and report HRIT spending in a standardized way
- BRM codes between FEA BRM and HR LOB BRM do not align due to recent changes in the FEA BRM

The sub-sections below provide details about each data source including issues with missing data and how the HR LOB dealt with this issue within the analysis.

¹ AACEI Recommended Practice. (AACEI was formerly Association for the Advancement of Cost Engineering) Accessed on April 10, 2014 at <http://www.aacei.org/non/rps/18R-97.pdf>

² OPM's Fedscope data can be found here: <http://www.fedscope.opm.gov/>

1.2.1 OMB's Exhibit 53 Data

About this source: OMB's Exhibit 53 is the Agency Information Technology (IT) Investment Portfolio, which provides budget estimates for overall IT investments and for significant IT systems. This exhibit allows the submitting agency and OMB to review and evaluate each agency's IT spending and compares IT spending across the Federal Government.³

Every federal agency is required to submit Exhibit 53 inputs for all IT investments and Exhibit 300 inputs for all major IT investments. OMB's IT Dashboard⁴ provides the public with access to these investment details, and displays costs related to specific OMB Federal Enterprise Architecture (FEA) Business Reference Model (BRM) mappings.

Issues with Exhibit 53 data: Currently, Exhibit 53 provides only a partial summary of system costs associated with specific BRM codes and overall spend across government. While agencies are required to map each Exhibit 53 submission to one of 186 available primary BRM codes (including 10 specifically related to Human Capital), many are mapped incorrectly or incompletely; thus, these mappings only allow for average approximations of costs for specific business functions identified in this report. The Exhibit 53 BRM mappings relating to this inquiry are found in Table 1 below.

#	BRM Code
1	BRM 106 (Workforce Planning)
2	BRM 228 (Labor Relations)
3	BRM 251 (Staffing and Recruiting)
4	BRM 254 (Employee Benefits and Compensation)
5	BRM 255 (Employee Performance Management)
6	BRM 256 (Employee Relations)
7	BRM 257 (Separation Management)
8	BRM 613 (Time Reporting)
9	BRM 618 (Employee Development and Training)
10	BRM 624 (Payroll)

Table 1: BRM Codes Relevant to this Analysis

Methods for dealing with missing data: When Exhibit 53 data were incomplete, the HR LOB filled in the missing data with weighted averages available for each area. This means that agencies who did not provide data, or whose data was not mapped to correct BRM codes, had missing inputs replaced with the overall weighted averages in this analysis.

³ Exhibit 53 Guidance. Accessed on September 15, 2014 at:

http://www.whitehouse.gov/sites/default/files/omb/assets/egov_docs/fy13_guidance_for_exhibit_53-a-b_20110805.pdf

⁴ OMB's IT Dashboard can be found here: <https://www.itdashboard.gov/>

1.2.2 HRIT Inventory

About this source: The HR LOB developed the HRIT Inventory as part of its FY 2011 Cost Benefit Analysis (CBA).⁵ The purpose of the HRIT Inventory was to create a comprehensive inventory of agency HR systems and related costs. In addition, the HR system data collected through this inventory helped the HR LOB understand the scope and complexity of HR system integration and interoperability.

The HRIT Inventory analysis was produced through federal agency-provided responses to a template initially populated with Exhibit 53 data and refined through numerous follow-up calls and interviews. The HRIT Inventory includes projected and actual spending for 23 federal agencies, representing approximately 57 percent of federal employees for the period of FY 2007-2012.⁶

The HRIT Inventory data, unlike the Exhibit 53 data, demonstrates how all system investments are mapped to the OMB FEA BRM and related Service Component Model (SCM) components. This provides a more precise and detailed breakdown of HRIT investments. The SCM codes within each service component that are relevant to this cost analysis are listed in Table 2⁷.

⁵ OPM HR LOB. (2012). HR LOB FY 2011 Cost Benefit Analysis (CBA) Report. Accessed on 31 March 2014, at <http://www.opm.gov/services-for-agencies/hr-line-of-business/cost-benefit-analysis/fy-2011-cost-benefit-analysis-report.pdf>.

⁶ The analysis includes the same 23 agencies used in HR LOB FY 2011 Cost Benefit Analysis (CBA) Report, as well as those MAESC agencies that responded to the data call. A few agencies such as the Department of Defense (DoD) did not participate. The list of agencies included in each analysis is shown within each section of analysis.

⁷ The full list of Service Components can be found in the HR LOB Service Component Model (SCM) version 2 at <http://www.opm.gov/services-for-agencies/hr-line-of-business/enterprise-architecture/hrlobscmv2.pdf>

Human Resources Service Components		Human Capital Service Components	
Payroll Processing	Pay Administration	Competency Management	HRD Program Delivery
Payroll Reporting	Position Classification	Succession Planning	Employee Relations
Time and Attendance	Recruiting	Workforce Planning	Labor Relations
Benefits Counseling	Application Management	Workforce Reshaping	Career Development Planning
Benefits Processing	Learning Administration	Organization Design	Performance Management
Benefits Reporting		Position Management	Staffing
		Assessment Model	

Table 2: Service Component Model Codes Relevant to this Analysis

Comparing the BRM and SCM Mappings

As part of the analysis, to show how various components relate to one another, OMB’s BRM codes used in Exhibit 53 and OMB’s IT Dashboard⁸ were mapped to the SCM codes used in the HRIT Inventory.

As shown in Figure 1, SCM codes are defined at a much more detailed level compared to BRM codes, and in most cases, do not have a direct one-to-one match to BRM. This lack of alignment between these codes increased complexity of this analysis. The mapping from BRM to SCM Code(s) is listed below in Figure 1.

BRM Code	SCM Code
<i>BRM 106 (Workforce Planning)</i>	→ <i>Service Components: Succession Planning, Workforce Planning, Workforce Reshaping, Organizational Design, Assessment Model, Career Development and Planning</i>
<i>BRM 228 (Labor Relations)</i>	→ <i>Service Components: Labor Relations</i>
<i>BRM 251 (Staffing and Recruiting)</i>	→ <i>Service Components: Position Classification, Recruiting, Application Management, Competency Management, Workforce Reshaping, Organization Design, Position Management, Staffing</i>
<i>BRM 254 (Employee Benefits and Compensation)</i>	→ <i>Service Components: Benefits Counseling, Benefits Processing, Benefits Reporting</i>
<i>BRM 255 (Employee Performance Management)</i>	→ <i>Service Components: Performance Management</i>
<i>BRM 256 (Employee Relations)</i>	→ <i>Service Components: Employee Relations</i>
<i>BRM 257 (Separation)</i>	→ <i>Service Components: Benefits Counseling, Benefits</i>

⁸ OMB’s IT Dashboard can be found at <https://itdashboard.gov/>

BRM Code	SCM Code
<i>Management</i>	Processing, Benefits Reporting
<i>BRM 613 (Time Reporting)</i>	→ <i>Service Components: Time & Attendance</i>
<i>BRM 618 (Employee Development and Training)</i>	→ <i>Service Components: Learning Administration, HRD Program Delivery</i>
<i>BRM 624 (Payroll)</i>	→ <i>Service Components: Payroll Processing, Payroll Reporting, Pay Administration</i>

Figure 1: BRM Codes Mapped to SCM Codes

Issues with HRIT Inventory Data: As mentioned in the previous section, Exhibit 53 only provides a partial summary of system costs due to issues with mapping to BRM codes which also impacts HRIT Inventory results. However, through the HRIT Inventory effort, the HR LOB was able to receive data from agencies that did not complete or did not fully complete Exhibit 53 inputs. For example, in regards to Time & Attendance (T&A) systems, much of the Exhibit 53 data is missing. In this case, the HR LOB was able to collect inputs from agencies that did not have Exhibit 53 data which resulted in much less missing data within the HRIT Inventory. This analysis is detailed in Section 3.3 of this document. In addition, HRIT Inventory analysis efforts also had incomplete data because of a lack of agency submissions and responses to associated data calls.

Methods for dealing with missing data: In several sections where Exhibit 53, HRIT Inventory, and HRITT Passback data were incomplete, the HR LOB filled in the missing data with weighted averages available for each area. This means that agencies who did not provide data, or whose data was not mapped to correct BRM codes, had missing inputs replaced with the overall weighted averages in this analysis.

1.2.3 HRITT Passback Data Analysis

About this source: At OPM’s request, in January 2014, OMB issued a data call for updated information on two important HRIT systems, Time and Attendance (T&A) and Learning Management System (LMS). This HRITT Passback data analysis is based on the T&A and LMS spending data received in this data call distributed by OMB to agency Chief Financial Officers (CFOs). HRITT Passback data collection occurred at a later date and used a different sample compared to the Exhibit 53 and HRIT Inventory data analyses. Data for HRITT Passback data is FY 2014 data, whereas HRIT Exhibit 53 data and HRIT Inventory is FY 2012 data. For additional information relating to per-capita spending estimates from the three data sources for T&A and LMS, please see Appendix B and Appendix C of this document.

Issues with HRIT Passback Data: The HR LOB received 25 agency Passback submissions, representing 740,646 employees, or 36.2 percent of the federal employee population. HRITT Passback analysis efforts also had incomplete data because of a lack of agency submissions and responses to associated data calls.

Methods for dealing with missing data: This data analysis for T&A and LMS spending was based on a variation of the methodology used in the Exhibit 53 and HRIT Inventory

analysis described earlier. In this analysis, the HR LOB filled in missing agency data with average values based on FedScope Agency Size ⁹ (Cabinet, Large, Medium, and Small). This meant that the HR LOB filled in an inferred spending value based on an agency size category for those agencies whose data was missing. For example, the one agency did not respond to the request in this data call, therefore, any missing data was replaced with the Cabinet-agency average in the analysis.

⁹ Fedscope Agency Size definitions include: Cabinet, Large, Medium and Small. Accessed on April 2, 2014 at: <http://www.fedscope.opm.gov/datadefn/#agency>

2 Overall HRIT Spending Analysis

2.1 Overall HRIT Spending

2.1.1 Methods of Analysis

The HR LOB derived two specific estimates for actual HR-related Federal IT investments based on the analysis of two independent data sets: HR LOB's HRIT Inventory and OMB's Exhibit 53 data.

The HR LOB developed this cost estimate approach to account for agencies inconsistently reporting HRIT spending in Exhibit 53 and the large variances in spending levels across HRIT Inventory and Exhibit 53 data inputs. This approach entailed three steps:

1. The HR LOB transformed both the HRIT Inventory and Exhibit 53 FY 2012 data to a cost per-capita spending ratio, according to employee headcounts reported in Fedscope as of September 2012.¹⁰
2. The HR LOB then removed large cost per-capita outliers and filled in the weighted average as input for agencies with missing data.
3. The HR LOB then computed overall HRIT spending based on agency populations.

2.1.2 Scope of Analysis

This estimate is based on costs pertaining to HRIT spend of the 24 CFO Act¹¹ agencies and selected Multi-Agency Executive Strategy Committee (MAESC) agencies. These agencies account for approximately 99percent of the federal workforce (excluding U.S. Postal Service).

2.1.3 Results

After careful analysis of the HRIT Inventory and Exhibit 53 data, the HR LOB developed an estimate of government-wide HRIT spending.

From the perspective of a government-wide approach, the average annual per-capita HRIT Inventory-based spending estimate is \$801. When compared to an Exhibit 53-based spending estimate, the average is approximately \$1,095 per-capita per year.

When multiplied by agency populations, this data produces annual overall HRIT spending estimates of **\$1.7 billion** and **\$2.3 billion** per year.¹² Thus, at a minimum, agencies are spending approximately \$1.7 billion or more per year on HRIT.

¹⁰ Total spending (in \$M) reported in the Exhibit 53 or HRIT Inventory was divided by total employee headcount (Fedscope, September 2012) to derive HRIT spending per-capita for each agency.

¹¹ The CFO 24 were named in the Chief Financial Officers (CFO) Act of 1990 (Public Law 101-576)

¹² Using the HRIT Inventory-based methodology, the total spending estimate is \$1.7 billion per year. Using the Exhibit 53-based methodology, the total spending estimate is \$2.3 billion per year.

Table 3 shows the per-capita and overall spend estimates based on the data source. In addition, Table 4 displays the per-capita and overall spend estimates by agency.

Data Source	Estimate of Spending Per Capita	Total Estimate of Spend
HRIT Inventory	\$801.01	\$1.7 billion
Exhibit 53	\$1,094.59	\$2.3 billion

Table 3: HRIT Inventory and Exhibit 53 Estimates

	[A]	[B]	[C]	[D]	[E]
Agency Acronym	Agency Population as Reported in Fedscope (Sept. 2012)	HRIT Spend per capita as reported in HRIT Inventory (FY 2012)	HRIT Spend per capita as reported in OMB Exhibit 53 (FY 2012)	HRIT Total Spend as Reported in HRIT Inventory [Column A x B]	HRIT Total Spend as Reported in OMB Exhibit 53 [Column A x C]
DHS	198,100	\$ 199.61	\$ 550.62	\$ 39,542,110	\$ 109,078,000
DOC	45,136	\$ 551.69	\$ 269.30	\$ 24,901,206	\$ 12,155,010
DOI	77,053	\$ 559.27	\$ 398.91	\$ 43,093,788	\$ 30,737,477
DOL	16,793	\$ 1,538.50	\$ 1,070.04	\$ 25,836,000	\$ 17,969,217
DOJ	116,065	\$ 403.27	\$ 480.70	\$ 46,805,960	\$ 55,792,178
DOT	57,146	\$ 478.55	\$ 244.23	\$ 27,347,480	\$ 13,956,775
ED	4,366	\$ 1,180.49	\$ 447.64	\$ 5,154,000	\$ 1,954,376
EPA	18,061	\$ 638.00	\$ 387.41	\$ 11,523,000	\$ 6,997,000
GSA	12,394	\$ 2,910.84	\$ 1,429.47	\$ 36,076,957	\$ 17,716,813
HUD	9,260	\$ 801.01	\$ 1,076.79	\$ 7,417,315	\$ 9,971,076
NARA	3,331	\$ 388.77	\$ 1,094.59	\$ 1,295,000	\$ 3,646,084
NASA	18,145	\$ 621.27	\$ 1,094.59	\$ 11,273,000	\$ 19,861,362
NRC	3,906	\$ 874.55	\$ 800.47	\$ 3,416,000	\$ 3,126,655
NSF	1,468	\$ 3,572.55	\$ 3,109.67	\$ 5,244,500	\$ 4,565,000
OPM	5,805	\$ 801.01	\$ 1,291.76	\$ 4,649,840	\$ 7,498,652
PeaceCorps	894	\$ 513.16	\$ 1,094.59	\$ 458,763	\$ 978,565
Smithsonian	4,850	\$ 2,450.31	\$ 135.05	\$ 11,884,000	\$ 655,000
SSA	65,113	\$ 587.39	\$ 237.26	\$ 38,247,000	\$ 15,449,000
State	12,824	\$ 5,772.77	\$ 4,667.26	\$ 74,030,000	\$ 59,853,000
Treasury	104,818	\$ 366.85	\$ 268.87	\$ 38,452,664	\$ 28,181,940
USAID	3,974	\$ 7,235.97	\$ 354.15	\$ 28,755,736	\$ 1,407,380
USDA	101,304	\$ 4,012.86	\$ 1,707.80	\$ 406,518,402	\$ 173,007,115
VA	324,498	\$ 226.61	\$ 1,094.59	\$ 73,533,000	\$ 355,192,747
HHS	86,425	\$ 801.01	\$ 740.25	\$ 69,226,943	\$ 63,976,000
DOE	15,882	\$ 801.01	\$ 1,626.05	\$ 12,721,577	\$ 25,824,955
DOD	759,628	\$ 801.01	\$ 1,616.20	\$ 608,466,577	\$ 1,227,714,000
SBA	4,914	\$ 801.01	\$ 182.26	\$ 3,936,143	\$ 895,650
TOTAL	2,072,153	\$ 801.01	\$ 1,094.59	\$ 1,659,806,961	\$ 2,268,161,028
	Employees	per capita	per capita	Total Spend	Total Spend
Note: Cells with Red Text were derived using the weighted average for agencies reporting Exhibit 53 or HRIT Inventory data. Cells highlighted in Pink represent the larger reported or projected number.					
Sources: Exhibit 53 (IT Dashboard), HRIT Inventory (HR LOB CBA), Population (Fedscope)					

Table 4: Cost Estimates of Total HRIT Spend

How to interpret the table above: For agencies who did not submit data, the blank cells are filled in with the overall average and highlighted in red text. The pink-shaded cells highlight the HRIT Inventory or the Exhibit 53 spending that is highest in comparison for each agency.

3 Individual Opportunity Analysis

The sections below detail the current spending of six HRIT categories based on available data. The HR LOB identified these HRIT categories by having discussions around future HRIT savings opportunities with the federal HR community.

3.1 Data Exchange and Interfaces

3.1.1 Methods of Analysis

SSCs and agencies are highly dependent on individual data exchange interfaces to share information. Similarly, agencies often establish individual data exchange interfaces with other agencies to share data. OPM estimates there are thousands of agency-to-agency and agency-to-service center interfaces across the Federal Government. Based on market research, each interface represents an initial investment cost and ongoing maintenance changes that is estimated to be more than \$10,000 a year.

Data Exchanges and Interfaces are vital for Shared Service Centers (SSCs) across the Federal Government. Data interfaces connecting SSC systems to external agency data sources are essential for SSC operation, as access to agency data is critical. In addition, these interfaces require regular maintenance to ensure they continue to allow for data exchange.

At this current time, there is no accurate or approved count of the number of data interfaces between HR systems across federal SSCs. The associated maintenance cost is also unknown. Therefore, the HR LOB made the following assumptions to arrive at a representative cost estimate for this section:

- **SSC Sample:** The number of interfaces at the Department of the Interior's (DOI) Interior Business Center (IBC) was used as a sample of the SSCs. IBC's 17 application interfaces was used as a sample for all SSCs.
- **External Research:** Based on market research, the estimate of the average cost of maintenance per interface across public and private organizations ranges from \$15,000 to \$30,000 annually.

3.1.2 Scope of Analysis

This analysis pertains to the number of interfaces within the HR LOB's SSCs based on available data.

3.1.3 Results

The HR LOB used the number of interfaces in DOI's IBC SSC (17 interfaces) to estimate the number of interfaces per provider and across the enterprise. Based on the assumptions above, the HR LOB began with the number of IBC interfaces and multiplied this by the assumed interfaces to other systems (16), as well as a factor of $\frac{1}{2}$ to create a conservative

estimate. The HR LOB then combined the result with data from an industry source, which identified the average per-interface maintenance cost. The HR LOB multiplied the average maintenance cost for interfaces by the estimate of the number of interfaces assumed at SSCs and OPM, producing an estimated total current cost of \$19.3 million (See Figure 2).

<i>Data Exchange Calculation Details</i>								<i>Total</i>	
<i>((17</i>	<i>x</i>	<i>16</i>	<i>x</i>	<i>.5</i>	<i>x</i>	<i>5)</i>	<i>+ 176)</i>	<i>x \$22,500</i>	<i>= \$19.3M</i>
<i>Number of application interfaces at IBC</i>		<i>Number of application interfaces (with other systems) (n-1)</i>		<i>Factor to create a conservative estimate</i>		<i>Number of Shared Service Centers</i>		<i>Number of interfaces at OPM</i>	
								<i>Average Maintenance Cost of Interfaces</i>	

Figure 2: Formula for the Data Exchange and Interface Cost Analysis

Based on the savings associated with the reduction of agency-to-agency interfaces when payroll consolidated to service centers, it is assumed a considerable cost savings can be realized by further consolidation into shared service centers and improvement of government-wide data standards. However, this current cost analysis below is based on the limited data available and does not include such considerations.

3.2 Learning Management Systems (LMS)

3.2.1 Methods of Analysis

A Learning Management System (LMS) is software that automates the training process and function and includes registration and administration tools, skills and records management, courseware access, and programming interfaces to packaged applications.¹³

The HR LOB shared the same approach for the LMS analysis that was used in the Overall HRIT Spending analysis (Section 2.1). This LMS analysis used specific BRM and SCM data relating to LMS. Specifically, the HR LOB analysis focused on per-capita spending in the Exhibit 53 for Employee Training and Development (BRM 618) and SCM for “Learning Administration”.

As in the previous analysis, the HR LOB data adjusted the data to remove outliers¹⁴ and input an average weighted cost per-capita for those agencies whose data was unavailable.

As noted in previous sections, the HR LOB used a variation of the methodology in the HRITT Passback analysis based on replacing missing agency data by agency size.¹⁵

3.2.2 Scope of Analysis

This estimate is based on costs pertaining to LMS spend of the 24 CFO Act¹⁶ agencies and selected MAESC agencies. These agencies account for approximately 99 percent of the federal workforce (excluding U.S. Postal Service).

3.2.3 Results

The HR LOB produced estimates of annual spending on LMS using HRIT Inventory, Exhibit 53, and HRITT Passback, as shown below in Table 5. Table 6 on the following page provides agency-level results of this analysis for HRIT Inventory and Exhibit 53. Table 7 shows the results for HRITT Passback analysis, which used a different calculation methodology.

Data Source	Estimate of Spending Per Capita	Total Estimate of Spend
HRIT Inventory	\$35.50	\$73.6 million
Exhibit 53	\$133.22	\$276.1 million
HRITT Passback	\$45.98	\$94.1 million

Table 5: LMS Estimates of Spending for HRIT Inventory, Exhibit 53, and HRITT Passback

¹³ Definition of Learning Management Systems from Gartner IT Glossary. Accessed on September 26, 2015 at <http://www.gartner.com/it-glossary/e-learning/>

¹⁴ According to Department of State data included in the HRIT inventory, the agency spent \$1,821 per-capita on Learning in FY 2012. This was removed as an outlier as the average for all other inputs was \$57.98 per-capita.

¹⁵ The HR LOB used Fedscope Agency size categories including Cabinet, Large, Medium, and Small. This use is further described in Section 1.2.3.

¹⁶ The CFO 24 were named in the Chief Financial Officers (CFO) Act of 1990 (Public Law 101-576)

	[A]	[B]	[C]	[D]	[E]
Agency Acronym	Agency Population as Reported in Fedscope (Sept. 2012)	HRIT Spend as Reported in HRIT Inventory per capita (FY 2012)	HRIT Spend as Reported in OMB Exhibit 53 per capita (FY 2012)	HRIT Inventory Total Spend [Column A x B]	OMB Exhibit 53 Total Spend [Column A x C]
DHS	198,100	\$ 20.87	\$ 87.23	\$ 4,135,020	\$ 17,281,000
DOC	45,136	\$ 14.97	\$ 133.23	\$ 675,560	\$ 6,013,327
DOI	77,053	\$ 6.11	\$ 23.17	\$ 470,522	\$ 1,785,700
DOL	16,793	\$ 57.70	\$ 133.23	\$ 969,000	\$ 2,237,279
DOJ	116,065	\$ 6.70	\$ 133.23	\$ 777,408	\$ 15,462,975
DOT	57,146	\$ 9.86	\$ 51.89	\$ 563,600	\$ 2,965,200
ED	4,366	\$ 7.99	\$ 133.23	\$ 34,875	\$ 581,668
EPA	18,061	\$ 28.24	\$ 26.63	\$ 510,000	\$ 481,000
GSA	12,394	\$ 217.50	\$ 357.89	\$ 2,695,714	\$ 4,435,636
HUD	9,260	\$ 35.50	\$ 133.23	\$ 328,743	\$ 1,233,681
NARA	3,331	\$ 35.50	\$ 133.23	\$ 118,255	\$ 443,779
NASA	18,145	\$ 37.20	\$ 133.23	\$ 675,083	\$ 2,417,401
NRC	3,906	\$ 123.40	\$ 87.71	\$ 482,000	\$ 342,588
NSF	1,468	\$ 35.50	\$ 133.23	\$ 52,116	\$ 195,577
OPM	5,805	\$ 5.91	\$ 83.03	\$ 34,318	\$ 482,000
PeaceCorps	894	\$ 11.19	\$ 133.23	\$ 10,000	\$ 119,105
Smithsonian	4,850	\$ 136.13	\$ 133.23	\$ 660,222	\$ 646,150
SSA	65,113	\$ 214.24	\$ 133.23	\$ 13,950,000	\$ 8,674,800
State	12,824	\$ 35.50	\$ 133.23	\$ 455,270	\$ 1,708,501
Treasury	104,818	\$ 17.43	\$ 133.23	\$ 1,827,422	\$ 13,964,573
USAID	3,974	\$ 65.43	\$ 133.23	\$ 260,000	\$ 529,444
USDA	101,304	\$ 116.77	\$ 133.23	\$ 11,829,057	\$ 13,496,414
VA	324,498	\$ 3.93	\$ 133.23	\$ 1,275,800	\$ 43,231,849
HHS	86,425	\$ 35.50	\$ 47.22	\$ 3,068,209	\$ 4,081,000
DOE	15,882	\$ 35.50	\$ 173.03	\$ 563,833	\$ 2,748,110
DOD	759,628	\$ 35.50	\$ 170.94	\$ 26,967,862	\$ 129,853,000
SBA	4,914	\$ 35.50	\$ 133.23	\$ 174,454	\$ 654,677
TOTAL	2,072,153	\$ 35.50	\$ 133.23	\$ 73,564,344	\$ 276,066,434
	Employees	per capita	per capita	Total Spend	Total Spend

Note: Cells with Red Text were derived using the weighted average for agencies reporting Exhibit 53 or HRIT Inventory data. Cells highlighted in Pink represent the larger reported or projected number.

Sources: Costs for systems in the Exhibit 53 with Primary BRM Codes of 618 (Employee Training and Development) (IT Dashboard), HRIT Inventory with Service Component Mappings to "Learning Administration" (HR LOB CBA), Population (Fedscope)

Table 6: LMS Cost Estimate Per-Capita

How to interpret the table above: For agencies who did not submit data, the blank cells are filled in with the overall average and highlighted in red text. The pink-shaded cells highlight the HRIT Inventory or the Exhibit 53 spending that is highest in comparison for each agency.

Fedscope Agency Size	Agency Population (Source: Dec 2013 Fedscope)	LMS Per Capita Spend	FY 2014 Total Spend (in Millions)
Cabinet	582,416	\$ 45.32	\$ 26.39
Cabinet Agencies with Data Missing	1,289,406	\$ 45.32	\$ 58.43
Large	121,107	\$ 40.22	\$ 4.87
Large Agencies with Data Missing	40,279	\$40.22	\$ 1.62
Medium	915	\$ 240.44	\$ 0.22
Medium Agencies with Data Missing	10,625	\$ 240.44	\$ 2.55
Small	--	N/A	N/A
Small Agencies with Data Missing	1,513	N/A	N/A
Projected Federal Total	2,046,261	\$ 45.98	\$ 94.09

Table 7: LMS Cost Analysis for HRITT Passback

How to interpret the table above: Based on available data the HR LOB calculated an average per-capita cost for each of the Fedscope Agency Size (Cabinet, Large, Medium, and Small). This per-capita cost was then filled in within the analysis for those agencies without a HRITT Passback submission for each of the Fedscope Agency Size categories. For more details, please refer to Section 1.2.3.

3.3 Time and Attendance (T&A)

3.3.1 Methods of Analysis

A Time and Attendance (T&A) system is a system that defines work schedules and records and certifies the time and attendance for employees of an organization.¹⁷

The HR LOB shared the same approach for the T&A analysis that was used in the Overall HRIT Spending analysis (Section 2.1). This analysis focused on per-capita spending in the Exhibit 53 for Time Reporting (BRM 613) and similar spending in the HRIT Inventory relative to the SCM for “Time and Attendance”.

As in the previous analysis, the HR LOB adjusted data to remove outliers¹⁸ and inputted an average weighted cost per-capita for missing data. For example, in regard to the Exhibit 53 data, the HR LOB inputted the average federal per-capita cost of \$14.94 per person for those agencies with missing data.

As noted in previous sections, the HR LOB used a variation of the methodology in the HRITT Passback analysis based on replacing missing agency data by agency size.¹⁹

3.3.2 Scope of Analysis

This estimate is based on costs pertaining to HRIT spend of the 24 CFO Act²⁰ agencies and selected MAESC agencies. These agencies account for approximately 99 percent of the federal workforce (excluding U.S. Postal Service).

3.3.3 Results

The results of T&A spending estimates for HRIT Inventory, Exhibit 53, and HRITT Passback are shown below in Table 8. Table 9 on the following page provides agency-level results of this analysis for HRIT Inventory and Exhibit 53. Table 10 shows the results for HRITT Passback analysis, which used a different calculation methodology (See Section 1.2.3 for details on this analysis methodology).

¹⁷ HR LOB Service Component Model definition of T&A. Accessed at: <http://www.opm.gov/services-for-agencies/hr-line-of-business/enterprise-architecture/hrlobscmv2.pdf>

¹⁸ According to the spending data provided by one agency in the HRIT inventory, the agency spent \$6,721 per-capita on T&A in FY 2012, which was an outlier in our agency sample. This agency’s data was removed.

¹⁹ The HR LOB used agency Fedscope Agency size including Cabinet, Large, Medium, and Small. This use is further described in Section 1.2.3.

²⁰ The CFO 24 were named in the Chief Financial Officers (CFO) Act of 1990 (Public Law 101-576)

Data Source	Estimate of Spending Per Capita	Total Estimate of Spend
HRIT Inventory	\$54.13	\$112.2 million
Exhibit 53	\$14.94	\$30.9 million
HRITT Passback	\$60.07	\$122.9 million

Table 8: T&A Estimates of Spending for HRIT Inventory, Exhibit 53, and HRITT Passback

Beyond the main analysis displayed, the cost per-capita for those agencies receiving T&A services through an SSC was compared to those that are not. Based on Exhibit 53 data, aligned agencies are currently spending approximately \$13.97 per-capita compared to unaligned agencies, which spend \$16.16 per-capita on T&A.

	[A]	[B]	[C]	[D]	[E]
Agency Acronym	Agency Population as Reported in Fedscope (Sept. 2012)	HRIT Spend as Reported in HRIT Inventory per capita (FY 2012)	HRIT Spend as Reported in OMB Exhibit 53 per capita (FY 2012)	HRIT Inventory Total Spend [Column A x B]	OMB Exhibit 53 Total Spend [Column A x C]
DHS	198,100	\$ 54.13	\$ 14.94	\$ 10,723,435	\$ 2,959,314
DOC	45,136	\$ 15.40	\$ 14.94	\$ 695,060	\$ 674,263
DOI	77,053	\$ 72.16	\$ 3.22	\$ 5,559,944	\$ 248,000
DOL	16,793	\$ 101.17	\$ 14.94	\$ 1,699,000	\$ 250,862
DOJ	116,065	\$ 28.41	\$ 14.94	\$ 3,297,692	\$ 1,733,835
DOT	57,146	\$ 29.11	\$ 67.65	\$ 1,663,500	\$ 3,866,100
ED	4,366	\$ 93.91	\$ 14.94	\$ 410,000	\$ 65,221
EPA	18,061	\$ 17.19	\$ 14.94	\$ 310,417	\$ 269,804
GSA	12,394	\$ 59.52	\$ 14.94	\$ 737,667	\$ 185,148
HUD	9,260	\$ 3.53	\$ 14.94	\$ 32,667	\$ 138,330
NARA	3,331	\$ 28.35	\$ 14.94	\$ 94,444	\$ 49,760
NASA	18,145	\$ 32.32	\$ 14.94	\$ 586,429	\$ 271,059
NRC	3,906	\$ 228.88	\$ 159.13	\$ 894,000	\$ 621,557
NSF	1,468	\$ 54.13	\$ 14.94	\$ 79,465	\$ 21,930
OPM	5,805	\$ 63.39	\$ 14.94	\$ 368,000	\$ 86,718
PeaceCorps	894	\$ 14.54	\$ 14.94	\$ 13,000	\$ 13,355
Smithsonian	4,850	\$ 54.13	\$ 14.94	\$ 262,537	\$ 72,452
SSA	65,113	\$ 46.07	\$ 14.94	\$ 3,000,000	\$ 972,689
State	12,824	\$ 348.64	\$ 14.94	\$ 4,470,988	\$ 191,571
Treasury	104,818	\$ 27.50	\$ 14.94	\$ 2,882,938	\$ 1,565,822
USAID	3,974	\$ 54.13	\$ 14.94	\$ 215,118	\$ 59,366
USDA	101,304	\$ 210.22	\$ 36.45	\$ 21,296,139	\$ 3,692,752
VA	324,498	\$ 18.34	\$ 14.94	\$ 5,952,381	\$ 4,847,508
HHS	86,425	\$ 54.13	\$ 27.92	\$ 4,678,308	\$ 2,413,000
DOE	15,882	\$ 54.13	\$ 82.11	\$ 859,715	\$ 1,304,000
DOD	759,628	\$ 54.13	\$ 5.67	\$ 41,119,744	\$ 4,307,000
SBA	4,914	\$ 54.13	\$ 14.94	\$ 266,002	\$ 73,408
TOTAL	2,072,153	\$ 54.13	\$ 14.94	\$ 112,168,588	\$ 30,954,823
	Employees	per capita	per capita	Total Spend	Total Spend

Note: Cells with Red Text were derived using the weighted average for agencies reporting Exhibit 53 or HRIT Inventory data. Cells highlighted in Pink represent the larger reported or projected number.

Sources: Costs for systems in the Exhibit 53 with Primary BRM Codes of 613 (Time Reporting) (IT Dashboard), HRIT Inventory with Service Component Mappings to "Time and Attendance" (HR LOB CBA), Population (Fedscope)

Table 9: T&A Cost Estimates Per-Capita

How to interpret the table above: For agencies who did not submit data, the blank cells are filled in with the overall average and highlighted in red text. The pink-shaded cells highlight the HRIT Inventory or the Exhibit 53 spending that is highest in comparison for each agency.

Fedscope Agency Size	Agency Population (Source: Dec 2013 Fedscope)	T&A Per Capita Spend	FY 2014 Total Spend (in Millions)
Cabinet Agencies	616,538	\$ 58.83	\$ 36.27
Cabinet Agencies with Data Missing	1,255,284	\$ 58.83	\$73.85
Large Agencies	122,316	\$ 76.19	\$ 9.32
Large - Data Missing	39,070	\$ 76.19	\$ 2.98
Medium Agencies	234	\$ 42.74	\$ 0.01
Medium Agencies with Data Missing	11,306	\$ 42.74	\$ 0.48
Small Agencies	--	N/A	N/A
Small Agencies with Data Missing	1,513	N/A	N/A
Projected Federal Total	2,046,261	\$ 60.07	\$ 122.91

Table 10: T&A HRITT Passback Results

How to interpret the table above: Based on available data the HR LOB calculated an average per-capita cost for each of the Fedscope Agency Size (Cabinet, Large, Medium, and Small). This per-capita cost was then filled in within the analysis for those agencies without a HRITT Passback submission for each of the Fedscope Agency Size categories. For more details, please refer to Section 1.2.3.

3.4 Electronic Performance Management Systems (EPMS)

3.4.1 Methods of Analysis

Electronic Performance Management Systems (EPMS) are systems that automate the employee performance management process, which includes planning work, setting expectations, monitoring performance, and rating performance in a summary fashion.²¹

The HR LOB shared the same approach in the EPMS analysis that was used in the Overall HRIT Spending analysis (Section 2.1). This EPMS analysis focused on per-capita spending in the Exhibit 53 for Employee Performance Management (BRM 255) compared to similar spending in the HRIT Inventory on the SCM for “Performance Management”. The HR LOB adjusted the data to remove outliers and inputted an average weighted cost per-capita when agency data was unavailable.

3.4.2 Scope of Analysis

This estimate is based on costs pertaining to HRIT spend of the 24 CFO Act²² agencies and selected MAESC agencies. These agencies account for approximately 99 percent of the federal workforce (excluding U.S. Postal Service).

3.4.3 Results

The analysis resulted in a final estimate of annual spending on EPMS, as shown below in Table 11. Table 12 on the following page provides agency-level results of this analysis.

Data Source	Estimate of Spending Per Capita	Total Estimate of Spend
HRIT Inventory	\$16.67	\$34.5 million
Exhibit 53	\$132.68	\$274.9 million

Table 11: EPMS HRIT Inventory and Exhibit 53 Estimates

²¹ OPM Performance Management. Accessed at: <http://www.opm.gov/policy-data-oversight/performance-management/overview-history/> on September 16, 2014.

²² The CFO 24 were named in the Chief Financial Officers (CFO) Act of 1990 (Public Law 101-576)

	[A]	[B]	[C]	[D]	[E]
Agency Acronym	Agency Population as Reported in Fedscope (Sept. 2012)	HRIT Spend as Reported in HRIT Inventory per capita (FY 2012)	HRIT Spend as Reported in OMB Exhibit 53 per capita (FY 2012)	HRIT Inventory Total Spend [Column A x B]	OMB Exhibit 53 Total Spend [Column A x C]
DHS	198,100	\$ 0.63	\$ 29.57	\$ 125,000	\$ 5,858,000
DOC	45,136	\$ 3.90	\$ 12.85	\$ 176,000	\$ 580,000
DOI	77,053	\$ 6.25	\$ 132.68	\$ 481,272	\$ 10,223,655
DOL	16,793	\$ 87.96	\$ 132.68	\$ 1,477,143	\$ 2,228,153
DOJ	116,065	\$ 9.95	\$ 132.68	\$ 1,154,964	\$ 15,399,901
DOT	57,146	\$ 1.05	\$ 3.90	\$ 60,000	\$ 223,000
ED	4,366	\$ 7.99	\$ 229.45	\$ 34,875	\$ 1,001,800
EPA	18,061	\$ 16.67	\$ 132.68	\$ 301,137	\$ 2,396,395
GSA	12,394	\$ 82.68	\$ 132.68	\$ 1,024,714	\$ 1,644,478
HUD	9,260	\$ 1.01	\$ 132.68	\$ 9,333	\$ 1,228,648
NARA	3,331	\$ 16.67	\$ 132.68	\$ 55,539	\$ 441,968
NASA	18,145	\$ 23.43	\$ 132.68	\$ 425,083	\$ 2,407,541
NRC	3,906	\$ 16.67	\$ 132.68	\$ 65,126	\$ 518,261
NSF	1,468	\$ 40.87	\$ 132.68	\$ 60,000	\$ 194,779
OPM	5,805	\$ 3.73	\$ 4.31	\$ 21,667	\$ 25,000
PeaceCorps	894	\$ 28.97	\$ 132.68	\$ 25,895	\$ 118,619
Smithsonian	4,850	\$ 136.13	\$ 132.68	\$ 660,222	\$ 643,515
SSA	65,113	\$ 16.67	\$ 132.68	\$ 1,085,650	\$ 8,639,415
State	12,824	\$ 91.79	\$ 5.07	\$ 1,177,130	\$ 65,000
Treasury	104,818	\$ 31.96	\$ 206.70	\$ 3,350,183	\$ 21,666,276
USAID	3,974	\$ 16.67	\$ 354.15	\$ 66,260	\$ 1,407,380
USDA	101,304	\$ 78.75	\$ 147.98	\$ 7,977,976	\$ 14,991,219
VA	324,498	\$ 0.87	\$ 132.68	\$ 281,250	\$ 43,055,504
HHS	86,425	\$ 16.67	\$ 8.97	\$ 1,440,992	\$ 775,000
DOE	15,882	\$ 16.67	\$ 133.84	\$ 264,806	\$ 2,125,685
DOD	759,628	\$ 16.67	\$ 180.16	\$ 12,665,521	\$ 136,856,000
SBA	4,914	\$ 16.67	\$ 45.82	\$ 81,933	\$ 225,150
TOTAL	2,072,153	\$ 16.67	\$ 132.68	\$ 34,549,671	\$ 274,940,344
	Employees	per capita	per capita	Total Spend	Total Spend

Note: Cells with Red Text were derived using the weighted average for agencies reporting Exhibit 53 or HRIT Inventory data. Cells highlighted in Pink represent the larger reported or projected number.

Sources: Costs for systems in the Exhibit 53 with Primary BRM Codes of 255 (Employee Performance Management) (IT Dashboard), HRIT Inventory with Service Component Mappings to "Performance Management" (HR LOB CBA), Population (Fedscope)

Table 12: EPMS Cost Estimate

How to interpret the table above: For agencies who did not submit data, the blank cells are filled in with the overall average and highlighted in red text. The pink-shaded cells highlight the HRIT Inventory or the Exhibit 53 spending that is highest in comparison for each agency.

3.5 Single Sign-On (SSO)

3.5.1 Methods of Analysis

Single Sign-On (SSO) provides the capability to authenticate once, and be subsequently and automatically authenticated when accessing other, various systems. SSO therefore eliminates the need to separately authenticate and sign on to individual applications and systems.²³ In regards to federal SSO implementation, Homeland Security Presidential Directive 12 (HSPD-12) sets the policy for a common identification standard for federal employees and contractors and mandates a federal standard for secure and reliable forms of identification.²⁴

At the current time, the Federal Government has multiple, highly dispersed, agency-specific implementations of HSPD-12-compliant authentication and SSO functionalities, all with system-specific and redundant account management and authentication systems. Presently, the IT costs for these myriad systems are incorrectly captured by HRIT Inventory or Exhibit 53 data. Therefore, the HR LOB used an alternative method to quantify the costs associated with redundant authentication systems.

The methodology used to derive the costs of authentication and SSO functionalities is based on HR LOB and industry research estimates of time saved using SSO technology combined with available federal employee population and salary data. Based on available industry research and interviews with federal employees, the number of passwords and usernames required to access various IT systems and applications consumes large amounts of an employee's time. For example, the use of various usernames and passwords increases calls to Help Desks for password resets. It diminishes employee efficiency and usability experience in interacting with HR systems. Table 13 displays results from HR LOB interviews with federal staff, and provides a breakdown of the number of logons required by the person's role.

²³ Definition of Single Sign-On. Accessed on September 16, 2014 at: <http://www.gartner.com/it-glossary/sso-single-sign-on/>

²⁴ Definition of HSPD-12. Accessed on September 16, 2014 at: <http://www.dhs.gov/homeland-security-presidential-directive-12>

System	Role				
	Applicant	Candidate	Employee	HR/Pay Specialist	Retiree/Beneficiary
<i>USAJOBS</i>	X	X		X	
<i>TAS (USA Staffing, MGS, Avue)</i>	X	X		X	
<i>eQIP</i>		X	X		
<i>Onboarding Portal (EODS)</i>		X	X	X	
<i>Employee Portal (EEX, myPay)</i>			X	X	
<i>T&A (webTA, Paycheck, etc.)</i>			X	X	
<i>BENEFEDS (FEDVIP, FLTCIP)</i>		X	X		X
<i>FSAFEDS (FSA)</i>		X	X		X
<i>TSP</i>		X	X		X
<i>eOPF</i>			X	X	
<i>LMS</i>			X	X	
<i>Performance Management</i>			X	X	
<i>e-Travel</i>			X	X	
<i>Core HRIT</i>				X	
<i>Payroll</i>				X	
<i>Analytical Tool (SDM, EHRI)</i>				X	
<i>ER Case Management Tool</i>				X	
<i>Ret. Annuity Estimators (i.e., ESI, GRB)</i>				X	X
<i>Services Online Portal</i>					X
Totals	2	7	11	14	5

Table 13: Breakdown of Number of System Logons by Role

Based on the results of this analysis, the HR LOB estimated that HR staff manages up to 14 separate accounts for various HRIT systems. On average, approximately seven different accounts are managed across the roles shown in Table 13.

Many studies have investigated the impact of using SSO in work settings. Private sector studies of SSO capabilities indicate that average users can save between 8.1 and 14.6 minutes a day by using an efficient SSO capability. This yields an average time savings of 11.35 minutes per day.²⁵ This result was used in developing the cost estimate detailed below.²⁶

²⁵ Ponemon Institute. (2011). How Single Sign-On Is Changing Healthcare” Accessed on 26 June 2014 at: http://pages.imprivata.com/rs/imprivata/images/2011_ponemon_survey_how_sso_changing_healthcare.pdf

²⁶ The Ponemon Institute is a research institute that is owned by Imprivata, a privately-run company. The estimate of minutes saved with SSO data is included in this preliminary cost estimate with the understanding that this data may not be completely unbiased or objective. Due to the limited amount of publicly available data related to time savings for SSO, the HR LOB used this data with caution.

1. **Current Federal Population:** The analysis includes three main assumptions associated with the three employee groups detailed below:
 - i. **HR Personnel:** Given their daily interaction with these systems, HR personnel were assumed to log onto these systems every business day or at least 208 days of the year. The team concluded the population of HR personnel using an HR Servicing ratio is 1 HR Specialist for every 64.6 Federal Employees²⁷, and for the federal employee population of 2.1 million in Fedscope (June 2012), this equals 32,193 Federal HR Personnel.
 - ii. **Managers and Supervisors:** There is an estimated 200,000 managers employed by the Federal Government today.²⁸ For the purposes of this analysis, these 200,000 individuals are assumed to interact with HR systems twice per pay period, or 52 times a year.
 - iii. **Non-Supervisory Employees:** As indicated above, there are 2.1 million federal employees as of June 2012. The HR LOB subtracted the estimated number of Managers and Supervisors (results in “ii.” above) from the total number of HR personnel (the results of “i.” above) to prevent double counting staff, yielding a total of 1.8 million federal employees. These employees were assumed to interact with HR systems once per pay period, or 26 times a year.
2. **Average Time Saved by Single Sign-On:** A 2011 Ponemon Institute study^{Error!} **Bookmark not defined.** estimated that a SSO implementation saves an average time of 11.35 minutes for each day an employee requires access to IT systems. Using this mean time, the analysis derived the number of hours spent by different groups of employees each year logging into HRIT systems. Table 14 below provides details about this calculation.

Staff Group	SSO Calculation Details		
HR Personnel	11.35 minutes	x 208 days	= 39.4 hours/year (2,360 minutes/year)
Managers/Supervisors	11.35 minutes	x 52 days	= 9.8 hours/year (590.2 minutes/year)
Non-Supervisory Personnel	11.35 minutes	x 26 days	= 4.9 hours/year (295.1 minutes/year)
	Number of minutes saved per day	Number of days in year using the systems	Total time in calculation

Table 14: Breakdown of Calculation for Time Savings for Specific Employee Groups

3. **Average Federal Rate of Hourly Pay:** To derive the total cost of the above time estimates, the HR LOB used the average federal, permanent salary reported by OPM in the Common Characteristics of the Government Report (2012)²⁹ of \$76,353 and

²⁷ See HR LOB HR Benchmarking FY 2013.

²⁸ Federal Managers Association. Accessed on 31 March 2013 at <http://www.fedmanagers.org/About-FMA>

²⁹ Office of Personnel Management. (2013). Common Characteristics of the Government. Accessed on 31 March 2014 at <http://www.opm.gov/policy-data-oversight/data-analysis-documentation/federal-employment-reports/common-characteristics-of-the-government/common-characteristics-of-the-government-2012.pdf>.

divided it by the federal hourly rate of 2,087 provided by OPM Pay and Leave.³⁰ Thus, the average hourly rate of a federal employee is \$36.59/hour. Multiplying this hourly rate by the estimated time spent logging in; the HR LOB derived the results shown in Table 15.

Staff Group	SSO Calculation Details		
HR Personnel	39.35 hours/year	x \$36.59/hour	= \$1439.81 a person/year
Managers/Supervisors	9.84 hours/year	x \$36.59/hour	= \$360.05 a person/year
Non-Supervisory Personnel	4.92 hours/year	x \$36.59/hour	= \$180.02 a person/year
	Number of hours spent on systems not using SSO (from previous step)	Average Hourly Wage	Total Cost Per Year

Table 15: Details of Costs Based on Federal Average Salary

3.5.2 Scope of Analysis

This estimate is based on authentication and SSO productivity costs pertaining to the entire Federal Government employee population of approximately 2.1 million.

3.5.3 Results

Based on the results of the analysis in the previous steps, the HR LOB then multiplied the hourly pay rates by the current federal employee population of HR employees discussed in Appendix A sub-section 3.5.1 1.i. *HR Personnel* above, and then took the summation to arrive at the annual personnel-related lost productivity costs avoidable through SSO. Further details of this analysis are listed below in Table 16. The total current avoidable cost in personnel time and salaries is \$442.4 million.

Staff Group	SSO Calculation Details		
HR Personnel	\$1439.81 a person/year	x 32,193 staff	= \$46.4 million
Managers/Supervisors	\$360.05 a person/year	x 200,000 staff	= \$72.0 million
Non-Supervisory Personnel	\$180.02 a person/year	x 1,800,000 staff	= \$324.0 million
<i>Total</i>			Total: \$442.4 million
	Total Cost Per Person (in each group)	Average Federal Hourly Wage	Total Cost Per Year (In Millions)

Table 16: Final SSO Calculation

³⁰ Office of Personnel Management. (2014). Computing Hourly Rates of Pay Using the 2087 hour divisor. Accessed on 31 March 2014, accessed at <http://www.opm.gov/policy-data-oversight/pay-leave/pay-administration/fact-sheets/computing-hourly-rates-of-pay-using-the-2087-hour-divisor/>.

3.6 Retirement Annuity Estimators

3.6.1 Methods of Analysis

Retirement annuity estimators enable employees to plan for their retirement by modeling Civil Service Retirement System (CSRS) or Federal Employees Retirement System (FERS) benefits based on basic criteria (i.e., employee's last three years of salary, service history and type). Currently, there is no automated retirement application endorsed or used by OPM or other federal agencies. Many agencies rely on Commercial Off-The-Shelf (COTS) retirement annuity estimators during retirement counseling.

Within Retirement Services (RS), only cost data related to retirement annuity estimators, which comprises a small portion of the overall cost of federal retirement, was available. Additional HRIT retirement data not factored in this analysis included costs of case management solutions, as well as systems holding retirement data in various stages across the retirement case cycle.

The HRIT Inventory provides a window into the relative costs of these COTS offerings on a per-retiree basis. Exhibit 53 data does not provide any meaningful way to analyze these types of investments. However, there are 16 separate rows in Exhibit 53 corresponding to either one of the two major COTS retirement annuity estimator software from Government Retirement & Benefits, Inc. (GRB) and Economic Systems, Inc. (ESI). Although the initial intent of this analysis was to calculate HRIT costs related to Retirement Systems, this estimate was limited by the availability of RS data.

This analysis includes an assumption that approximately 100,000 (3 percent)³¹ of total agency employees separate through retirement each year.

3.6.2 Scope of Analysis

This cost estimate only pertains to the cost of retirement annuity estimators. As noted above, the cost of retirement annuity estimators in Federal agencies comprise a small amount of the entire HRIT cost associated with Federal retirement.

3.6.3 Results

This cost estimate resulted in the following findings:

- The price for these annuity estimators ranged from \$13.56 to \$229.73 per-retiree. There was no discernible pattern to these estimated per-retiree costs occurring at each agency.

³¹ This 100,000 employees (3%) retirement figure is based on an approximation of data available from OPM showing numbers of retirements by year. Projections over the past 5 years (2009-2013 equal 99,458 retirements). Accessed on May 20, 2014 at: <http://www.opm.gov/retirement-services/retirement-statistics>

- The weighted average of FY 2011 and FY 2012 retirement annuity estimator costs result in an average cost of \$73.93 per retiree.
- Since OPM RS processes approximately 100,000 retirement applications annually, the overall imputed cost of these retirement benefit annuity estimators is \$7.4 million a year.

4 Conclusion

4.1 Summary of Findings

In conclusion, this cost analysis serves as an important starting point in understanding current spending related to HRIT systems across the Federal Government. The HR LOB determined the estimated annual HRIT spending across the Federal Government using two different methodologies. Using the methodology based on HRIT Inventory data, the estimate of annual HRIT spend is \$1.7 billion. On the other hand, the methodology based on Exhibit 53 data produced an estimate of \$2.3 billion annual HRIT spend.

Beyond the spend estimates, this analysis helped to identify opportunities to decrease overall HRIT spending in the future, and specifically across the six opportunities investigated in this report. Table 17 shows overall estimated HRIT spending as well as each opportunity's resulting annual HRIT costs.

Sec.	Opportunity Area	Data Source	Estimate of Annual HRIT Costs
2.1	Overall HRIT Spend ³²	HRIT Inventory	\$1.7 billion
		OMB Exhibit 53	\$2.3 billion
3.1	Data Exchange and Interfaces	HRIT Inventory	\$19.3 million
3.2	Learning Management Systems (LMS)	HRIT Inventory	\$73.6 million
		OMB Exhibit 53	\$276.0 million
		HRITT Passback	\$94.1 million
3.3	Time and Attendance (T&A)	HRIT Inventory	\$30.9 million
		OMB Exhibit 53	\$112.2 million
		HRITT Passback	\$122.9 million
3.4	Electronic Performance Management Systems (EPMS)	HRIT Inventory	\$34.5 million
		OMB Exhibit 53	\$274.9 million
3.5	Single Sign On (SSO)	Other Sources ³³	\$442.4 million
3.6	Retirement Annuity Estimators	OMB Exhibit 300	\$7.4 million

Table 17: Current Estimated HRIT Costs

4.2 Challenges Identified During Analysis

As mentioned in the introduction, the HR LOB identified the challenge of agencies neither consistently nor completely reporting HRIT investments against the correct BRM code in their OMB 53 submissions. Additional challenges pertinent to this cost analysis include:

- Lack of clear definitions of agency reporting requirements related to HRIT systems

³² Total system costs enumerated above for Section 3.2 to 3.6 do not equal Section 2.1 Overall HRIT Spend total. This cost does not include HRIT spending for systems that are outside the scope of the opportunities identified in the HR LOB Strategic Plan (i.e., Payroll, Talent Acquisition).

³³ The SSO spending analysis used HR LOB estimates of logins, as well as industry sources for SSO costs, and OPM official sources for personnel-related costs.

- Lack of Standard Operating Procedures (SOPs) related to categorizing spending
- Lack of a current accurate reporting mechanism that meets HRIT financial reporting needs

These challenges limited the ability of the HR LOB to perform a complete analysis of the data, which resulted in only a preliminary cost estimate. A higher-level cost estimate, based on more substantial and concrete data, is targeted for future analysis.³⁴

4.3 Suggested Next Steps for HR LOB

Based on the findings of this analysis and the related state of the data, suggested next steps include:

- Development of clear definitions of required financial reporting components related to HRIT systems
- Further standardization of HRIT investment reporting mechanisms and SOPs to ensure more consistent and complete reporting and increased levels of transparency. The HR LOB proposes to redefine the processes and requirements that agencies use to complete their Exhibit 53 mapping to the BRM codes defined by the FEA model.

A deeper investigation of future HRIT spending based on this analysis should be conducted. Additionally, the HR LOB should conduct another thorough analysis of data received from “HRITT Passback” and PMA benchmarking data collection and analysis efforts related to LMS and T&A system data. Using this data, OPM and the Federal Government can collectively continue to build momentum to reduce HRIT spend in the future.

³⁴ As noted in the introduction, the current cost estimate is considered a Level 4 cost estimate. Cost estimates using higher quality data could result in cost estimates that would be considered level 1, 2, 3 cost estimates, as defined by AACEI. Accessed on April 10, 2014 at <http://www.aacei.org/non/rps/18R-97.pdf>

Appendix A-ii: HRITT Passback Results Comparison (T&A Results)

Agency	HRIT Inventory Per capita (FY 2012)	Exhibit 53 Per capita (FY 2012)	HRITT Passback Per capita (FY 2014)
DHS	\$ 54.13	\$ 14.94	\$ 59.13
DOC	\$ 15.40	\$ 14.94	\$ 50.38
DOI	\$ 72.16	\$ 3.22	\$ 57.38
DOL	\$ 101.17	\$ 14.94	\$ 320.57
DOJ	\$ 28.41	\$ 14.94	\$ 29.13
DOT	\$ 29.11	\$ 67.65	\$ 76.92
EDU	\$ 93.91	\$ 14.94	\$ 85.89
EPA	\$ 17.19	\$ 14.94	\$ 134.02
GSA	\$ 59.52	\$ 14.94	\$ 92.92
HUD	\$ 3.53	\$ 14.94	\$ 32.34
NARA	\$ 28.35	\$ 14.94	\$ 97.51
NASA	\$ 32.32	\$ 14.94	\$ 47.46
NRC	\$ 228.88	\$ 159.13	\$ 391.06
NSF	\$ 54.13	\$ 14.94	\$ 168.94
OPM	\$ 63.39	\$ 14.94	\$ 42.74
Peace Corps	\$ 14.54	\$ 14.94	\$ -
Smithsonian	\$ 54.13	\$ 14.94	\$ 42.74
SSA	\$ 46.07	\$ 14.94	\$ 46.81
State	\$3 48.64	\$ 14.94	\$ 77.44
Treasury	\$ 27.50	\$ 14.94	\$ 52.68
USAID	\$ 54.13	\$ 14.94	\$ 77.44
USDA	\$ 210.22	\$ 36.45	\$ 107.91
VA	\$ 18.34	\$ 14.94	\$ 59.13
HHS	\$ 54.13	\$ 27.92	\$ 22.71
DOE	\$ 54.13	\$ 82.11	\$ 77.44
DOD	\$ 54.13	\$ 5.67	\$ 59.13
SBA	\$ 54.13	\$ 14.94	\$ 77.44
Missing Values	6	20	10

Table 18: T&A Per-Capita Spending for HRIT Inventory, Exhibit 53, and HRITT Passback ³⁵

³⁵ Red text in the table denotes missing data that was replaced with average values.

Appendix A-iii: HRITT Passback Results Comparison (LMS Results)

Agency	HRIT Inventory Per capita (FY 2012)	Exhibit 53 Per capita (FY 2012)	HRITT Passback Per capita (FY 2014)
DHS	\$ 20.87	\$ 87.23	\$ 45.41
DOC	\$ 14.97	\$ 133.23	\$ 30.70
DOI	\$ 6.11	\$ 23.17	\$ 39.18
DOL	\$ 57.70	\$ 133.23	\$ 96.28
DOJ	\$ 6.70	\$ 133.23	\$ 63.61
DOT	\$ 9.86	\$ 51.89	\$ 11.17
EDU	\$ 7.99	\$ 133.23	\$ 112.71
EPA	\$ 28.24	\$ 26.63	\$ 3.09
GSA	\$217.50	\$ 357.89	\$ 71.77
HUD	\$ 35.50	\$ 133.23	\$ 25.59
NARA	\$ 35.50	\$ 133.23	\$ 77.12
NASA	\$ 37.20	\$ 133.23	\$ 55.83
NRC	\$123.40	\$ 87.71	\$ 54.28
NSF	\$ 35.50	\$ 133.23	\$ 446.21
OPM	\$ 5.91	\$ 83.03	\$ 240.44
PeaceCorps	\$ 11.19	\$ 133.23	\$ -
Smithsonian	\$136.13	\$ 133.23	\$ 240.44
SSA	\$214.24	\$ 133.23	\$ 24.21
State	\$ 35.50	\$ 133.23	\$ 40.22
Treasury	\$ 17.43	\$ 133.23	\$ 34.82
USAID	\$ 65.43	\$ 133.23	\$ 40.22
USDA	\$116.77	\$ 133.23	\$ 87.60
VA	\$ 3.93	\$ 133.23	\$ 45.41
HHS	\$ 35.50	\$ 47.22	\$ 13.98
DOE	\$ 35.50	\$ 173.03	\$ 40.22
DOD	\$ 35.50	\$ 170.94	\$ 45.41
SBA	\$ 35.50	\$ 133.23	\$ 40.22
Missing Values	8	17	10

Table 19: LMS Per-Capita Spending for HRIT Inventory, Exhibit 53, and HRITT Passback³⁶

³⁶ Red text in the table denotes missing data that was replaced with average values.

Appendix B: Business Challenges for Future Vision

While the HR LOB has achieved considerable success over the past decade through the migration of agencies to SSCs for “Core HR” services, there remain additional opportunities for improvement that provide the business challenges for the vision outlined in *Section 4: Future Vision*.

The resolution of these challenges will ensure that the HR LOB meets the goals that define the HR LOB Strategic Framework. These challenges, which have emerged throughout the HR LOB Strategic Framework’s development, OPM’s Strategic IT Plan, and CHCOC Future Vision, include:

Current State Section	Areas for Improvement
<p style="text-align: center;">Service Delivery 3.1</p>	The SDM only mandates agencies to use an SSC for “Core HR” Functions, enabling the continued existence of potentially duplicative HRIT systems that support “Non-Core HR” functions
	The HR LOB EA and the FEA are not completely aligned, resulting in inconsistent guidelines for federal HRIT service delivery
	Incomplete government-wide HRIT standards, guidelines, and requirements limit the full potential benefit of data exchange capabilities and data-driven human capital management decision making
	Proliferation of providers in “Non-Core HR” areas impacts OPM’s ability to effectively implement government-wide policy changes and inhibits the effective exchange of HC data
	Duplicative HRIT investments waste valuable government resources and inhibit modernization and innovation
	Absence of an existing vehicle to enforce the mandate to adopt a shared services model for “Non-Core HR” services prevents the full realization of cost savings that could be generated from the model
<p style="text-align: center;">HR Data Management 3.2</p>	Consistency of HR data standards could be improved in order to increase enterprise-wide data usage and enable cross-agency HR data integration
	Use of manual processes may lead to data entry inconsistencies

Current State Section	Areas for Improvement
	Unestablished ownership of standard government-wide data elements can be a cause of inconsistencies in employee records and inefficiencies in retirement processing
	Inconsistent security controls result from the lack of ownership of government-wide security policy and standards
<p style="text-align: center;">Investment and Acquisition Planning</p> <p style="text-align: center;">3.3</p>	Incomplete alignment between the FEA BRM and the HR LOB BRM leads to inconsistencies in HRIT spend reporting
	Inability to identify the efficacy of government-wide HRIT spend minimizes opportunities for furthering the OMB's "Shared-First" Strategy
	Development of an advisory role for HR LOB to support OMB in approving government-wide IT investments is needed to actively align federal HR strategy and agency HRIT spend
	Lack of flexibility in how SSCs fund their operations inhibits their ability to accumulate reserves in order to modernize their HRIT systems
	Inability of SSCs to access an alternative funding mechanism over an extended period of time creates a potentially unsustainable model and increases risk for the Federal Government
	Lack of a mechanism to fund innovations from which all SSCs and their customers can benefit leads to inefficient spending of limited government resources
	Lack of a government-wide approach to vendor management for HRIT increases the likelihood of federal agencies purchasing multiple instances of commercial products
Decentralized procurement across federal agencies may lead to duplicative investments and reduces the collective purchasing power of the Federal Government	

Current State Section	Areas for Improvement
	<p>Limited transparency leads to insufficient visibility into the federal marketplace for agency decision-makers regarding:</p> <ol style="list-style-type: none"> 1. HRIT vendor products and services that individual agencies have purchased 2. Requirements for customizations and configurations 3. Prices and rates paid for these products and services
<p>Authority 3.4</p>	<p>Lack of authority to expand the adoption of the Franchise Fund model reduces the ability to reinvest for HRIT innovation</p>
	<p>Lack of policy owners for several critical HR services (e.g., Payroll, T&A) limits the government’s ability to stand up cross-agency collaboration groups aimed at improving these services</p>
	<p>The absence of a clear mandate to adopt “Non-Core HR” services within OMB’s Competition Framework limits the potential in reducing system duplication</p>
<p>Governance 3.5</p>	<p>Provide the HR LOB with sufficient visibility into cross-council decision-making to ensure consistent, government-wide priorities for HRIT investments</p>
	<p>Reinvigorate the business requirements group that was originally included in the governance model</p>

Appendix C: Acknowledgements

The HR LOB Strategic Framework could not have been completed without the community of people and organizations involved in its development. Specifically, the following people and organizations should be acknowledged for their leadership, hard work, and participation in the Strategic Framework's vision and development:

- Angie Bailey, OPM COO
- Jon Foley, OPM PIO and MAESC Co-Chair
- Mark Reinhold, OPM CHCO and MAESC Co-Chair
- Donna Seymour, OPM CIO and MAESC Co-Chair
- Bernie Kluger, OPM Deputy PIO
- David Vargas, OPM Associate CIO and HR LOB Program Director
- Michael Torres, OPM Program Manager - HRIT Transformation
- Indu Garg, CHCOC HRIT Working Group Co-Chair
- Tom Mulhern, CHCOC HRIT Working Group Co-Chair
- CHCOC Working Group members
- CHCOC members
- MAESC members
- SSCAC members
- HR LOB PMO and its IBM contract support team

Additional subject matter experts are acknowledged on the following pages of Appendix C for their involvement in stakeholder sessions, interviews, and working groups.

Appendix C-i: Acknowledgements – Stakeholder Sessions

Listed below is a table of all subject matter experts (SMEs) that participated in stakeholder sessions conducted for the HR LOB Strategic Framework.

Meeting	Attendees (Organization)
February 25, 2013 CHCO Session on HRIT Consolidation	<ul style="list-style-type: none"> • Angela Bailey, Judith Rutkin and Kathryn Medina (OPM) • James Villarubia (DOJ) • Andrew McMahon (OMB) • Dustin Brown (OMB) • John Fox (DOE) • Cynthia Vaughan (VA) • Paula Molloy (VA) • Tom Mulhern and Pam Malam (DOI) • Anita Blair (Treasury) • Thomas Wheeler and Letitia Lawson (DOE) • Donna Seymour (DOD) • Gregg Pelowski and Carolyn Hadiji (DHS) • Joannie Newhart (EOP)
March 1, 2013 CIO Council Executive Committee HR LOB Presentation	<ul style="list-style-type: none"> • Steven Van Roekel and Lisa Schlosser (OMB)
March 5, 2013 MAESC Innovation Lab Session on HRIT Consolidation	<ul style="list-style-type: none"> • Joan Johnson and Carolyn Hadiji (DHS) • Aftab Bukari (DOC) • Deb Breining (DOD) • John Fox (DOE) • Chris Lawson (DOI) • Karen Humes-Dancy (DOJ) • Cathy Cestone (DOL) • Doug Townsend (State) • Joyce Woodard (DOT) • Vincent McKinney (ED) • Heidi Sheaffer (HHS) • Ricardo Osborne and Denis McGurin (HUD) • May Edwards and Neal Riddle (IC) • Nadine Tremper and Dan Costello (NASA) • Scott Bernard (OMB) • David Parks and John Moreira (Treasury) • Lindsey Willis (USAID) • Indu Garg (USDA) • Paula Molloy (VA) • Aimlee Scanlon and Joy Douglas (DCPAS) • Marcia Hawkins (DFAS) • Peter Russelburg (GSA) • Laura Glass (HHS) • Stephanie Robbs and LC Williams (IBC)

Meeting	Attendees (Organization)
	<ul style="list-style-type: none"> • Mark Liegey and Randy Speed (NFC) • Steve Dobberowsky and Deb Vess (Treasury)
<p>March 18, 2013 CHCO Session on HRIT Consolidation</p>	<ul style="list-style-type: none"> • Deb Breining (DOD) • John Fox and Letitia Lawson (DOE) • Chris Lawson and Tom Mulhern (DOI) • Michael Hornsby and Cecilia Trujillo (EOP) • Joanie Newhart (OMB) • Mohammed Schultz (State) • Anita Blair (Treasury)
<p>April 2, 2013 MAESC Innovation Lab Session on HRIT Consolidation</p>	<ul style="list-style-type: none"> • Aftab Bukari (DOC) • John Fox (DOE) • Chris Lawson and Tom Mulhern (DOI) • Karen Humes-Dancy (DOJ) • Cathy Cestone (DOL) • Doug Townsend and Cecelia Cooper (State) • Duane Lee (DOT) • Han Holmberg (ED) • Rob Senty (EPA) • Heidi Sheaffer and Raymona Ramsay (HHS) • Annette Jackson (HUD) • May Edwards and Neal Riddle (IC) • Nadine Tremper and Dan Costello (NASA) • Gerri Ratliff (NSF) • David Parks (Treasury) • Lindsey Willis (USAID) • Crystol Armstrong and Frank Camarillo (USDA) • Paula Molloy (VA) • John Turner and Joy Douglas (DCPAS) • James Atwater (GSA) • Laura Glass (HHS) • Karen Roper (IBC) • Tangie Joefield (NFC) • Steve Dobberowsky (Treasury)
<p>April 19, 2013 Cross-Council Data Group: Shared Services Project Team Meeting Regarding “Shared Services Scorecard”</p>	<ul style="list-style-type: none"> • Stephen Brockelman, Tigisty Berhe, Adam Hughes, John Karner, Craig Jennings, Casey Coleman, and Anthony Costa (GSA) • Norman Dong, Lisa Schlosser, Jonathan Porat, Dominic Sale, Emily Kornegay, Carrie Wibben, Thomas Gates, and Dustin Brown (OMB) • Nani Coloretti and Mark Reger (Treasury) • Peggy Sherry (DHS) • Lee Lofthus (DOJ) • Pam Malam (DOI) • Angela Bailey and Traci DiMartini (OPM) • Cheryl Cook (USDA)

Meeting	Attendees (Organization)
July 2, 2013 OPM Early Glimpse #1	<ul style="list-style-type: none"> • John La Rue (CPL) • Gary Lukowski (PPA) • Shanaz Porter, Sydney Smith-Heimbrock, Bill Brantley, and Linda Datcher (ES) • Ray Kirk (RS)
July 19, 2013 OPM Early Glimpse #2	<ul style="list-style-type: none"> • Randy Bergquist (DOJ) • Alan Spielman (OPM-HI) • Steve Driscoll (OPM-CLA) • Paul Craven, Will Peratino, Willie Harrison and Michelle Gilder (OPM-HRS) • Matt Perry and Colleen Crowley (OPM-FIS) • Vic Karcher (OPM-EHRI)
August 1, 2013 MAESC Working Group Meeting #1	<ul style="list-style-type: none"> • Joan Johnson and Carolyn Hadiji (DHS) • James Hoebel (DOC) • Joy Douglas (DOD) • Letitia Lawson (DOE) • Chris Lawson (DOI) • Karen Humes Dancy (DOJ) • Cathy Cestone (DOL) • Stephanie Robbs (DOT) • Karen Nichols (GSA) • Robert A Jacobs and Jim Martin (HHS) • Denis McGurin and Rick Osborne (HUD) • Nadine Tremper and Dan Costello (NASA) • Jeffrey Cunningham (NSF) • Neil Singh (OPM) • Dave Parks (Treasury) • Lindsey Willis (USAID) • Frank Camarillo (USDA)
August 20, 2013 Shared Service Center Advisory Council Tri-Annual Meeting	<ul style="list-style-type: none"> • Marcia Hawkins (DFAS) • Tami Henry, Vickie Jones, and Paul York (GSA) • Laura Glass (HHS) • Julie Bednar, Trina Crosser, Sam Doutrich, Dominick Graham, Pat Hallisey, Jodi Jenik, Jennifer Lorrigan, Tom Larson, Troy Newcombe, Linda Rihel-Todd, Leisa Schievelbein, Terrie Smigiel, Mark Stover, Cheryl Thomason, LC Williams, and Christine Zertuche-Rocha (IBC) • Billy Dantagnan, Anita Fincher, Cherie Landry, and Cindy Suarez (NFC) • Cecelia Cooper and Jeff Mounts (State) • Mike Cundiff, Steve Dobberowsky, and Nancy Smith (Treasury)
November 14, 2013 Joint MAESC/SSCAC Working Group	<ul style="list-style-type: none"> • Joan Johnson and Carolyn Hadiji (DHS) • Letitia Lawson (DOE) • Chris Lawson (DOI)

Meeting	Attendees (Organization)
	<ul style="list-style-type: none">• LC Williams (DOI – IBC)• Stephanie Robbs (DOT)• Karen Senkel (Education)• Rob Senty (EPA)• Laura Glass (HHS)• Natalie Edwards and Doug Smith (IC)• Dan Costello (NASA)• Chuck Lewis (SSA)• Matthew Smith (State)• Theresa Thompson (Treasury)• Steve Dobberowsky and Deborah Vess (Treasury – TSSC)• Freddie Morris, Cheryl Ruf, and John White (USDA – NFC)

Appendix C-ii: Acknowledgements – Interviews

Listed below is a table of all subject matter experts (SMEs) that participated in interviews conducted for the HR LOB Strategic Framework.

Organization	SME	Topic	Date
DAU – FAI	Bob Faulk	Data Standards and Data Exchange	8/6/2013
DAU – FAI	Stephen Gould	Data Standards and Data Exchange	8/6/2013
DAU – FAI	Tenley Truxell-Svenson	Data Standards and Data Exchange	8/6/2013
DHS	Helen Schmitz	Identity Access and Management SSO/PIV	7/8/2013
DHS	Paul Grassi	Identity Access and Management SSO/PIV	7/8/2013
DHS	Tom McCarty	Identity Access and Management SSO/PIV	7/8/2013
DOD – DCPAS	Joy Douglas	Retirement	6/14/2013
DOD – Navy	Mary Foley	Retirement Benefits Enrollment	6/19/2013
DOI	Chris Lawson	Cost Analysis	8/28/2013 9/6/2013
DOI	Larry Gross	eOPF	7/25/2013
DOI	Sandy Wells	Learning Management	7/29/2013
DOI – IBC	Ellen Galarowicz	Benefits Enrollment	8/28/2013
DOI – IBC	LC Williams	Time and Attendance	6/13/2013
DOI – IBC	Leisa Schievelbein	Benefits Enrollment	8/28/2013
DOI – IBC	Michael Colburn	Data Standards and Data Exchange	7/24/2013
DOJ	Randy Bergquist	Learning Management	7/29/2013
DOJ	Sandra Gangadhar	Cost Analysis	11/15/2013
DOJ	Terry Cook	Cost Analysis	11/15/2013
DOJ	Trevor Norris	Cost Analysis	11/15/2013
GSA	Angela Smith	Identity Access and Management SSO/PIV	8/28/2013
GSA	Deb Gallagher	Identity Access and Management SSO/PIV	8/28/2013
GSA	Greg Gershman	Identity Access and Management SSO/PIV	6/20/2013
GSA	Hope Dolan	Data Standards and Data Exchange	8/6/2013
HHS	Laura Glass	Cost Analysis	11/15/2013
HUD	Pat Evans	Identity Access and Management SSO/PIV	6/24/2013
NASA	Christopher Carlson	Data Standards and Data Exchange Authentication and SSO Retirement	7/12/2013

Organization	SME	Topic	Date
NASA	Dan Costello	Data Standards and Data Exchange Authentication and SSO Retirement	7/12/2013
NSF	Gerri Ratliff	Learning Management	7/1/2013
OMB	Benjamin Sweezy	Data Standards and Data Exchange	6/6/2013
OPM	Alan Spielman	Benefits Enrollment, Counseling, and Data Management Benefits Strategic Plan	7/15/2013 12/4/2013
OPM	Angelo Cueto	Benefits Enrollment and Counseling	7/16/2013
OPM	Barbara Colchao	Talent Management Performance Management	7/23/2013
OPM	Bill Brantley	Learning and Talent Management	6/10/2013
OPM	Bob Heim	Reciprocity and Adjudication	7/19/2013
OPM	Brenda Roberts	Time and Attendance	9/9/2013 1/15/2014
OPM	Charlene Heermans	Benefits Enrollment	6/12/2013
OPM	Charlotte Lewis	Benefits Enrollment	7/10/2013
OPM	Christine Hunter	Benefits Enrollment	6/5/2013
OPM	Chuck Simpson	Identity Access and Management SSO/PIV eOPF Data Standards and Exchange	6/21/2013
OPM	Colleen Crowley	Reciprocity and Adjudication	6/21/2013
OPM	Corky Conyers	Data Standards and Data Exchange	6/24/2013
OPM	Dan Thibodeau	Identity Access and Management SSO/PIV	7/24/2013
OPM	Daniel McKay	Time and Attendance	6/21/2013
OPM	Dave Vargas	Time and Attendance	8/6/2013
OPM	Dean Hunter	Reciprocity and Adjudication	7/21/2013
OPM	Dennis Hardy	Benefits Data Management	7/17/2013
OPM	Dianna Saxman	Strategic Vision-SSC Data Call	7/16/2013
OPM	Donna Ifft	Benefits Enrollment	6/12/2013
OPM	Eric Figg	Benefits Enrollment	4/25/2013
OPM	Gary Lukowski	Learning Management	5/2/2013
OPM	Gary Worley	Learning Management	5/2/2013
OPM	George Price	Strategic Vision-SSC Data Call	7/16/2013
OPM	Greg Nagel	Cost Analysis	8/12/2013
OPM	Jason Parman	Strategic Vision-SSC Data Call	7/16/2013
OPM	Jay Fritz	Benefits Enrollment	4/25/2013
OPM	Jeanne Jacobson	Time and Attendance	9/9/2013 1/15/2014

Organization	SME	Topic	Date
OPM	Jeff Flora	Reciprocity and Adjudication	6/28/2013
OPM	Jim Hall	Cost Analysis	12/4/2013
OPM	Jodi Miller	Time and Attendance	6/5/2013
OPM	Johari Rashad	Learning and Talent Management	6/10/2013
OPM	John Barone	Benefits Enrollment Benefits Counseling Retirement	6/6/2013
OPM	John O'Brien	Benefits Enrollment and Data Management	7/10/2013
OPM	Jon Foley	Benefits Enrollment Benefits Counseling Retirement	6/19/2013
OPM	Karen Lebing	Talent Management Performance Management	7/23/2013
OPM	Kathleen Healy	Benefits Strategic Plan	12/4/2013
OPM	Ken Zawodny	Retirement	6/26/2013 8/27/2013
OPM	Larry Wells	Time and Attendance	1/16/2014
OPM	Leslie Pollack	Strategic Vision-SSC Data Call	7/16/2013
OPM	Linda Datcher	Learning Management	5/1/2013 6/20/2013
OPM	Lynn Gebrowsky	Reciprocity and Adjudication	10/1/2013
OPM	Marc Bromley	Benefits Enrollment and Counseling	7/9/2013
OPM	Marianne Ndekey	Learning Management	5/1/2013
OPM	Mark Reinhold	Cost Analysis	8/14/2013
OPM	Mary Robertson	Learning Management	6/20/2013
OPM	Mary Volz-Peacock	Data Standards and Data Exchange	6/24/2013
OPM	Matt Perry	Reciprocity and Adjudication Retirement	6/21/2013 9/5/2013
OPM	Merle Townley	Benefits Enrollment Benefits Data Management Benefits Strategic Plan	4/25/2013 7/10/2013 12/4/2013
OPM	Merton Miller	Reciprocity and Adjudication	6/17/2013
OPM	Michelle Gilder	Identity Access and Management SSO/PIV	7/24/2013
OPM	Mindy Davis	Reciprocity and Adjudication	7/21/2013
OPM	Monique Kelly	Benefits Enrollment Benefits Counseling	6/10/2013
OPM	Nick Ashenden	Retirement	8/27/2013 9/5/2013
OPM	Ray Kirk	Benefits Counseling Retirement	6/11/2013

Organization	SME	Topic	
OPM	Rebecca Ayers	Performance Management	
OPM	Reggie Brown	Strategic Vision-SSC Data Call	7/16/2013
OPM	Stephen Schultz	Cost Analysis Strategic Vision-CPIC	
OPM	Sydney Smith-Heimbrock	Learning and Talent Management	6/10/2013
OPM	Tameka Gillis	Time and Attendance	
OPM	Tanya Bennett	Time and Attendance	1/16/2014
OPM	Tom Kingdom	Learning and Talent Management	
OPM	Trieu Nguyen	Benefits Data Management	7/24/2013
OPM	Trisha Prasnikar	Reciprocity and Adjudication	
OPM	Vic Karcher	eOPF Identity Access and Management SSO/PIV	6/12/2013 10/31/2013
OPM	Voni Fletcher	Retirement	
OPM	Will Peratino	Learning Management	7/24/2013
OPM	Willie Harrison	Learning Management	
SSA	Kathy Grantland	Retirement Benefits Counseling Benefits Enrollment and Retirement	6/26/2013 7/2/2013
SSA	Ken Laskowsky	Benefits Enrollment and Retirement	
State	Cecelia Cooper	Global Pay	8/8/2013
State	Jeff Mounts	Global Pay	
Treasury	Anita Blair	Cost Analysis	9/9/2013
Treasury	Bill Taylor	Cost Analysis (Learning Management)	
Treasury	Candace Trott	Cost Analysis	9/9/2013
Treasury	Cindy DeCoster	Cost Analysis (Learning Management)	
Treasury	David Parks	Cost Analysis	9/9/2013
Treasury	Dawn Philips	Cost Analysis	
Treasury	Jeff Cain	Cost Analysis (Learning Management)	11/12/2013
USDA	Adam Zeimet	Identity Access and Management SSO/PIV	
USDA	Darius Jamshidi	Cost Analysis	11/22/2013
USDA	Pam Weber	Identity Access and Management SSO/PIV	
USDA	Shari Erickson	Identity Access and Management SSO/PIV	8/12/2013
USDA – NFC	Adrienne Riviere	Benefits Enrollment and Data Management	
USDA – NFC	Brian Sanford	Benefits Enrollment	7/15/2013

Organization	SME	Topic	Date
USDA – NFC	Cherie Landry	Benefits Enrollment	7/15/2013
USDA – NFC	John White	Time and Attendance Benefits Enrollment and Data Management	6/18/2013
USDA – NFC	Randy Speed	Time and Attendance Benefits Enrollment and Data Management	6/18/2013
USDA – NFC	Robert Nobles	Benefits Enrollment and Data Management	7/10/2013
USDA – NFC	Tangie Joefield	Benefits Enrollment	7/15/2013
USPS	Al Woods	Retirement	6/19/2013
USPS	Frank McGraw	Retirement	6/19/2013
VA	Denise Collins	Retirement	7/24/2013
VA	Erin Andrews	Benefits Enrollment and Counseling Retirement	7/15/2013 7/24/2013
VA	Tia Lewis	Benefits Enrollment and Counseling Retirement	7/15/2013 7/24/2013

Appendix C-iii: Acknowledgements – Working Groups

Listed below is a table of all SMEs that participated in technical working group sessions conducted for the HR LOB Strategic Framework.

Organization	SME	Topic	Date
DOD	Barbara Zakrison	Retirement	12/11/2013
DOI	Dave Hudson	SSO and Authentication	12/6/2013
DOI	Patty Houghton	Retirement	12/11/2013
DOI – IBC	Bob Hamlett	Retirement	12/11/2013
DOI – IBC	Karen Marietta	Retirement	12/11/2013
DOI – IBC	Lynette Murray	SSO and Authentication	12/6/2013
EPA	Rob Senty	Electronic Performance Management	12/11/2013
OPM	Alan Spielman	Benefits	11/25/2013 12/4/2013 1/15/2014
OPM	Amen Mashariki	Benefits	1/15/2014
OPM	Anne Easton	Benefits	1/15/2014
OPM	Bernie Kluger	Benefits	1/15/2014
OPM	Bill Brantley	Learning Management	12/16/2013
OPM	Candace Gill	Benefits	1/15/2014
OPM	Dave Vargas	Benefits	1/15/2014
OPM	Dennis Hardy	Benefits	1/15/2014
OPM	Doug Berger	Retirement	12/11/2013
OPM	Gary Lukowski	Time and Attendance	12/4/2013
OPM	Heather Beard	Time and Attendance	12/4/2013
OPM	James Metzler	Time and Attendance	12/4/2013
OPM	Jay Fritz	Benefits	1/15/2014
OPM	John O'Brien	Benefits	1/15/2014
OPM	Jon Foley	Benefits	1/15/2014
OPM	Karen Simpson	Learning Management System	12/16/2013
OPM	Kathleen Healy	Benefits	12/4/2013 1/15/2014
OPM	Ken Zawodny	Retirement	12/11/2013
OPM	Lloyd Williams	Benefits	1/15/2014
OPM	MC Price	Data Exchange and Data Standards	12/5/2013
OPM	Merle Townley	Benefits	11/25/2013 12/4/2013 1/15/2014
OPM	Myriam Mayobre	Electronic Performance Management	12/5/2013
OPM	Pam Israel	Retirement	12/11/2013

Organization	SME	Topic	Date
OPM	Rebecca Ayers	Electronic Performance Management	12/5/2013
OPM	Shanaz Porter	Learning Management System	12/16/2013
OPM	Steve Shih	Electronic Performance Management	12/5/2013
OPM	Tamika Gillis	Time and Attendance	12/4/2013
State	Matt Smith	Retirement	12/11/2013
Treasury	Michael Cundiff	Time and Attendance	12/3/2013
Treasury	Rick Culotta	Electronic Performance Management	12/11/2013
Treasury	Sherry Curtis	Retirement	12/11/2013
Treasury	Steve Dobberowsky	Electronic Performance Management	12/11/2013
Treasury	Theresa Thompson	SSO and Authentication	12/6/2013
Treasury	Virginia Towe	Retirement	12/11/2013
USDA – NFC	Alan Bowman	Electronic Performance Management	12/11/2013
USDA – NFC	Dana Esposito	Time and Attendance	12/3/2013
USDA – NFC	Shavon Butler	Time and Attendance	12/3/2013

Appendix D: Authorities

The HR LOB Strategic Framework’s opportunities for cost savings and consolidation as discussed in Section 5 are supported by federal legislation, regulations, policy, and initiatives. The table below shows how these authorities are aligned to the opportunities.

Source of Authority or Approach	Opportunity Alignment
<u>Legislation, Regulations, and Policy</u>	
E-Government Act	<ul style="list-style-type: none"> All Opportunities
Economy Act	<ul style="list-style-type: none"> All Opportunities
Clinger-Cohen Act	<ul style="list-style-type: none"> All Opportunities
Government Performance And Results Act and Modernization Act (GPRA MA)	<ul style="list-style-type: none"> All Opportunities
Privacy Act	<ul style="list-style-type: none"> All Opportunities
OMB Budget Circulars (e.g., A-11, A-127)	<ul style="list-style-type: none"> All Opportunities
Telework Enhancement Act of 2010	<ul style="list-style-type: none"> Time and Attendance
Affordable Care Act	<ul style="list-style-type: none"> Time and Attendance
5 USC	<ul style="list-style-type: none"> Learning Management (§ 4101)
5 CFR	<ul style="list-style-type: none"> Electronic Performance Management (§ 430) Learning Management (§ 410, § 412, Part 9.2)
Executive Orders and Presidential Directives	<ul style="list-style-type: none"> Single Sign On (HSPD-12)
OMB Memoranda	<ul style="list-style-type: none"> Competition Framework (All Opportunities)
<u>Initiatives</u>	
Federal Data Center Consolidation Initiative (FDCCI)	<ul style="list-style-type: none"> Learning Management Electronic Performance Management Time and Attendance
Cloud First	<ul style="list-style-type: none"> Learning Management Electronic Performance Management Time and Attendance
Portfolio Management and Transparency (PortfolioStat/Tech Stat/IT Dashboard)	<ul style="list-style-type: none"> All Opportunities
Challenge.Gov (Challenge and Prize Competitions)	<ul style="list-style-type: none"> All Opportunities
Federal Strategic Sourcing Initiative (FSSI)	<ul style="list-style-type: none"> Learning Management Electronic Performance Management Time and Attendance
Federal IT Shared Services Strategy	<ul style="list-style-type: none"> All Opportunities
HRStat Sessions	<ul style="list-style-type: none"> All Opportunities
Open Data Initiative	<ul style="list-style-type: none"> Retirement

Appendix E-i: Glossary - Acronyms

Acronym	Definition
BFE	Budget Formulation and Execution
BRM	Business Reference Model
CBA	Cost Benefit Analysis
CHCO	Chief Human Capital Officers
CHCOC	Chief Human Capital Officers Council
CIO	Chief Information Officer
CM	Case Management
CONOPS	Concept of Operations
COTS	Commercial Off The Shelf
CPIC	Capital Planning and Investment Control
DAIP	Disaster Assistance Improvement Program
DM	Data Model
EA	Enterprise Architecture
EBC	Exception Business Case
E-Gov	E-Government Act of 2002
EHRI	Enterprise Human Resource Integration
eOPF	Electronic Official Personnel Folder
EPMS	Electronic Performance Management System
EUSS	End User Systems and Support
FAS	Federal Acquisition Service
FEA	Federal Enterprise Architecture
FERS	Federal Employee Retirement System
FERS-FRAE	Federal Employees Retirement System as Further Revised Annuity Employees
FHA	Federal Health Architecture
FICAM	Federal Identity, Credential, and Access Management
FM	Financial Management
FSSI	Federal Strategic Sourcing Initiative
FSSI DDS2	Express and Ground Domestic Delivery Services
FSSI IS	Information Services
FSSI MRO	Maintenance, Repair and Operations Supplies
FSSI OS2	Office Supplies
FSSI PM	Print Management
FY	Fiscal Year
GAO	Government Accountability Office
GEO	Geo-information delivery

Acronym	Definition
GM	Grants Management
GMRA	Government Management Reform Act of 1994
GRDR	OPM's Guide to Retirement Data Reporting
GSA	General Services Administration
HC	Human Capital
HCM	Human Capital Management
HR	Human Resources
HR LOB	Human Resources Line of Business
HRIT	Human Resources Information Technology
HRITT	Human Resources Information Technology Transformation
IAD	Institute for African Development
IRB	Investment Review Board
IRM	Information Resources Management
IRR	Individual Retirement Record
ISS	Information Systems Security
IT	Information Technology
ITDS	International Trade Data System
ITI	Information Technology Infrastructure
JPAS	Joint Personnel Adjudication System
LCMS	Learning Content Management System
LMS	Learning Management System
MAESC	Multi-Agency Executive Strategy Committee
OFPP	Office of Federal Procurement Policy
OMB	Office of Management and Budget
OPM	Office of Personnel Management
PA	Provider Assessment
PM	Performance Model
PMA	President's Management Agenda
RS	Retirement Services
SCM	Service Component Model
SDM	Service Delivery Model
SLA	Service Level Agreement
SME	Subject Matter Expert
SOP	Standard Operating Procedure
SSC	Shared Service Center
SSCAC	Shared Service Center Advisory Council
SSO	Single Sign-On
SSP	Shared Service Provider
SSLC	Strategic Sourcing Leadership Council

Acronym	Definition
SSO	Single Sign-On
T&A	Time and Attendance
TM	Technical Model
TSSC	Treasury Shared Service Center
WCF	Working Capital Fund

Appendix E-ii: Glossary - Definitions

Term	Definition
“Shared-First” Strategy	OMB’s Federal IT Shared Services Strategy, released in May 2012, that calls on agencies to use IT Shared Services to improve government-wide returns on IT investment (ROI), close productivity gaps, and increase communications with stakeholders
2013 President’s Management Agenda for Government Innovation	Issued in the FY 2015 Budget and calls for “Creating a 21 st Century Government” through improved effectiveness, efficiency, economic growth, people and culture, and results.
Appropriated Funding	Funds delegated to agencies by Congress. SSCs operating under appropriated funding receive appropriations from Congress as part of the parent agency’s budget process. This option is typically used for modernization projects when other funding alternatives are unfeasible.
Capital Planning and Investment Control (CPIC)	Decision-making process for ensuring IT investments integrate strategic planning, budgeting, procurement, and the management of IT in support of agency missions and business needs
Clinger-Cohen Act of 1996	Requires agencies to use a disciplined CPIC process to acquire, use, maintain and dispose of information technology.
Core HR Services	HR services that agencies are required to receive from SSCs as pursuant to the HR LOB Service Delivery Model
E-Government Act of 2002	Requires agencies to support government-wide E-Gov initiatives, leverage cross-agency opportunities, and establish a process for determining which government information the agency intends to make available and accessible to the public on the Internet and by other means.
Franchise Fund	GMRA of 1994 authorized the Director of OMB to establish six franchise fund pilot programs. SSCs operating under the Franchise Fund receive funding through fees charged to customers for services. SSCs can accrue a “reasonable” operating reserve for acquisition of HRIT investments and improvements by retaining up to 4percent of total annual income.
FY14 Cost Analysis of HRIT	Part of the <i>Discovery Phase</i> of the HR LOB Strategic Framework. Evaluation of existing government-wide investment planning mechanisms, provided insight into current HRIT spend transparency, and resulted in an agency-specific breakdown of HRIT investments
HRIT Transformation 2015 Passback	Data collection effort that was used by agencies for reporting current and planned spending for IT systems and/or shared services for Learning Management Systems and Time and Attendance

Term	Definition
Non-Core HR	HR services that agencies can either receive from SSCs or deliver locally at the agency-level as pursuant to the HR LOB Service Delivery Model
Shared Service Provider (SSP)	Used throughout the Strategic Framework to refer to SSCs (see below) and any additional providers (e.g., OPM and Centers of Excellence).
Shared Service Center (SSCs)	Used throughout the Strategic Framework to refer to the approved HR LOB Shared Service Centers and payroll providers.
Strategic Sourcing	Structured process based on spend analysis to make business decisions about acquiring commodities and services more efficiently and effectively
Strategic Visioning Sessions	Part of the <i>Discovery Phase</i> of the HR LOB Strategic Framework. Consisted of sessions that included stakeholders from the CHCOC, CHCOC HRIT Working Group, HR LOB Multi-Agency Executive Strategy Committee (MAESC), HR LOB SSCs, and subject matter experts (SMEs), and highlighted the current landscape and the future state for HRIT in the Federal Government.
Strategy to Separation	Term used to represent the entire employee lifecycle and is in reference to the HR LOB Business Reference Model (BRM) that outlines 10 HR sub-functions across four phases: 1) Strategize, Organize and Plan, 2) Acquire, 3) Sustain, and 4) Separate.
Working Capital Fund	SSCs operating under this funding model receive funding through fees charged to customers for services. SSCs may use this funding for planned technology refreshes for hardware and software in the year collected.