Legislative Council Staff
Nonpartisan Services for Colorado's Legislature

Memorandum

February 1, 2024

TO: Executive Committee of the Legislative Council
            Joint Technology Committee

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SUBJECT: Information Technology Budget Request

Summary

The legislature's information technology (IT) team, also called Legislative Information Services (LIS), is responsible for technology in the legislature and is part of Legislative Council Staff. LIS provides information technology services and support to all legislative staff, legislators, and to some extent, the public. Areas covered by the team include:

- infrastructure: network servers, storage, backup, equipment, wireless networks, etc.;
- support: desktop, mobile devices, printers, audio/video, helpdesk, support services, etc.;
- cybersecurity: incident response, risk management, threat monitoring, etc.; and
- application development: custom software applications, website, software products, etc.

Table 1 provides a brief summary of staff's recommendations for IT budget requests. Totaling $92,495 and 0.3 FTE Cash Funds in FY 2023-24, and $1,601,800 General Fund and 6.0 FTE in FY 2024-25, the request includes funding in the following areas:

- **Google Workspace Enterprise Plus**. This request would provide Google Workspace accounts, including enterprise email accounts, to members and staff. The request includes a one-time request of $92,495 and 0.3 FTE from the Legislative Department Cash Fund in FY 2023-24 and a total of $185,000 General Fund and 1.0 FTE in FY 2024-25. *See page 4 for more information.*

- **Accessibility compliance.** A total of $1,246,800 General Fund and 4.0 FTE in FY 2024-25. This includes a net $861,800 in ongoing operating requests and $385,000 in base salary requests for two "document remediators," a "UX/UI designer," and a "front end developer." *See page 6 for more information.*

- **General.** General requests include $95,000 base salary and 1.0 FTE for a business/quality assurance analyst, an ongoing $60,000 to maintain and upgrade the audio visual system in two committee rooms per year on a rotating basis, and an ongoing $15,000 to update the legislature's VMware server virtualization software license. *See page 11 for more information.*

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Table 1
LIS Information Technology Budget Request Summary

Request	FY 2023-24 Cash Fund*	FTE	FY 2024-25 General Fund	FTE
Google Workspace (*See page 4 for more information.*)				
Implementation and migration	40,211*			
User accounts	24,784*		85,000	
New FTE: system administrator**	27,500*	0.3	100,000	1.0
Subtotal, Google Workspace	*$92,495**	*0.3*	*$185,000*	*1.0*
Accessibility Compliance (*See page 6 for more information.*)				
Vendor document remediation			931,000	
Accessibility software, total			41,800	
Accessibility audits			(111,000)	
New FTE: document remediators**			150,000	2.0
New FTE: UX/UI designer**			110,000	1.0
New FTE: front end developer**			125,000	1.0
Subtotal, Accessibility			*$1,246,800*	*4.0*
General Requests (*See page 11 for more information.*)				
New FTE: business/quality assurance analyst**			95,000	1.0
Committee room audio visual systems			60,000	
VMware server virtualization			15,000	
Subtotal, General Requests			*$170,000*	*1.0*
Total	**$92,495***		**$1,601,800**	**6.0**
Subtotal, ongoing operating requests			*$1,021,800*	
*Subtotal, new staff requests, base salary**			*$580,000*	*6.0*

*Legislative Department Cash Fund spending authority requested from the Executive Committee.

**Requested amounts are base salary only and do not include associated benefits and costs.

Google Workspace Enterprise Plus

On January 25, 2024, the Joint Technology Committee was asked to make a recommendation to the Executive Committee about whether the Legislative Department should purchase Microsoft M365 or Google Workspace user licenses. The Joint Technology Committee chose to recommend Google Workspace Enterprise Plus to the Executive Committee. This suite of products includes Gmail and Google Calendar, Docs, Sheets, Slides, Drive, Meet, Chat, and more.

LIS therefore respectfully requests one-time spending authority for $92,495 and 0.3 FTE from the shared agency account of the Legislative Department Cash Fund in FY 2023-24[1], and a total of **$185,000 General Fund and 1.0 FTE in FY 2024-25**, to purchase and implement Google Workspace Enterprise Plus accounts for legislators and staff. These requests are summarized in Table 2.

Table 2
Google Workspace Enterprise Plus Budget Request

Request	FY 2023-24		FY 2024-25	
	Cash Fund*	FTE	General Fund	FTE
Implementation & migration				
Resultant Implementation Services	31,211			
Cloud migrator, 600 mailboxes	9,000			
Subtotal, Implement. & migration	*$40,211*			
User accounts	**$24,784**		**$85,000**	
New FTE: system administrator**	**$27,500**	**0.3**	**$100,000**	**1.0**
Total	**$92,495**	**0.3**	**$185,000**	**1.0**

*Legislative Department Cash Fund spending authority requested from the Executive Committee.
**Requested amount is base salary only and does not include associated benefits and costs.

Implementation and migration. Staff recommends hiring *Resultant*[2] to partner with Google and staff to provide this implementation, at a one-time cost of $31,211 in FY 2023-24. In addition, staff recommends using the *Cloud migrator tool* to manage the migration of existing accounts, at a cost of $15 per account for an estimated 600 accounts, or $9,000.

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[1] Because the Legislative Department Cash Fund is continuously appropriated to the Executive Committee pursuant to § 2-2-1601, C.R.S, the cash fund appropriation does not need to be included in the Legislative Appropriations Bill.
[2] *https://resultant.com/*

User accounts. Google is charging the legislature annual license fees of approximately $100 per user for FY 2024-25, based on pricing available through the State Internet Portal Authority to the State of Colorado. Table 3 shows how the 850 accounts requested for FY 2024-25 are distributed between different types of users. Staff recommends budgeting for 770 accounts in FY 2023-24, which excludes accounts for new legislators and future growth, for four months at a cost of $24,784. The estimated cost for 850 user accounts in FY 2024-25 is $85,000.

FTE. The new email system and new state-provided accounts will create significant workload for the network system administration team. Because filling this position as soon as possible would ensure that the new email system is ready to implement in July and August, staff respectfully requests 0.3 FTE and $27,500 base salary (with the pay day shift applied) for a system administrator in FY 2023-24 from the Legislative Department Cash Fund. The request annualizes to 1.0 FTE and $100,000 General Fund in the Legislative Appropriations Bill for FY 2024-25. LIS will also experience increased workload to integrate Google Workspace into existing applications and systems. These costs can be absorbed within existing appropriations.

Costs do not reflect savings from no longer using HCL for email, since the legislature will continue to use HCL applications and will not incur significant savings.

Table 3
Google Workspace User Accounts Budgeted for FY 2024-25

User Group	# of Accounts	Note
Legislators	100	New state-provided accounts. Migration assistance from existing personal accounts is available
New Legislators	40	New accounts for transition following elections
Legislative Districts	100	New accounts, available to aides at each member's discretion
Existing Legislative Staff	370	Existing accounts; will be migrated
Shared accounts	200	Existing accounts; will be migrated. Shared email accounts for committees, functions, etc. (e.g. LCS.GA@coleg.gov)
Future growth	40	Purchased only when necessary
Total	**850**	The FY 2023-24 total of 770 users excludes new legislators and future growth.

Accessibility Compliance

Section 24-34-802, C.R.S., requires state digital resources and services to be accessible for persons with disabilities on or before July 1, 2024. In order to comply, staff respectfully requests an increase of **$1,246,800 ongoing General Fund and 4.0 FTE in FY 2024-25.** Table 4 categorizes these requests into requests to address the accessibility of documents, the accessibility of applications, and a continuing request for accessibility audits. This section of the memorandum explains LIS's approach to accessibility compliance and describes budget requests for each of these categories in more detail.

Accessibility Approach. Accessibility will need to be integrated into all aspects of the organization, including but not limited to procurement, governance, application development, and publications. Ensuring accessibility requires a three-part ongoing and iterative process as follows:

1. **Auditing.** Auditing allows staff to understand the scope and methodology of remediation that is required for each digital product.
2. **Remediation.** The remediation process implements the recommendations of the audit to ensure that digital content, applications, and the website are accessible.
3. **Accommodation.** Because resources are not sufficient to remediate all existing content, a process to ensure that we can accommodate users who need to access content that has not yet been remediated will be required.

Accessibility Roadmap. Staff's priority will be to bring all new content into compliance first. This is an ongoing effort as new content is created on a continual basis. Staff will then focus on identifying existing content for accommodation or remediation. Among the existing content identified for remediation, staff will prioritize more recent and mission-critical content.

Accessibility: Documents. Staff respectfully requests a total of **$1,117,800 General Fund and 2.0 FTE to address the accessibility of documents**. Specific uses for this money, as detailed in Table 4, include:

- $931,000 for vendor document remediation;
- $150,000 base salary for two in-house document remediators;
- $18,000 for 150 licenses of Adobe Acrobat Pro;
- $3,800 for five licenses of CommonLook PDF; and
- $15,000 for 200 licenses of Grackle for Google Workspace.

The following paragraphs include a description of the department's workload and process for document remediation, followed by detailed information about each of these requests.

Table 4
Accessibility Compliance Budget Request Detail

Request	Description	FY 2024-25 General Fund	FTE
Documents (See pages 6 through 10 for more information.)			
Vendor document remediation	Document remediation at a cost of $8.50/page, based on 85% of the number of PDF documents produced and posted on the website in 2023.	931,000	
FTE: document remediators*	In-house document remediators can facilitate needs for time-sensitive materials and accommodations.	150,000	2.0
Adobe Acrobat Pro	Required to produce accessible PDF documents. 150 users at $120/year.	18,000	
CommonLook PDF	Allows select staff to audit and remediate inaccessible PDF documents. 5 users at $760/year.	3,800	
Grackle for Google Workspace	Grackle facilitates the production of fully accessible documents from Google Workspace applications. 200 users at $75 per year.	15,000	
Subtotal, Documents		*$1,117,800*	*2.0*
Applications (See pages 10 and 11 for more information.)			
ReadSpeaker webReader	Enables website visitors to listen to the text on a webpage using a toolbar.	5,000	
FTE: UX/UI designer*	A new position responsible for designing the visual elements and layouts of applications to ensure accessibility for the end-user.	110,000	1.0
FTE: front end developer*	A new position responsible for the programming required to implement the UX/UI designer's specifications.	125,000	1.0
Subtotal, Applications		*$240,000*	*2.0*
Accessibility Audits (See page 11 for more information.)		(111,000)	
Staff anticipates a reduced need for funding accessibility audits of the legislature's documents, website, and applications; from $261,000 in FY 2023-24 to $150,000 in FY 2024-25.			
Total: Accessibility Compliance		**$1,246,800**	**4.0**

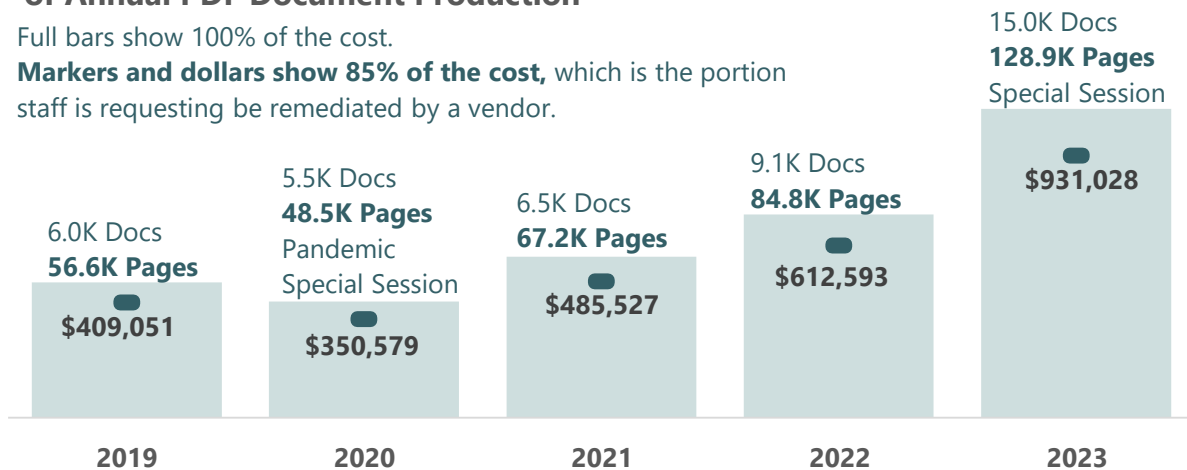*Requested amounts are base salary only and do not include associated benefits and costs.

Document remediation workload. The Legislative Department's current website, which went live in 2016, houses more than 85,000 PDF documents consisting of a total of close to 844,000 pages. This does not include legislative documents prior to 2016 available on the legacy website for prior sessions. Between 2019 and 2023, the legislature posted an average of approximately 80,000 pages within PDF documents on the legislature's website each year. However, as shown in Figure 1, the number of posted PDF documents and associated pages has increased steadily since 2019, with the exception of the 2020 pandemic. The trend would imply that, in order to remain compliant with new production in 2024, at least the amount of funding that would have been required in 2023 should be appropriated.

About half of these documents are legislation or documents related to legislation, such as amendments. Other documents include, but are not limited to: House and Senate calendars, journals, audits, fiscal notes, budget documents, the voter information guide, handbooks, memoranda, and documents provided to staff from persons testifying to legislative committees.

Figure 1. Vendor Remediation Cost of Annual PDF Document Production

Full bars show 100% of the cost.
Markers and dollars show 85% of the cost, which is the portion staff is requesting be remediated by a vendor.

Year	Docs	Pages	Note	Cost (85%)
2019	6.0K Docs	56.6K Pages		$409,051
2020	5.5K Docs	48.5K Pages	Pandemic Special Session	$350,579
2021	6.5K Docs	67.2K Pages		$485,527
2022	9.1K Docs	84.8K Pages		$612,593
2023	15.0K Docs	128.9K Pages	Special Session	$931,028

The document remediation process. This budget request incorporates three primary ways to remediate a document, as follows:

1. adjust the production process to produce accessible documents;
2. in-house remediation by select staff; and
3. vendor remediation.

Staff has itemized the number of documents expected to be produced for each major type of document and applied assumptions for how each would be remediated. While work has already begun on adjusting production processes to produce already accessible documents, that process

will likely take several years to fully implement. The requested budget assumes that 15 percent will be remediated by in-house staff and 85 percent will be remediated by a vendor.

Vendor document remediation ($931,000 requested). LIS is currently contracting with *CrownPeak*[3] to provide accessibility audits and remediation, and whom we expect will charge $8.50 per page to remediate most of the legislature's documents. We are therefore requesting $931,000, or the amount that would have been required to remediate approximately 85 percent of the PDF documents produced in 2023. Costs will be lower or higher based on whether the department produces fewer or more than during 2023, and based on the extent to which we receive accommodation requests for and/or if the vendor is able to remediate existing documents.

In-house document remediation ($150,000 base salary and 2.0 FTE requested). Staff respectfully requests $150,000 base salary to hire two in-house document remediators. This request assumes that in-house remediators will handle about 15 percent of PDF documents produced in FY 2024-25, as well as respond to most accommodation requests. In addition to the new FTE, we expect that another three existing staff will be able to provide in-house remediation on a regular basis, although that work will not be their primary responsibility.

In-house document remediation is generally cheaper and faster than vendor remediation. It is needed to facilitate the remediation of fast-moving or quickly changing documents, such as amendments, bill versions, and other legislative documents; and to respond in a timely manner to accommodation requests. *CrownPeak* charges an additional fee for expedited service, which is defined as a response time faster than its standard five to seven business days. In-house remediation can also be useful for remediating difficult documents, such as budget documents.

Document remediation software ($36,800). Staff respectfully requests a total of $36,800 General Fund to purchase the following software for document remediation:

- *Adobe Acrobat Pro*[4] ($18,000, 150 licenses at $120/year). The Legislative Branch currently purchases licenses for Kofax PDF, a direct competitor of Adobe Acrobat Pro for a significantly lower price. However, PDF documents produced by Kofax do not meet accessibility standards, whereas PDF documents produced by Adobe Acrobat Pro do meet accessibility standards.
- *CommonLook PDF*[5] ($3,800, five licenses at $760/year). CommonLook PDF is a software program that enables in-house staff to audit and remediate PDF documents.

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[3] *https://www.crownpeak.com/products/digital-accessibility-and-quality/*

[4] *https://www.adobe.com/acrobat.html*

[5] *https://commonlook.com/about/*

- *Grackle for Google Workspace*[6] ($15,000 for 200 licenses at $75/year). Grackle is a software add-on to Google Workspace that allows users to create fully accessible documents using Google Workspace applications such as Docs, Sheets, and Presentations.

Accessibility: Applications. Staff respectfully requests a total of **$240,000 General Fund and 2.0 FTE to address the accessibility of applications**. Specific uses for this money, as detailed in Table 4, include:

- $110,000 base salary and 1.0 FTE for a UX/UI designer (user experience / user interface designer);
- $125,000 base salary and 1.0 FTE for a front end developer; and
- $5,000 to purchase *ReadSpeaker webReader*.[7]

More information about each of these requests is included in the following paragraphs.

New application development staff (a total of $235,000 base salary and 2.0 FTE). The Legislative Department's application development team is either developing or maintaining more than 60 custom applications, the most highly visible of which are listed in *Appendix A on page 14.* The law requires each of these be accessible by July 1, 2024, and the workload required to comply has crowded out other development work. In addition, LIS does not currently have the right expertise on staff to fulfill this need and has instead been using salary vacancy savings to hire short-term contractors for that purpose, which is not sustainable.

Staff respectfully requests a UX/UI designer and a front end developer to address accessibility within the department's custom applications. The UX/UI (i.e. "user experience / user interface") designer is someone who is skilled in designing the visual elements and layouts of applications to ensure accessibility for the end-user. The front end developer is responsible for programming the user interface for applications to meet the compliance standards and specifications set by the UX/UI designer.

RealSpeaker webReader ($5,000). Staff respectfully requests $5,000 to purchase *RealSpeaker webReader*[8] for use on the Legislative Department's website. RealSpeaker webReader embeds a toolbar on a webpage to enable a user to listen to the content of the webpage. The toolbar includes play, pause, rewind, and forward buttons. This software is used by the U.S. Congress on *Congress.gov*, an example of which is available *here*[9] and depicted in Figure 2.

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[6] *https://workspace.google.com/marketplace/app/grackle_docs/1085622905455*

[7] *https://www.readspeaker.com/solutions/text-to-speech-online/readspeaker-webreader/*

[8] *https://www.readspeaker.com/solutions/text-to-speech-online/readspeaker-webreader/*

[9] *https://www.congress.gov/bill/118th-congress/house-bill/7024*. Please note that HR. 7024 was chosen for this example because it was readily accessible on Congress.gov, and was not chosen because of anything having to do with the content of the bill.

Figure 2. Example of Use by Congress of RealSpeaker webReader[10]

Summary: H.R.7024 — 118th Congress (2023-2024)
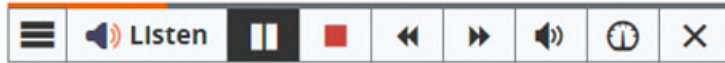
There is one summary for H.R.7024. Bill summaries are authored by CRS.

Accessibility audits ($111,000 decrease requested). Staff requests a decrease in the appropriation for accessibility audits performed by our vendor *CrownPeak*. Staff anticipates a decreased need for funding accessibility audits of the legislature's documents and applications, from $261,000 in FY 2023-24 to $150,000 in FY 2024-25.

General Information Technology Requests

Staff respectfully requests a total of **$170,000 General Fund and 1.0 FTE** for the following items, also listed in Table 5:

- $95,000 base salary and 1.0 FTE for a business / quality assurance (BA/QA) analyst;
- An ongoing $60,000 to provide funding to maintain and upgrade the audio visual systems in two committee rooms on a rotating basis each year; and
- $15,000 to upgrade and update the legislature's license with *VMware*, a service that allows the legislature to maximize the use of its existing servers by creating virtual servers in the cloud.[11]

More information about each of these requests is provided in the following paragraphs.

New business/quality assurance (BA/QA) analyst ($95,000 base salary and 1.0 FTE requested). Staff respectfully requests $95,000 base salary and 1.0 FTE to hire a BA/QA analyst. Business analysts and quality assurance analysts fill important roles in the development and maintenance of custom software applications. The business analyst works with users to determine how an application should work and documents these needs for the developers. After the developer programs to match this documentation, the quality assurance analyst tests the application to ensure that it meets the client's needs.

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[10] *https://www.congress.gov/bill/118th-congress/house-bill/7024*. Please note that HR. 7024 was chosen for this example because it was readily accessible on Congress.gov, and was not chosen because of anything having to do with the content of the bill.
[11] *https://www.vmware.com/*

This position would be responsible for both business and quality assurance analyst functions for certain applications. This approach creates better understanding of business processes and needs, improves product quality, improves developer productivity, and contributes to a decrease in technical debt. Adding this FTE will also improve cross-training and reduce the loss of institutional knowledge resulting from attrition.

Table 5
General Information Technology Budget Request Detail

Request	Description	FY 2024-25 General Fund	FTE
General Information Technology			
FTE: business / quality assurance analyst*	This FTE is requested to provide additional business requirements and quality assurance support to the programmers on the application development team.	$95,000	1.0
Committee room A/V systems	This ongoing request will allow staff to maintain and upgrade the audio visual system in two committee rooms per year.	60,000	
VMware server virtualization contract update	Allows staff to upgrade and update the legislature's license with *VMware*, a service that allows the legislature to extend existing servers onto virtual servers in the cloud.	15,000	
Total: General Requests		**$170,000**	**1.0**

*The requested amount is base salary only and does not include associated benefits and costs.

Committee room audio visual systems ($60,000 requested). Staff respectfully requests $60,000 on an ongoing basis to provide continual maintenance and upgrades to the audio visual systems in two committee rooms on a rotating basis per year. Given that the legislature currently has 14 committee rooms, this would ensure that the audio visual systems in each committee room are upgraded every seven years. Refreshing the equipment at regular intervals is important to maintain high performance, replace end-of-life (unsupported) equipment, maintain integrations and compatibility with newer technologies, and manage unexpected maintenance costs. Affected equipment includes, but is not limited to, microphones, speakers, and displays, digital signal processors, amplifiers, mixers, DMPS, and cabling.

VMware[12] server virtualization technology ($15,000 requested). Staff requests $15,000 to upgrade and update the legislature's license with *VMware*, a service that enhances the performance of our network while managing costs by extending our servers onto virtual servers located on the cloud. VMware is requiring its clients to update licenses from a perpetual to a subscription model. However, the bulk of the increase is the result of an upgrade in our license from "Standard" to "Enterprise." The upgrade will give our network access to a number additional resiliency features and simplify the deployment and configuration of server hosts.

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[12] *https://www.vmware.com/*

Appendix A: LIS Custom Applications

Recent and in-development applications. The following is a brief list of applications created in the past few years or currently in development. These applications increase automation in the legislative process and save time for legislative staff and members.

- Electronic Bill Sponsorship;
- CRS Publishing (XDOME):
- CDC/JTC Requests Tracking Application:
- Website rewrite:
- Budgeting system rewrite (CLIMBS);
- Committee witness electronic signup;
- Visitor Services tour reservation system;
- OLWR case management system;
- Interim committee management system;
- OSA Financial Recommendations system;
- LCS Research Request system;
- JBC Research Request system;
- Greenhouse Gas Reports and Demographic Notes Integration;
- Bill Status Reporting (CLICS Reporting System)/Fiscal Impact Reporting; and
- Box/iLegislate/CLICS Integration.

Existing applications. These are existing applications maintained by the LIS application development staff.

- Bill drafting, calendar, journal and committee management system (CLICS);
- Voting system (CLUVS);
- Budgeting system (CLIMBS);
- Legislative website;
- iLegislate;
- Live proceedings;
- OSA local government audits portal;
- Redistricting website;
- Initiatives/ballot system;
- Member history database; and
- Required reports database.

Future projects. Some of the projects planned for the future include, but are not limited to:

- Replace WordPerfect for bill drafting;
- Replace on-premises email and instant messaging system;
- Enhanced communication and collaboration tools;
- Website improvements:

- o   accessibility (in-progress);
- o   personalization;
- o   bill event notifications and subscriptions;
- o   advanced Search/Reporting;
- o   application programming interfaces; and
- o   data curation;
- One-stop administrative portal for legislators (aide hours, per diem approvals, notifications, subscriptions, etc.);
- Member self-service research request process;
- Automating journal and calendar creation;
- Automating enrolling;
- Digital annotating for amendments;
- Audio transcription;
- Agile process improvements;
- Quality assurance process improvements;
- Data and system architecture assessments and improvements;
- Information security improvements;
- Infrastructure resiliency; and
- Increased Cloud deployment.