MODERNIZING INFORMATION DELIVERY IN THE HOUSE

HEARING

BEFORE THE

SUBCOMMITTEE ON OVERSIGHT

OF THE

COMMITTEE ON HOUSE ADMINISTRATION
HOUSE OF REPRESENTATIVES

ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

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THURSDAY, JUNE 16, 2011

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON OVERSIGHT,
COMMITTEE ON HOUSE ADMINISTRATION,
Washington, DC

The subcommittee met, pursuant to call, at 10:07 a.m., in room 1310, Longworth House Office Building, Hon. Phil Gingrey (chairman of the subcommittee) presiding.

Present: Representatives Gingrey, Nugent, and Lofgren.

Staff Present: Phil Kiko, Staff Director and General Counsel; Peter Schalestock, Deputy General Counsel; Kimani Little, Parliamentarian; Joe Wallace, Legislative Clerk; Yael Barash, Assistant Legislative Clerk; Salley Wood, Communications Director; Linda Ulrich, Director of Oversight; Dominic Stoelli, Oversight Staff; Reynold Schweickhardt, Oversight Staff; Jamie Fleet, Minority Staff Director; Kyle Andersen, Minority Press Secretary; Matt Defreitas, Minority Professional Staff; Khalil Abboud, Minority Elections Staff; Thomas Hicks, Minority Elections Counsel; and Mike Harrison, Minority Professional Staff.

Mr. GINGREY. I will now call to order the Committee on House Administration Subcommittee on Oversight for today's oversight hearing on modernizing information delivery in the House. The hearing record will remain open for 5 legislative days so that Members may submit any materials that they wish to be included therein.

A quorum is present, so we may proceed.

Central and integral to our oversight responsibility is ensuring efficiency and transparency in how we, the House, create and disseminate legislative information. Today, we are interested in learning from our witnesses about how we can improve information delivery in the House, how we can improve the way we create and distribute legislative documents, and how we reduce costs and increase transparency.

I am eager to hear from our knowledgeable witnesses about their experiences and, of course, recommendations as we seek to improve both of these aspects: the creation and the delivery of legislative information.

In today's environment, we have no choice but to cut long-term costs, eliminate unnecessary printing, adapt to the electronic delivery of information, and bring more transparency, accessibility, and accuracy to the legislative process.

We are approaching the 20th anniversary of the GPO Electronic Information Access Enhancement Act of 1993, which began the transition to electronically based legislative information. Title 44, the statute governing our paper-based requirements, has not been seriously and properly reformed and updated in decades. Now is the time to reevaluate and revisit these laws and bring our information delivery system into this 21st century.

We need to reevaluate what documents we need to maintain in hard copy and which ones can be made solely available electronically. For example, it is estimated that only 3 percent of introduced bills in the House ever become law. However, the House spends $1.7 million annually printing all introduced bills, every one of them. And while we know from our last hearing, that for some publications approximately 70 percent of the costs are related to preproduction, perhaps it is worth considering only printing bills that are reported by committee or are actually going to be considered on the House floor.

Finally, we should utilize our collective wisdom. During the 112th Congress, both the Rules and the Natural Resources Committees have been experimenting with cost-savings measures in relation to markups and committee documents, respectively.

I would like to thank both Chairman Dreier and Chairman Hastings for their submitted statements describing what they have learned. I request unanimous consent that we include these two statements in the record. Hearing no objection, so ordered.

Again, I look forward to hearing from our witnesses as we continue to reduce government spending and increase efficiency and transparency.

I would now like to recognize my colleagues, starting with Congresswoman Lofgren, for the purpose of providing her opening statement. I turn it over to Congresswoman Zoe Lofgren.

Ms. LOFGREN. Thank you very much, Mr. Chairman. And I welcome today's hearing on modernizing information delivery in the House of Representatives. As a Member representing Silicon Valley, I know the importance that technology can have on adding productivity and maximizing efficiency in the workplace.

As I was mentioning to my colleague Mr. Walden, I first came here in the 1970s as a young staffer, and the House was using typewriters and carbon paper at that time, and something called a Robo Machine, which was a tape with little holes punched in it. When I came back as a Member in 1995, not every office had a computer, e-mail was in its infancy, most Members did not have Web pages. Blackberrys, smart phones, a necessity in today's work environment, weren't in wide use until after 2011.

Change sometimes comes slowly to a body that is based on traditions and precedent. However, we have been embracing new technology at an accelerated pace over the last 2 years, particularly under the leadership of Representative Bob Brady, the former chair of this committee, who I would like to single out for tremendous credit for the leadership that he showed in this area.

During the last Congress, the committee oversaw a number of technology initiatives for the House. We redesigned the house.gov Web site to make it easier for visitors to navigate. We initiated HouseLive, a searchable video database of floor proceedings. We

started posting statements of disbursements online, reducing the need for printed copies. We consolidated individual servers in Member offices to centralize location, reducing energy and resources required for computer operations, and also increasing cybersecurity.

We increased Internet bandwidth for most district offices, and installed a campus-wide wireless network. We started supporting Apple products, including desktops, iPhones and iPads, and we are testing Voice-over-Internet Protocol, known as VoIP, a system for House implementation.

These improvements help Members and their staff work more efficiently, but also provide the American people more access to information on our branch of government.

One of the most important partners that Congress has in terms of disseminating legislative information to the public is the Government Printing Office. And just as Congress has changed, adapted, integrated technology, so has the GPO. Going back to my first time here as a staffer, the GPO is not the same. When I started in the 1970s as a staffer, printing was an important function of the GPO, but they had around 8,000 employees at that time. The GPO today is down to 2,200. They have streamlined their workforce and are using technology. Since the GPO has started making government documents available online at gpo.gov, this has been one of the government's most visited sites.

On the ink and paper side, 70 percent of the printing GPO is responsible for is done by outside contractors. GPO's printing procurement program continues to be one of the government's longest-running partnerships with the private sector, saving millions of taxpayers' dollars per year, and creating jobs and tax revenues in States and localities nationwide. Moving forward, I hope the GPO continues to be a close partner with us in providing documents for the legislative branch and the general public.

I think it is important to have this hearing because although we have made tremendous progress, we always seek further improvements. And I look forward to hearing from our witnesses today, and yield back the balance of my time, Mr. Chairman.

Mr. GINGREY. Thank you, Congresswoman Lofgren.

Mr. GINGREY. Does any other Member wish to be recognized for the purpose of making an opening statement?

I would now like to introduce our first witness. The Honorable Greg Walden represents the Second Congressional District in the great State of Oregon. Elected in 1998, this is Congressman Walden's seventh term in the U.S. House. A former small business owner, he is chairman of the Energy and Commerce Subcommittee on Communications and Technology, and has served as chairman of the House Republican leadership since February of 2010. He is also a deputy whip, and he chaired the majority transition team for Speaker Boehner after the 2010 midterm elections. In that role, Congressman Walden and his colleagues analyzed House practices and procedures for ways to improve efficiencies, increase the effectiveness of the House, and to reduce costs to the taxpayer.

Congressman Walden has a bachelor of science degree from the University of Oregon, and was a member of the Oregon State House of Representatives from 1989 to 1995, and the Oregon State Senate from 1995 to 1997.

On the first panel, our second witness is my colleague, our colleague, the Honorable Michael Honda. Congressman Honda represents the 15th Congressional District of California. He is a member of the Appropriations Committee, a member of the Budget Committee, a House Democratic senior whip, and cochair of the Democratic Caucus's new media working group. Congressman Honda has been a California State Assembly member, a Santa Clara County Board supervisor, a San Jose planning commissioner, a Peace Corps volunteer in El Salvador, and a teacher, principal, and school board member. In 2000, Congressman Honda was elected to the House, where he has served ever since.

Ms. LOFGREN. And if the gentleman would yield, Mr. Honda is also my neighbor in Santa Clara County, and someone who I have served with in local and Federal Government for 30 years.

Mr. GINGREY. Very happy to yield to the ranking member. And that prompts me to say that Congressman Walden is my neighbor on North Carolina Avenue here in Washington. I wish he would keep his yard in a little bit better shape.

Finishing up with my introduction of Congressman Honda, he earned a bachelor's degree in biological sciences and Spanish, a master's degree in education from San Jose State University.

Congressmen, we both thank you for being here today. The committee has received your written testimonies, and I will recognize each of you for 5 minutes to present a summary of your submissions. To help keep that time, we have a timing device near the witness table. The device will emit a green light for 4 minutes, and it will turn yellow when 1 minute remains. And when the light turns red, it means your time has expired. For my colleagues, the gavel will be quite soft.

Congressman Walden, we will start with you. Please proceed.

STATEMENT OF THE HON. GREG WALDEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON

Mr. WALDEN. Thank you, Mr. Chairman. It is an honor and delight to be before your subcommittee here. I recognize you and your ranking member, Ms. Lofgren. And Congressman Nugent, always good to see you. I want to commend this committee, both in its current configuration and in its prior iterations, for the work it has continued to do in a bipartisan way to reform how the House operates.

When Speaker-designee Boehner asked me to chair the transition team, I approached it from the notion that it was the people's House, the public's business, the taxpayers' money, and they should have the right to watch and participate in the process, and that we had an obligation to make sure that their precious dollars were spent as efficiently and minimally as possible.

We created a 22-member team, including four freshmen. I reached out to Speaker Pelosi's office and asked them to designate Representatives from the Democratic Caucus. And they, fortunately, gave me two outstanding Members, Mr. Andrews and Bob Brady from this committee. We solicited every Member in the House, current, and their staff. I, like your colleague there, Chairman, served on congressional staff in the 1980s. And while I wasn't here to learn about the Robo-tape, when we got here I was the re-

cipient of the memory typewriter, though, because I was press secretary. That meant I didn't have to retype the Congressman's biography every time it needed to go out. I could push a button. It was remarkable. But we still had typewriters.

And then I was here when we got our first XT IBM PC and had to figure out that the floppy disk in the drive was the reason you couldn't do anything because it would give you that error message.

Anyway, you all understand that. We have come a long way, is the long and short of it. And as we approached the transition, I invited back people who had led transitions before. Jim Nussle, who coordinated the 1994 transition. I said, tell us lessons learned. What did you find? What did you change? The same with Mike Capuano. I asked him to have lunch with me. We had a delightful talk about things that worked, things that didn't, and how we could continue to restore faith and confidence in this institution and bring about efficiencies and transparency.

I know Jim Nussle mentioned that in 1994 they were still delivering ice to each office. Now, ice was a delivery that was begun before refrigeration and only stopped in 1995. And it saves taxpayers about a half a million dollars a year. So we began to look for ice buckets of our own. What was working, what wasn't? And in a bipartisan way, we decided the composting attempt didn't work. And both parties agreed that the way it was configured it was probably an idea ahead of its time and not as efficient or cost savings as anticipated. So it went away.

We also reduced our own budgets by 5 percent. We looked at a number of other things that needed to be done. And then we solicited the public. And I think your committee is the beneficiary of over 2,000 responses we got. Some of them you probably don't want to print publicly. But most of them were very helpful.

And the staff I think really were helpful. My wife and I were in small business for 22 years. And I always enjoyed filling in on the vacation shifts at our radio stations because I could really learn what our folks were dealing with firsthand and then work to improve and gain efficiencies.

If you go in my chief of staff's office or in our back legislative office in the Rayburn Building offices, you will see upwards of 50 file cabinets. Those originated in the days when you had typewriters and carbon paper and you filled files. Today, we click a place on a piece of software and file a document. So then that really leads us to how we can tighten our belts here.

GPO received $147.46 million in 2010, with $93.7 million appropriated for congressional printing and binding. I have before me here some documents that I am not saying you get rid of these, but let's talk about going forward, some make sense, some may not.

We always continue to improve. These are the statements of disbursements of the House. This is a set of documents that is published quarterly and distributed. Does everybody need one? Do we have to have them published? How big? How many? Every Congress, they do a congressional directory. Now, that is a pretty handy document. You may want to keep that in written form. But in today's world with the changes that occur every minute around here, maybe an electronic is actually more up to date and better.

There are periodic publications. Very nicely bound documents. This is Deschler-Brown-Johnson Precedents of the U.S. House, volume 17, chapters 34 through 40. Now, I was up last night going through chapter 17, but I am not sure everybody does this. No, I am kidding. I don't know who reads these other than the Parliamentarians and your colleague there. But do you need the printed copies? I don't know.

The calendars are delivered every day to the House. This is May and June piled here. A total of $2.3 million a year. Congressional Record, which we all dutifully vote on almost every day, $2.1 million, delivered to each House office when we are in session. And then we send out an index every 2 weeks to this directory. And I would wager there aren't many Members that spend much time reading the hard-bound copies.

The Federal Register gets published every day that the Federal Government is open. Is this the best form? Does it need to be distributed as widely as it is?

I just think these are questions that we should ask. As the chairman said, we spend $1.7 million each year on printing bills that we introduce, only 3 percent of which ever become law. Maybe we ought to print our own bills as needed, but not have them printed fully.

I realize—I couldn't see the clock, Mr. Chairman—my time has expired. I thank you for taking a look at these issues. I encourage you and applaud your work, and look forward to doing my part to be of assistance. Thank you, Mr. Chairman.

Mr. GINGREY. Thank you, Congressman Walden.

Mr. GINGREY. And now we will turn to Congressman Honda for his testimony.

STATEMENT OF THE HON. MICHAEL M. HONDA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. HONDA. Thank you. And good morning, Chairman Gingrey, Ranking Member Lofgren, and Mr. Nugent, for allowing me and asking me to testify today.

This hearing, Modernizing Information Delivery in the House, is extremely broad because as Members we receive information from many sources. This information is developed within the House by the Clerk's organization, the committees, and others, along with their Senate counterparts. Official legislative information is prepared and disseminated mainly through documents delivered in electronic and printed form by the Government Printing Office.

Bills have been introduced that would cut back or eliminate most congressional printing, which begs the question: Is Congress ready to go paperless? While I wish the answer were "yes," I am extremely doubtful that old ways can be changed on a dime. And we saw with the recent autopen signature of a bill by President Obama that not everyone is ready to bring our legislative process into the current century.

We are also not a society that likes to read and analyze everything digitally. We like to receive information digitally and then print electronic documents in sometimes multiple copies.

When it comes to GPO documents such as bills and reports, it may be more expensive to eliminate GPO prints, leaving offices

with only electronic copies that are printed at a higher rate. According to GPO, it costs taxpayers 7 cents for a Member's office to print a single-sided document. GPO can copy or print that same document for 5.5 cents. And if the GPO press were being used, it would cost taxpayers about 1 cent.

Also these bills assert that they would save money, and the estimates used are often inflated. During a recent hearing that we held in the Legislative Branch Appropriations Subcommittee, I was surprised to learn that according to GPO, approximately 68 percent of the costs producing the Congressional Record would be incurred, whether multiple copies were printed or not. This is the pre-press cost, which is used to create the electronic file form, which they upload online and also print. Again, 68 percent of the cost is incurred before the very first copy is printed.

GPO has made progress in using technology to cut down the amount of congressional records that it needs to print. When GPO started offering online access in 1994, about 18,000 copies of the Record were printed daily. Today, GPO prints 3,600 copies, about 900 of which are sent to local libraries and reading rooms in communities across the country for our constituents to access.

Now, GPO has surveyed the House and Senate for their continued need for print copies of the Record, along with other print documents like the Federal Register, the first survey of its kind. For those offices that have told GPO they want to opt out of the Record, they stopped those deliveries. The goal of some of these bills, to decrease Congress' paper usage, is laudable. I believe every Member can support moving towards a more paperless Congress as technology allows. And I would join my colleagues on both sides of the aisle in finding ways to restructure our processes so that we can eventually get to a point where less and less paper is needed for this body to properly function.

However, we are just not there yet. For example, when a Member submits a document to the body, whether it is a bill, extension of remarks, or an amendment, he or she is required to sign that document as verification for the Clerk that it is the official document that Member intended to submit. And as an individual, when I write a bill I like to see that in print, too. There certainly is technology out there that would allow Members to provide an electronic signature for these documents. But to my knowledge, the House has no infrastructure in place for using this technology.

Furthermore, any effort to modernize the House way of doing business would also have to be joined by the Senate. It would be impractical for the House to send the Senate digitally signed copies of bills and for the Senate to still send us paper copies.

Again, the goal of some of these bills, to decrease Congress' paper usage, is credible; but we must caution ourselves against imprudently going paperless without putting the necessary infrastructure in place that would allow us to reach those goals in a constructive way.

So as we explore ways to modernize congressional printing, let's make sure that we somehow don't treat GPO as the villains or deprive the agency of tools they need to support us in what we do.

The men and women of GPO are truly our partners in the legislative process. At this time, we could not function without the Con-

gressional Record every morning in both printed and electronic form, and other congressional documents, too. Those are the principal ways Members receive official information for their work. And GPO assists us in our work. Also, Members should know that GPO does not print anything that is not required or requested by Congress.

The House Clerk, Senate Secretary, and the congressional committees are the drivers of many of our GPO practices. If we want to make it a priority to become a paperless Congress, then we need to start in house, and GPO will follow whatever business practice Congress wants. Just to put it succinctly, GPO will do whatever they are directed by both the House of Representatives and the Senate.

Again, I thank the subcommittee for inviting me to testify today.

[The statement of Mr. Honda follows:]

CHA Oversight Hearing
Thursday, June 16, 2011, 10am

Hearing entitled:

"Modernizing Information Delivery in the House"

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There have been bills introduced that would cut back or eliminate most congressional printing. That begs the question, is Congress ready to go paperless? While I wish the answer were yes, I am extremely doubtful that old ways can be changed on a dime. We saw with the recent autopen signature of a bill by President Obama that not everyone is ready to bring our legislative process into the current century. We are also not a society that likes to read and analyze everything digitally. We like to receive information digitally and then print electronic documents, sometimes multiple copies. When it comes to GPO documents, such as bills and reports, it may be more expensive to eliminate GPO prints, leaving offices with only electronic copies that are printed at a higher rate. According to GPO, it costs taxpayers 7 cents for a Members office to print a single sided document. GPO can copy or print that same document for 5.5 cents, and if a press were being used, it would cost taxpayers only about 1 cent.

Also, these bills assert that they would save money and the estimates used are often inflated. During a recent hearing that we held in the Legislative Branch Appropriations Subcommittee, I was surprised to learn that, according to GPO, approximately 68% of the cost of producing the Congressional Record would be incurred whether copies were printed or not. This is the prepress cost which is used to create the electronic file from which they upload online and also print. Again, 68% of the cost is incurred before the very first copy is printed. And GPO has made progress on using technology to cut down the amount of Congressional Records that it needs to print. When GPO started offering online access in 1994, about 18,000 copies of the Record were printed daily. Today GPO prints 3,600 copies, about 900 of which are sent to local libraries and reading rooms in communities across the nation for our constituents to access. GPO has surveyed the House and Senate for their continued need for print copies of the Record along with other print documents like the Federal Register—the first survey of its kind. For those offices that told GPO they want to opt out of the Record, they stopped those deliveries.

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so that we can eventually get to a point where less and less paper is needed for this body to properly function. However, we're just not there yet. For example, when a Member submits a document to the body, whether it is a bill, extension of remarks, or an amendment, he or she is required to sign that document as verification for the Clerk that it is the official document that the Member intended to submit. There certainly is technology out there that would allow for Members to provide an electronic signature for these documents, but to my knowledge, the House has no infrastructure in place for using this technology. Furthermore, any efforts to modernize the House's way of doing business would also have to be joined by the Senate. It would be impractical for the House to send the Senate digitally signed copies of bills, and for the Senate to still send us paper copies. Again, the goal of some of these bills to decrease Congress' paper usage is creditable, but we must caution ourselves against imprudently going paperless without putting the necessary infrastructure in place that would allow us to reach those goals in a constructive way.

So as we explore ways to modernize congressional printing, let's make sure we don't somehow treat GPO as villains, or deprive the agency of the tools they need to support us in what we do. The men and women of GPO are truly our partners in the legislative process. At this time, we could not function without the Congressional Record every morning, in both printed and electronic form, and other congressional documents too. Those are the principal ways Members receive official information for their work, and GPO assists us in our work. Also Members should know that GPO does not print anything that is not required or requested by Congress. The House Clerk, Senate Secretary, and the Congressional Committees are the drivers of many of our and GPO's practices. If we want to make it a priority to become a paperless Congress then we need to start in-house and GPO will follow whatever business practice Congress wants.

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Mr. GINGREY. I thank both witnesses for their testimony. And Representative Honda, thank you for your comments in regard to the laudability of our efforts in regard to what we are trying to do here in this hearing, and, in particular, the last paragraph of your printed statement in regard to GPO.

I agree with you that we should never try to villainize, not certainly to do anything like that with the fine men and women that work in the Government Printing Office. We are just looking for their help, and you and Congressman Walden and the second panel, to find ways to save money for the taxpayer. But thank you so much, both of you, for your testimony.

We now have time for committee members to ask questions of the witnesses. Each member is allotted 5 minutes of questioning time. To help each member to track that time, we also will use the timing device on the witness table. We will alternate back and forth among the majority and minority.

I will recognize myself first, and then defer to the ranking member, Ms. Lofgren.

It is my understanding that while traditionally when Members of Congress testify before a committee or subcommittee, we extend the courtesy to them of not grilling them with questions. But it is my understanding that Congressman Walden would be willing to take a question or two. So I will direct my time to Congressman Walden and put the first question to him.

Congressman Walden, what publications do you think we could publish only in electronic format? Are there some on the table in front of you?

Mr. WALDEN. I would think, first of all, I would look at the calendar, the House calendar, which the Clerk maintains all the relevant data for the calendar and provides the electronic feed to GPO. GPO then charges the House $2.3 million, I am told, for the preparation and publication of the calendar. I think it is something that could be posted electronically and could save us money, and certainly probably in a more searchable format than what we have here.

I was thinking, Mr. Chairman, searchable format means you have to, you know, on a printed document look through it, electronically just like that. And that would save us money. I was also thinking, as I just sat here looking around me, and having been a small business owner, the fact that we actually have pads printed up to make notes on that somebody is paying to put the ink on to say House of Representatives, Washington, D.C. The napkin here, I would never preprint napkins for my little company. I would have found—you know, these are very nice, and I am not criticizing the committee, we all do this around here. And I think we really need to just say when we are borrowing 42 cents on the dollar, is this something you would do if this was your money? So I would start with the calendars.

Mr. GINGREY. Congressman Honda.

Mr. HONDA. I think that is a great question: What can be done electronically only? Being a classroom teacher, and then also coming from Silicon Valley, process is kind of an important issue. And I would probably engage members of the committees and also those who are in GPO to sit down and look at the array of things that

are done, and then ask ourselves, and perhaps poll our own membership, as has been done in the past, to find out that which can be done. I wouldn't mind having certain things electronically printed, because then I can enlarge the print.

Mr. WALDEN. I concur with his assessment.

Mr. HONDA. And I think it is important to figure out which ones do we contract out for printing and for less of a cost to Congress, and that which is done commercially that may be sold in our stores downstairs. So those categories would probably have to be looked at, too. But I think it is a great question because it really moves us towards becoming more refined in some of the things that we are doing.

Mr. GINGREY. I thank both of you for your comments regarding that question. We, by the way, will be hearing from Silicon Valley in our next panel of witnesses.

Is it, Congressman Walden, is it just about saving money?

Mr. WALDEN. I don't think so, Mr. Chairman. It is about saving money; I was intrigued to learn that 68 percent of the costs of doing some of the printing, according to my colleague here from GPO, is just the setup fees. And I thought to myself, so the other part is 32 percent. That is a huge savings.

Now, you are not going to not print everything, necessarily. But what if you were able to cut back your printing 10 percent, 5 percent? These are the things you look for in small business, things we always look for all the time. And what we were doing is, is there a better way? Sometimes that requires an up-front investment to get a longer-term rate of return that saves you more. Sometimes it is just a matter of changing practice. And I think we all are of a mind to embrace this technology.

As chairman of the transition team, I was honored when Eric Schmidt came to see me from Google to talk about just brainstorming how we might use technology in our committee sessions. And we got to talking about how markups occur. And he said, What if your amendments popped up on a laptop, and in real time as they are adopted, merged into the statute so you could actually read the statute as it is being changed? He was like, Well, this could be done. This is a software issue. This could be managed.

And by the way, the entire world could watch this process, and maybe help us be better legislators by weighing in as we went along. Just as we now put all of these hearings up online for the public to watch, it is their business and their money. What if our markups actually were something more meaningful than if you looked at these amendments where strike line 2, add "the" to line 7, delete paragraph 3, move section 7 up? Nobody knows what that means. Wouldn't it be great if there were a better way?

And I think the brilliant people behind us could give this Congress some real help in how to improve that process. If we each had our own laptops or whatever, and you all made progress making Internet available around here, it could be a really better legislative process.

Mr. GINGREY. Thank you. Congressman Honda.

Mr. HONDA. Mr. Chairman, I think that is also a great question about should everything be a cost consideration.

I think the other question would be cost benefits. And I think that Congress and our government wants to be the Nordstrom's of government, where the customer is always right, and we like to deliver to our customers.

So I think the 18,000 copies that the GPO used to make, reducing it down to 3,600, and 900 going out to the communities, is something that we still need to keep an eye on, making sure that the public has access to it, both printed and electronically. But that that is available.

And then I think things like my colleague had mentioned, real-time kinds of efforts. It wouldn't be a bad idea to have an iPad during our committee hearings when we are looking at amendments. Because I look at insert "the," and I am thinking what page? You are shifting through. I can do that with an iPad.

Mr. GINGREY. I will just say this, and I know my time has expired, and I want to yield to my colleague, Ms. Lofgren. But as part of the rules package for the 112th Congress, we did make that—change the rules to allow the iPads to be used on the House floor.

Mr. HONDA. Right.

Mr. GINGREY. I am not sure in regard to in committee, but I see all my colleagues on both sides of the aisle looking at them. So we must have approved it for committee use as well.

I will now yield to my colleague, Ms. Lofgren, for 5 minutes.

Ms. LOFGREN. Thank you, Mr. Chairman. And respecting our tradition of not grilling our colleagues as witnesses, I will just maybe make a couple of comments and invite their reflection.

I think Mr. Walden said something about the Senate. And in fact, if the Senate doesn't join us in modernizing, the value and cost savings are going to be more limited than they otherwise would be. So actually, I am really focused on that, and you mentioned it.

So I think in addition to reaching out to users, as Mr. Honda has suggested, we really need to reach out also to the United States Senate, that may be a little behind us in terms of the embracing of technology.

The other thing I am thinking about—and would welcome your comments—are really twofold. Most of the costs of the printing, as Mr. Honda has mentioned, is in the preparation. So that is going to be an expense whether there is a single thing printed. And it is cheaper to print at the GPO than to print in the offices. So anything that people are going to be printing we ought to have printed and distributed.

The question is: How do we define what really isn't necessary in terms of printing? And I think we need to reach out beyond the House itself for some of those items. For example, we have got repository libraries. And although we are into, you know, real time, there are actually people around the country that are looking at the real copies. And not everybody in the world, I hate to say, is online. So we are going to have to make a finding of what is going to have to be printed at some point anyhow. And the extra copies are tiny compared to the production of the first one. So it is really a process that I am suggesting, rather than a conclusion that we need to go through.

And the second issue has to do with retention and cybersecurity. Mr. Walden and I were talking while we were assembling, and he mentioned the old technology of a wire that you could play music on. Now, the Library of Congress has that. We think of digital as permanent, but it is only as permanent as we have the programs to read them. And so that is something that we are actually not addressing as a Nation, let alone as a Congress. And it has important historical and archival implications. And I think that is something we need to reach out to the broader community about.

And then certainly I don't use the calendar very often. That is the kind of document that I think probably could go online, because it is real time. The archivists aren't looking at it. The repository libraries maybe aren't—I don't know. We should solicit input. But the opportunity to have a more user-friendly markup and the like, and also to have that be available online so that the public can see exactly what we are doing as we are doing it, I think has tremendous potential and would really be good for openness in our democratic system.

So any comment you have on those thoughts, and then I will yield back.

Mr. WALDEN. If I might respond, I concur with your statements both in terms of partnership we need to have with the Senate as we move forward—or as you move forward on these initiatives, or we do in the House. And also I think just the notion of permanency and archival storage is really important for historical purposes.

There are other things, though, that are changing in such real time that technology is the better way to go. I was thinking that as I was looking and mentioned this Congressional Directory. People are changing jobs all the time. The directory is printed once a year, is out of date before the ink is dry. Now, is it handy to have a hard copy so you have a base number? Yeah, but maybe you do that differently then.

I was also thinking, as I was looking at the Congressional Record and the calendar, they don't even have the Web site printed on the front. Now, you show me any other material in the private sector that is trying to get you do something; I will wager, whether it is the cover of a magazine or an advertisement, they all have the Web site. Now, maybe it is on here and I just missed it, but I don't see it on any of these that direct you where to go to the Web site for the House to find it. And if we are going to continue printing, at least we ought to perhaps—and maybe, again, it is in here. It is not obvious to me. So I think technology in some places is a better fix, and in other places having a printed copy makes sense. And that is what you all get the big bucks to sort out the difference. So your surveys are going to be real important.

Mr. GINGREY. Representative Honda, do you have a comment?

Mr. HONDA. Yes. It is an interesting dialogue, because I think when we talk about Web sites, it should be obvious on some of our documents. But I thought about our own Web sites that we have individually, that we can also refer to documents electronically to where our readers or our constituents, whoever is tracking us, can be referred to also.

And in terms of real time, not only real time but access to the information should be universal, and not only to the interests of

congressional Members. So those are the things. And calendars, I too, don't use the calendar every day, but I suspect that my staff does. So I have to sort of talk to them before I make any firm comments. But I think that the process will help us get to an answer. And I think one thing I learned about in schools is I have to trust the process.

And then on the archival issues, I think that is important. And it sort of reminded me of the near trauma that this country went through when we got to Y2K and when we had looked at our digital thing and said originally we could have done it in four digits rather than two, and then when we got to Y2K we started saying, oh, my God, what is embedded in there?

And so the congressional library serves a wonderful function. I don't know if there is a congressional museum. But there has got to be someplace where we can access processes that were historical, but may be needed in the future so that we can solve or anticipate problems in the future, too.

Mr. GINGREY. Thank you. Thank you, Congressman. I now yield 5 minutes to my colleague from Florida, Mr. Nugent.

Mr. NUGENT. Thank you, Mr. Chairman. Thank you very much for this distinguished panel.

You know, as sheriff, we went digital. And there was a lot of gnashing of teeth as to why it wouldn't work and why we need to have copies, why we need to have paper. In the legal department that I had that worked for me as sheriff, they would buy the statute books. They looked really nice on the shelf. But in actuality, the attorneys were utilizing the digital on a CD that was a lot less expensive than the hard copies and much more relevant because she could actually search. Like I said, there was a gnashing of teeth as to why we have to do certain things.

I am going to be interested to hear from the next panel particularly about the archival process; you know, how do we make sure that we have those documents available for public scrutiny off into the future?

Obviously, on the transparency side I think we would all agree that having the ability for the general public to look at what we do on a regular basis. And I am intrigued by the opportunity, possibly, to as it moves along in the process, to see the actual markup change before your eyes. Because you are right, I am sitting here reading it; I am going, I don't understand what that means. You have any comments?

Mr. WALDEN. Yeah, I would. I serve on the Energy and Commerce Committee, as does Mr. Gingrey. And I am amazed during a markup; we sit and wait while the staff rushes around with the—I don't know, somebody on your staff could probably tell you—I think you have to make 50 or a hundred copies of every amendment and submit it to the committee. Literally, they are carting in these boxes of paper and trying to keep piles this high so they can quickly distribute it to 50–plus Members. It may be a two-line amendment that we have already voted on before it is fully distributed because the Clerk has read it and it is agreed to. And I assume all that paper gets recycled. But you think of each of our offices and anybody that is offering amendments, if that process

alone were made electronic for us, there would be enormous savings.

Now, the public may need to see copies, and maybe there is another way to handle that. But for heaven's sakes, for the committee members we ought to have a more simplified and efficient system, because there often we wait while the clerks literally run around and hand out the amendment. We are debating it, and then it is agreed to or rejected because we know what is coming in this process. Wouldn't it be great if it popped up on your screen, you are able to see how it integrates into the statute?

The Oregon legislature, oftentimes in committee we could see how the statute was being amended. So you could actually read the statute as you went. Now, I am not a lawyer, but you could read the statute as it went, and then you could kind of question, well, how does this read then if it says this here? And you get a better understanding and better feel for it as opposed to debating the concept.

We are into the weeds a little deeper. I don't know if that addresses your question, but that is what we should look at getting into.

Mr. HONDA. That is a great question because in Appropriations, you know, I will see—I will replace 100 million with 179 million. I want to know, is that good for me or is that bad for me?

Mr. NUGENT. Right.

Mr. HONDA. And electronically, you can get that quickly. Or if I have a question, you really need to get the answer quickly, because the committee moves forward sometimes very quickly, and you need to get a response to make the right decision in voting.

But having said that, to put the master piece together, the master copies together, whether it is electronic or not, someone has to input all that first. And so if we save 32 percent and expend 68 percent on staffing at the committee level, that is still a savings. But we still have to remember that someone has got to put the initial input while we make amendments on the bill.

But I think that there is always a way, if we look at it and study it. So I think that this is a very good process that we are going through.

As far as being a sheriff, when I did ride-alongs I had a mountain area, and the sheriff's office—this is back in the early 1990s—and the sheriff's office up in the hills, he had a CB radio, a shortwave, and then cell phones. And he had two cell phones because of the way communication was done. But with the proper repeating stations and access to information at headquarters, they can get their job done quickly, and either act as a law enforcement agent or a counselor at the site.

So I think that it all has benefits. But I think we have to look at, you know, what is the bottom line that we have to look at, and then factor in the extra costs or how many jobs we will be saving and things like that. So it is a worthwhile effort that we are in.

Mr. WALDEN. Could I add one other thing? Because we are focused on sort of calendars and Records and indexes and things of the House. Let's not forget in many pieces of legislation we demand of agencies that they report to the Congress. And until that is removed, they report to Congress. And I know in the past there have

been efforts to look at whether those reports are needed, how they are produced. Some of them used to be really glossy, glitzy, expensive, four-color, slick paper.

And I think as a Congress, on a regular basis we should be reviewing a compendium of the reports that we require and asking ourselves, are they still necessary? Has the purpose been served? And can we eliminate them?

Ms. LOFGREN. Would the gentleman yield?

Mr. GINGREY. I yield to the gentlewoman.

Ms. LOFGREN. Just a quick follow-up on that. That is a really good opportunity for digital reporting. And sometimes a picture——

Mr. WALDEN. There you go.

Ms. LOFGREN [continuing]. Says more than 50 pages. But digital photography is available. So I think that that is something that we really ought to utilize the process to expand. I thank the chairman.

Mr. GINGREY. That concludes our questioning for the first panel. I would like to thank Congressman Walden, Congressman Honda, for your generosity of your time and willingness to take questions from the members of the subcommittee. And we thank you for that.

We will now dismiss the first panel and ask the second panel to come to the table to be seated.

Mr. HONDA. Thank you, Mr. Chairman.

Mr. WALDEN. Thank you, Mr. Chairman.

Mr. HONDA. It has been enlightening to me. And I just want to leave the last message that GPO will do what the House of Representatives and the Senate together will be directing them. Again, I thank you for this opportunity.

Mr. WALDEN. And I will try to get your lawn mowed again, sir, soon.

Mr. GINGREY. Please do. Thank you, Congressmen.

I would like now to introduce our second panel of witnesses. Mr. Thomas Bruce is the co-founder and director of the Legal Information Institute, a research and publication endeavor of the Cornell Law School. The Legal Information Institute's mission is to facilitate public access to legal information through the application of technical and editorial innovation. The LII was the first legal information site on the Web, offering Supreme Court opinions in 1992, and a full U.S. Code in 1994. It developed the first XML version of the Code in the year 2000—and for those that don't know, XML stands for extensible markup language—and will this year release a full edition of the Code of Federal Regulations developed in collaboration with the Office of the Federal Register and the United States Government Printing Office.

Mr. Bruce was educated at Yale College and the Yale School of Drama, and has been, among many other honors, a senior international fellow at the University of Melbourne School of Law in Australia.

The second witness on the second panel is Mr. Kent Cunningham. Mr. Cunningham is the chief technology officer for the Microsoft Corporation. He has been in the field of information and communication technologies for over 20 years, and has worked directly with vendors and the standards bodies through nearly every phase of the evolving communications market. He is currently a business development manager for Microsoft in the Ap-

plied Innovation Group. In this role, he is responsible for defining go-to-market strategies and product development roadmaps, as influenced by and tailored to meet public sector customer needs.

Mr. Cunningham holds a bachelor of science in electrical engineering and communications from ITT Technical College. He has an MBA in business strategy and leadership from New York Institute of Technology Old Westbury, and an MBA in business strategy from Carnegie Mellon University.

Our last witness of the second panel is Mr. Morgan Reed. Mr. Reed is the executive director at the Association for Competitive Technology. ACT is an international grassroots advocacy and education organization representing more than 3,000 small and midsize IT firms from around the world. Mr. Reed is a widely sought technology expert, with a background in software development, having contributed to several open source projects. He also specializes in issues relating to patents, copyrights, and intellectual property in the digital age.

Mr. Reed studied political science at Arizona State University. He did graduate research at the University of Utah and in Taiwan.

STATEMENTS OF THOMAS BRUCE, RESEARCH ASSOCIATE AND DIRECTOR AT LEGAL INFORMATION INSTITUTE, CORNELL LAW SCHOOL; KENT CUNNINGHAM, CHIEF TECHNOLOGY ADVISOR, U.S. PUBLIC SECTOR, MICROSOFT CORPORATION; AND MORGAN REED, EXECUTIVE DIRECTOR, ASSOCIATION FOR COMPETITIVE TECHNOLOGY

Mr. GINGREY. This panel has a wealth of knowledge and experience, and we thank each of you for being here today. The committee has received your written testimony. I will recognize each of you for 5 minutes to present a summary of that submission.

To help keep the time, as you heard with the first panel, we have a timing device near the witness table. The device will emit a green light for 4 minutes, and it will turn yellow when 1 minute remains. When the light turns red, it means your time has expired.

We will start with the testimony of Mr. Bruce.

STATEMENT OF THOMAS BRUCE

Mr. BRUCE. Thank you, Chairman Gingrey, Ranking Member Lofgren, members of the committee. I would like to thank you for inviting me to appear today and for giving such a nice recitation of our corporate resume. I would add to that that we continue to work with government on a number of projects, including one currently with the Library of Congress to rethink some of the model underpinnings of both the THOMAS and the LIS systems.

Last year, our Web site served more than 14 million unique individuals, with over 71 million page views of legal information. Roughly 22 percent of our referred traffic comes to us from government Web sites; notably, the IRS.

Speaker Boehner and Majority Leader Cantor have already voiced support for new electronic data standards at the House, including especially the creation of documents in open, machine-readable format such as XML.

Today I would like to say a little about the implications of that strategy, and sketch the shape and size of its benefits. I would also

urge you to consider some specific ways to make it happen. The manner of its implementation will strongly affect its usefulness to the Congress and to the American people.

The use of open standards to create interoperable, accessible legislative information creates four main benefits:

First, it can make the internal work of Congress faster and easier. Many have spoken about that already.

Second, by reengineering the document lifecycle, it can reduce the costs of congressional work.

Third, it can make the work of Congress easier to find and understand. Now, usually when we talk about that kind of threshold lowering, we talk about transparency. That is often a code phrase for public accountability, which is certainly a noble goal. But transparency has another meaning: opening legislative data to questions asked for business and professional purposes. For example, data about the legislative activity that creates and surrounds the Tax Code is as much a predictor for the business climate as the weather data provided by NOAA is for the climate itself. And that predictive value is used to plan business strategy and activities at all scale of business. When primary legislative data meets this huge public need, it stimulates and shapes business activity at all levels. That in turn creates a marketplace for information products and services where editorial and technical innovation can be rewarded.

Finally, the use of open standards can help technical communities inside and outside government to carry these three aims further by making new products and services.

What is needed to make this happen? Well, first we need to clean and open up the data. The data provided under any modernization initiative should meet a short list of requirements. It should be clean and consistent. It should be compliant with open, well-documented standards such as XML. It should be clear as to its authority. It should be available in bulk through well-documented access methods and APIs. Most of all, it should be timely.

Right now, if you are using the systems that government provides to the public, it is very difficult even to work out what the current state of the law is. This morning the LII's U.S. Code updating feature shows that 988 changes have been made to the Tax Code since the last electronic release of a full title update by the Office of the Law Revision Counsel. It can be as much as 18 months out of date, depending upon where we are in the revision cycle, and what has happened in between, and various other accidents of the calendar. We can reach these goals by implementing standards and creating partnerships.

First, the House needs to create a model or models for legislative data and metadata, one that embraces the entire legislative lifecycle. That effort can usefully draw on several similar undertakings now underway. It needs to be aimed at both the modernization of systems and work flows inside the House, and at the free provision of high-quality, open, interoperable bulk data to outside innovators and markets.

The specifications for that project might best be created by an advisory group drawn from government, the technology and legal publishing sectors, and the legal information science and engineering community.

The second need is for an appropriate framework in which to foster public-private partnerships designed to make use of such data. Remarkable things are possible when data is carefully leveraged to promote both efficiencies and services through collaboration between inside and outside stakeholders. Collaborative projects make the most sense when they are aimed at particular constituencies affected by defined categories of legislation. That implies that the best results will be achieved by chartering multiple small projects based upon public-private partnerships. Development of a suitable framework for chartering such projects will be critical.

I thank you for the opportunity to testify today, and I look forward to your questions.

Mr. GINGREY. Thank you.

[The statement of Mr. Bruce follows:]

Testimony of
Thomas R. Bruce

Co-Founder and Director of the Legal Information Institute
A Research and Publication Activity of the Cornell Law School

before the
Committee on House Administration
Subcommittee on Oversight
United States House of Representatives

on
Modernizing Information Delivery in the House

June 16, 2011

Comments of the Cornell Legal Information Institute
before the

Committee on House Administration
Subcommittee on Oversight

June 16, 2011

Chairman Gingrey, Ranking Member Lofgren, and members of the Committee, thank you for inviting me to appear before you today.

My name is Tom Bruce, and I am the co-founder and Director of the Legal Information Institute, a research, engineering, and publishing activity of the Cornell Law School. In 1992, we were the first to make primary legal information available on the Web, and, in 2000, the first to create a version of the United States Code in XML. In collaboration with USGPO and the Office of the Federal Register, we have developed an innovative version of the Code of Federal Regulations, currently available in beta test. We have been engaged by the Library of Congress to develop functional data models for legislative data that are very different from those that currently underpin the familiar THOMAS and LIS systems.

The results of our work have been undramatic but pervasive. For example, we caused legal section and paragraph symbols to be incorporated into the basic symbol set for HTML in 1993 [I], and have worked on standard practices for Internet delivery of legal information ever since[II]. We have consulted on legislative and judicial publishing and administration systems in 14 different countries on 4 continents, sometimes for government and sometimes for independent legal publishers, both noncommercial and commercial, including Thomson Reuters West Group and Lexis-Nexis. Recently, as part of work that we are doing in developing countries, we have become concerned with the effects of legal information policy on trade and on the climate affecting businesses large and small. Those effects are equally visible at home in the United States.

In our role as an Internet provider of primary legal information, we served more than 14 million unique individuals with over 71 million page views last year. Roughly 22 per cent of our referred traffic is sent to us by government web sites, notably the IRS. For the last few years, the IRS has widely distributed our version of Title 26 of the US Code for use by its tax-assistance programs. We are linked to by half a million web sites [III].

Speaker Boehner and Majority Leader Cantor have already voiced support for new electronic data standards at the House, including (especially) the creation of documents in open, machine-readable formats [IV]. Today, I would like to say a little about the implications of that strategy and sketch the shape and size of its benefits. I will also urge you to consider some specific ways to make it happen. The manner of its implementation will strongly affect its usefulness to the Congress, and to the American people.

Goals

The use of open standards to create interoperable, accessible legislative information will benefit Congress and the American people in four ways:

1) Making the work of Congress easier
There are many inside government who could more skillfully identify ways to make the use of electronic documents within the House better and easier. Nevertheless, an outsider like myself can identify some compelling ways in which an XML-based, lifecycle-oriented legislative information system would make the work of the Congress faster and more efficient. Some of the tools I discuss here are already in use within offices and programs responsible for discrete portions of the legislative process, but to my knowledge none has been implemented over the entire lifecycle of legislation.

- *Smart word processing for legislation*
  XML, accompanied by data models that reflect legislative process, provides the foundation for a series of process aids and improvements that might best be described as "smart word processing for legislation". Typically, these are rich environments that provide functions and features helpful in legislative drafting. Many such improvements involve pulling data from a well-architected legislative data environment outside the document itself, such as automated incorporation of language from related or referenced statutes, automated construction of hyperlinked cross-references, and so on. [v]

- *Document management and status tracking*
  Many inside and outside government are interested in knowing what the law is, and in keeping track of the status of pending legislation. Independent, transparency-oriented operations like govtrack.us [vi] have done a commendable job of creating status-tracking applications by scraping data published via THOMAS and other Congressional web sites. While govtrack.us is a good job, it is not a perfect one -- nor can it be without bulk access to significantly better data created and published in bulk at the direction of the Congress. For example, the availability of timely legislative status information would enable a cascade of current-awareness services developed for many different niche markets, much as weather data from NOAA has been differentiated into a series of different weather forecasting products for different audiences.

- *Summarization and "dashboard views"*
  Smart tools are needed to provide overview and summary of Congressional actions. The Congressional Record Daily Digest currently serves this purpose, in print and in two online versions that have different capabilities. Like many non-digital products, the printed version is necessarily a compromise between depth and overload. It is isolated from the data sources it summarizes. The online version in GPO Access contains no links to the text of legislation under discussion; the version offered in THOMAS does, but neither links to information about the other people, places, and things it mentions [vii]. At the same time, it may not be concise enough for a truly high-level summary. Outsiders

have developed applications that very quickly summarize the mood or actions of Congress for a particular time period[viii]. As yet, these are toys, but they do show that there is a need to bring considerable ingenuity to the problem of accurate and timely summary of Congressional events and documents. Clearly, too, those summaries need to provide pathways to full and complete information. With time and better data, the same ingenuity that produced these prototypes could produce a wealth of helpful products.

2) Further reducing the cost of Congressional work

Those ideas realize savings by easing small, frequently-performed tasks within particular stages of the legislative process. A look at the whole legislative document lifecycle may reveal further efficiencies. The cost of moving bills and resolutions from stage to stage within the legislative lifecycle can be high [ix]. An XML-based system architected with the entire legislative lifecycle in mind would substantially reduce those costs, eliminating the need for repetitive reprinting and re-proofing at each stage of the process. There may well be other process savings that can be realized through careful consolidation and rethinking of the document management process as an integrated process taking place across the full lifecycle of a bill or resolution.

It is tempting, in this context, to try to maximize return on investment through rigid enforcement of centralized approaches and apparatus. Such an approach was tried, to a degree unsuccessfully, in the Federal e-rulemaking initiatives of the late 1990s [x]. No matter the source or force of standardization efforts, internal constituencies can and will remain intransigent in the face of centralization if they believe that it increases burdens and not benefits. The best approaches to centralization may, in fact, resemble the South Beach Diet: not the most effective diet science can imagine, but the most effective in practice if only because it is one that people will follow. With that in mind, the should be to maximize effective return on investment by creating standards and practices that respect careful analysis of use cases important to stakeholders, rather than mandating theoretical efficiencies that prove unsustainable. The result is likely to be a highly-connected federation of activities, linked by common standards and protocols, operating under the oversight of different administrative entities.

3) Making the work of Congress easier to find and understand

People use information retrieval systems by taking something they know -- a term or phrase -- and using it to find something they don't. Outsiders often have no idea where to begin. They don't know the particular terms of art used in legislation, and they understand little about how the process is organized and documented. A major design goal for government information systems should be to lower the threshold for information discovery as much as possible. That requires improvement in the systems offered to the public by Congress itself, and will be further realized through independent innovation and a vigorous market for products and services based on legislative data, including free-to-air offerings by parties outside government. The first goal would be served by a series of discrete improvements in THOMAS or by the construction of successor systems, and the second by the offer of legislative data in bulk, in XML.

Usually, we talk about this kind of informational threshold-lowering in terms of "transparency". That is often a code phrase for "public accountability". Transparency and accountability are excellent, important goals, as Speaker Boehner and Majority Leader Cantor have remarked [xi]. But "transparency" has another meaning: opening legislative data to a range of vital, concrete

information-seeking activities used for personal and professional purposes. Among those, the predictive value of legislative information for business planning looms large. For example, data about the legislative activity that creates and surrounds the tax code is as much a predictor for the business climate as the weather data provided by NOAA is for the climate itself -- and there is an equally broad interest in using its predictive value to plan strategies and activities [xii]. In that way, the primary legislative data provided by Congress meets a huge public need whose fulfillment stimulates and shapes business activity at all levels. That in turn creates a marketplace for information products and services where editorial and technical innovation can be rewarded.

4)Enabling technical communities inside and outside government to carry those aims further
There are a lot of products and services waiting to be created from legislative data. At this writing there are just under 19,000 different items in Amazon's catalog whose name uses the phrase "income tax". Most of them are printed books. In the pre-digital world, primary legal information provided the raw material for editorially-innovative products and services that repackage and explain legislative data for a huge range of audiences. Many represent particular professions, industries, or classes of private individuals. In the world of modern software applications, much less of this has happened -- yet. A search of Apple's app store for tax products shows 33 iPhone apps and about half that many for the iPad. Clearly, there are a lot of products and services waiting to be created.

A few have been. My own organization has, for more than a decade, created "mashups" of Federal data that help in legal research, primarily applications that facilitate movement across disparate collections of judicial opinions, statutes, and regulations, or provide current-awareness services. More recently, independent developers have built services like govtrack.us, which shows the current status of proposed Federal legislation, and created iPhone apps that offer primary materials like the US Code and the CFR. There is much, much more that can be done.

To see just how much, we should put aside popular, romantic visions of caffeinated high-tech hipsters building apps for mobile phones, and look instead at something solidly old-school and middle-class: TurboTax. TurboTax, and other tax-preparation aids like it, show what a mature software product built atop Federal law can do. Because it is well-designed and helpful, 20.7 million copies of TurboTax were purchased last tax season. The use of its Web-based version grew by 18%. It is a wildly successful product. TurboTax is also valuable to government. It serves as a funnel into IRS e-filing programs, which have allowed the IRS to close half of its tax service centers and realize other operational savings. How much of that does TurboTax account for? It is difficult to say with any accuracy, but an informed guess would be around 15%, given its market share, the number of taxpayers filing electronically, and what is known about user behavior [xiii]. Through follow-on effects, TurboTax saves a great deal of money for the government.

That is a dramatic success, generated by the impact of a series of complex statutory requirements on a mass market. It has been facilitated by active collaboration between government and private industry in establishing standards and data flows[xiv]. The result is an old-school "killer app". Those are rare.

But as the success of "app stores" for mobile platforms indicates, a marketplace of low-priced, narrowly-purposed applications can easily grow to match the most massive market for one-size-fits-all consumer software products. The availability of timely legislative data, delivered in XML designed for openness and interoperability, will form the basis for such a market in specialized, professional applications -- a market that will reward government with savings and efficiency as well as rewarding the innovators who create these new products.

What is needed to make this happen?

Cleaning and opening up the data
The data provided under any modernization initiative needs to be:

- *Compliant with open standards*
  Legislative data needs to be created and presented in open, interoperable, machine-readable formats with documented schemas and metadata models. In modern practice, XML is the preferred format for this. Page-description formats like PDF fail the test of machine-readability, as well as being far more difficult to work with.

- *Clean*
  Misformatted data is expensive to repair. When misformatting or data corruption occurs at the head of a value chain, the liability for repair is transmitted to every consumer of the data, resulting in duplicative, expensive effort [xv]. For that reason, government needs to ensure the quality of the data it issues, and to do so without introducing undue delay in transmission.

- *Consistent over time*
  Often, the success of a computer text-processing application depends on being able to detect and match patterns in the data itself. For instance, automatic conversion of cross-references into Web links relies on matching certain patterns of words and numbers that make up citations; extracting the names of parties from the header of a judicial opinion requires foreknowledge of the way that the text is arranged. Software built for such purposes inevitably makes assumptions about what it will encounter, and breaks when those assumptions are invalidated by changes in the format or arrangement of text [xvi]. For that reason, consistency and coherence in the format and arrangement of data greatly reduce the difficulty of writing and maintaining useful applications over time.

- *Timely*
  People need to know the current state of the law, but that is not all. Properly-built systems that make current law available can evolve, over time, into systems that provide legislative information extending into the future as well as into the past [xvii]. Such a point-in-time system -- one that makes it possible to know what the state of the law was at a particular time in the past, or what it will be at some point in the future when pending laws come into effect -- would be a very valuable tool.

  Right now, if you are outside government, it is very difficult even to work out what the current state of the law is. At this writing, the LII's US Code updating feature shows that

988 changes have been made to USC Title 26 since the last electronic release of a full Title update by the Office of the Law Revision Counsel[xviii]. That is in part because changes to the tax code are frequent, and in part because the public update-release practices of the Office of the Law Revision Counsel can combine with accidents of the calendar to leave the most recent official release of a given Title as much as 18 months out of sync with current legislation.

Most users with a need for timely information thus rely on more-or-less speculative codifications done by commercial publishers such as Lexis and Westlaw. To say that they are speculative is perhaps an exaggeration. Because most amending text refers directly to current legislation and relatively little is ever completely new, it is possible to guess very accurately how codification of particular provisions will be done. But it is, nevertheless, a guess -- one that is less likely to be accurate in new areas of the law or in places (eg. Title 6) where the Code reflects recent changes in the organization of government.

- *Clear as to provenance and authority*
  Government data should be authoritative and authentic. But -- as the above section on timeliness makes clear -- there are intervals when we need to know the text of a law, whether it is completely settled or fully in force or not. Thus, data about what the law says needs to be accompanied by data about where the text has come from and how authoritative it might be. That is well within reach of current practice in metadata modeling.[xix]

  The current debates about "authenticity" largely fail to account for this need for information about things not yet in full force, or in an indeterminate state. Many incorrectly bind the idea of "authenticity" to the use of specific document formats or encodings. In reality, it is possible to use a number of techniques to verify the status and accuracy of a particular piece of legal text. While the resemblance of page-description formats like PDF to printed text may comfort those who equate accuracy and authority with the fixity of print, there are many other ways to ensure that the text we are viewing is an accurate representation of the text issued by an official body. At least some of those techniques interfere far less with the useful qualities of digital text than PDF encoding does, and XML excels at facilitating processing and reuse.

- *Available in bulk*
  Bulk availability of legislative data is necessary for three reasons. Most collections of legal text are fairly useless unless they're comprehensive. Processing legal data is easier and more efficient in larger packages. Finally, significant numbers of applications are reduced in value (or flatly impossible to create) if the whole of a corpus is not available for concurrent processing. Certain kinds of finding aids that summarize information from across an entire corpus, such as a subject index, are good examples. Hard-won experience at the LII tells us that this is also true of automated quality-control and repair apparatus, which often relies on a survey of an entire corpus to detect and repair anomalies or markup problems in some portion of it [xx].

- *Available through well-documented access methods*
  Consistency and clarity are virtues not only for the data, but also for the means by which it is exposed to outside use. Well-documented application program interfaces (APIs) [xxi], document schemas, file-naming practices, metadata registries, identifier regimes[xxii], and access to the expertise of government specialists via blogs and other documentation of principles and best practices are essential to practical use of the data by outside parties. In this respect, Google's documentation of its APIs and its openness to building-out by outside developers are exemplary [xxiii]. Government should do these things as well.

Reaching these goals by implementing standards and creating partnerships
The House should encode, manage and promulgate its in-process and finalized legislative work products in ways that meet the above five goals for the data itself. Reaching that state, in turn, requires that it solve two problems.

The first is the creation of an appropriate, functional model or models for legislative data and metadata, embracing the entire legislative lifecycle in a considered and comprehensive way. The models should be specified as XML application profiles, and account for document structure and for relevant metadata expressed in RDF. That effort can usefully draw on several similar undertakings underway inside and outside Congress [xxiv]. It needs to be aimed at both the modernization of systems and workflows inside the House, and at the free provision of high-quality, open, interoperable bulk data to outside innovators and markets. The specifications for that project might best be created by an advisory group drawn from government, the technology and legal-publishing sectors, and the legal information science and engineering community.

The second need is for an appropriate framework in which to foster public-private partnerships designed to make use of such data. Remarkable things are possible when data is carefully leveraged to promote both efficiencies and services in an environment of collaboration between inside and outside stakeholders. Collaborative projects like the IRS e-filing system make the most sense when they are aimed at particular constituencies affected by defined categories of legislation. That implies that the best results will be achieved by chartering multiple small projects based on public-private partnerships. Development of a suitable framework for chartering such projects will be critical. The framework might itself be developed by a public-private collaboration similar to ETAAC at the IRS[xxv].

What about print?

The fate of printed versions under such a regime is uncertain. Some who wish to retain them will point out that there are many in the United States who do not have access to digital information via the Internet. That group of have-nots comprises about 23% of the population, and is heavily skewed toward the elderly and toward households with incomes under $30,000. [xxvi]

First, it is worth pointing out that digital files in XML can be readily expressed as print. The reverse is not true. It is possible to imagine a system in which print-on-demand facilities can make available as many copies as are needed, where they are needed, when they are needed. That would be better than what we have; the number of freely-distributed printed copies

mandated under the present system is simply too small to provide any kind of effective public access. There are still many valid reasons to distribute and archive printed copies[xxvii], but public access is probably not one.

There will be universal informational needs that it is in the public interest to meet comprehensively. Some are already being addressed through intermediaries who, in effect, relay information from the Internet to Internet-disadvantaged (or unaware) populations; others can be. The remainder, it seems to me, are best done in a targeted way. The IRS tax-assistance programs, which are coincidentally aimed at the same populations that are least well-served by the Internet, provide an example. And that suggests that the mechanism for identifying, prioritizing, and creating programs that meet specific needs of Internet-disadvantaged groups might well be the same as that needed to develop sensible data-publishing programs in the first place: targeted public-private collaborations of the sort I described earlier.

Conclusion

Creating clean, interoperable legislative data for bulk distribution to innovators and developers inside and outside government will significantly improve the efficiency and lower the cost of internal operations of the House. It will create new markets for legal information, and result in products and services that will benefit millions of Americans. It will have enormous predictive and practical value for American businesses of every size and shape. That will happen most quickly and efficiently if the effort is kicked off by a process of standards development, accompanied by the administrative innovation needed to effectively develop public-private collaborations around the use of legislative data.

Thank you for the opportunity to testify today. I look forward to your questions.

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[i] See http://www.intercom.co.cr/www-archives/1993-q2/0194.html , note from Tim Berners-Lee memorializing the request.

[ii] For example, the URN:LEX standard for unique document identifiers. See http://tools.ietf.org/html/draft-spinosa-urn-lex-01

[iii] These statistics are taken from Google Analytics and Google Webmaster Tools for the www.law.cornell.edu site, from June 1 of 2010 to May 31 of 2011. They undercount by roughly 10 percent, as they do not include accesses to the Wex legal encyclopedia we provide at topics.law.cornell.edu.

[iv] Letter to the Honorable Karen Haas from Speaker John A Boehner and Majority Leader Eric Cantor (April 29, 2011), available at http://scr.bi/inig4d.

[v] A number of useful "wish lists" written by legislative drafters can be found on the Web, including one from Ed Hicks of Justice Canada (at http://www.opc.gov.au/calc/docs/Article_Hicks_UltimateLegislationSystem_2009.pdf) . XML.house.gov provides a list of such features already incorporated into House drafting systems (http://xml.house.gov/drafting.htm).

[vi] Govtrack.us is an independently developed system for tracking the status of federal legislation, and for searching the legislative corpus in innovative ways. It was developed by Joshua Tauberer, and can be found at http://www.govtrack.us/

[vii] While straightforward hyperlinking to other documentary sources is well understood, the connection of legislative data to real-world entities that are not documents on the Web (eg. for purposes of name-authority control) are more the province of newer Semantic Web technologies. Such an approach informs our current work for the Library of Congress.

[viii] See, eg., John Wonderlich's writeup of these apps at http://www.theopenhouseproject.com/2008/06/19/capitol-words/

[ix] During its design phase, I was told by an insider that the XML legislation system contemplated by Justice Canada had reduction of these inter-stage transfer costs as an explicit design goal, and that it was expected that those savings would cover the cost of the system. Unfortunately, I've been unable to find a post-mortem report assessing this claim.

[x] See generally "*Achieving the Potential The Future of Federal e-Rulemaking, A Report to Congress and the President*", a report of the ABA Committee on the Status and Future of e-Rulemaking. Available online at http://ceri.law.cornell.edu/erm-comm.php .

[xi] Letter to the Honorable Karen Haas from Speaker John A Boehner and Majority Leader Eric Cantor (April 29, 2011), available at http://scr.bi/inig4d.

[xii] See generally Bruce, "*Some thoughts on the Constitution of Public Legal Information Providers*", originally published 2004 in the Journal of Information Law and Technology, available online at http://www.law.cornell.edu/working-papers/open/bruce/warwick.html . More recently, Robinson et al have addressed government web sites in their very influential paper "*Government Data and the Invisible Hand*", available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1138083

[xiii] The main reason for uncertainty is that some users of tax software continue to file by mail. That number is known to be declining, but an exact figure is hard to come by. A look at the 2010 report of the Electronic Tax Administration Advisory Committee (available at http://www.irs.gov/pub/irs-pdf/p3415.pdf) holds a few clues. Roughly 77% of taxpayers now e-file individual tax returns. TurboTax sales would equal about 19% of that total, but that figure should be discounted by whatever percentage of TurboTax users file manually. If a quarter of TurboTax users still file manually, then TurboTax accounts for about 15% of all e-filers.

[xiv] See, generally, the ETAAC report at http://www.irs.gov/pub/irs-pdf/p3415.pdf.

[xv] See, for example, Frug, "*Ground-up law. Source quality, access, and the CFR*", at http://www.hklii.hk/conference/paper/2B3.pdf

[xvi] For example, there have been 3 unsuccessful attempts made to create an external federated search apparatus for the United States Courts of Appeal -- two by us, and one by the now-defunct AltLaw site at Columbia Law School. All three were frustrated by shifting, ongoing inconsistencies in the labeling and organization of data by the 13 Circuit Courts, which among them use at least 7 different systems for file-naming alone. A successful attempt by Justia.com requires extensive manual maintenance by programming staff on an average of once every two weeks.

[xvii] One example of such a system, built in Australia, is described here: http://www.austlii.edu.au/austlii/research/2008/pit/ . Similar systems exist in Canada and Papua New Guinea among other places.

[xviii] The feature is created by mashing up data created by parsing the current Classification Tables published by the Office of the Law Revision Counsel and combining it with data taken from THOMAS. Parsing the Classification Tables is itself a task that would be made much easier by making them available in XML. They provide a very good example of something whose design is nicely optimized for human consumption in print, but can only laboriously be made machine-readable (the Parallel Table of Authorities and rules is another such). Too, one might question why there is no resource available to the public that fills the same need with respect to the US Code that the e-CFR does for the Code of Federal Regulations.

[xix] See, eg., Hillmann, Dushay, and Phipps, "*Improving Metadata Quality: Augmentation and Recombination*" [2004] at http://dcpapers.dublincore.org/ojs/pubs/article/viewArticle/770 for ideas about how this might be done, and why.

[xx] A typical example of such an approach would be the use of authority files to validate legal citations. The general idea is to survey the entire corpus to collect a list of referenceable documents, from which it is possible to assemble a canonical file of valid possible citations. Citations within the corpus can then be compared to the canonical file to determine validity. We use similar techniques to assemble a database of valid US Code section numbers, since these cannot be calculated according to any rational algorithm.

[xxi] See Wikipedia's explanation of APIs at http://en.wikipedia.org/wiki/Api . In general, APIs specify methods by which external programs may access data or methods implemented in software running independently.

[xxii] See http://tools.ietf.org/html/draft-spinosa-urn-lex-01

[xxiii] Somewhat self-referentially, a Google search on the terms "google API documentation" turns up a substantial number of useful hits.

[xxiv] A partial list of examples would include the work at xml.house.gov, the LII's work on legislative metadata modeling for the Library of Congress, and some of the work that has gone into FDSYS at the Government Printing Office, as well as exemplary efforts with legislation in the UK.

[xxv] ETAAC is described at http://www.irs.gov/efile/article/0,,id=136216,00.html . A look at the linked biographies of ETAAC members provides some idea of the scope of involvement by diverse industries, and a look at the ETAAC annual reports paints a picture of robust and focused collaboration.

[xxvi] These figures are drawn from the latest demographic data available from the Pew Trust Internet and American Life Project, available online at http://www.pewinternet.org/Static-Pages/Trend-Data/Whos-Online.aspx

[xxvii] For a concise summary of useful ideas on this point, see the Ithaka S+R study of the Federal Depository Library Program, at http://www.ithaka.org/ithaka-s-r/research/documents-for-a-digital-democracy

Comments of the Cornell Legal Information Institute

before the

Committee on House Administration
Subcommittee on Oversight

Biography of Thomas R. Bruce

June 16, 2011

Thomas R. Bruce is the co-founder and Director of the Legal Information Institute (LII), a research and publication activity of the Cornell Law School. The LII's mission is to facilitate public access to legal information through the application of technical and editorial innovation. The LII was the first legal-information site on the Web, offering Supreme Court opinions in 1992 and a full US Code in 1994. It developed the first XML version of the Code in 2000, and will this year release a full edition of the Code of Federal Regulations developed in collaboration with the Office of the Federal Register and the US Government Printing Office.

Bruce was the author of the first web browser for the Microsoft Windows platform, and an early contributor to Web standards and practices. He is the technical architect of numerous legal resources on the Web, ranging from an edition of a sixteenth-century law text delivered in Latin and English (Bracton) to an alternative law-school curriculum developed by 7 teachers at the Harvard Law School, as well as many of the LII's collections and services. He has acted as a consultant to legal-publishing efforts in 14 countries on 4 continents, including work in Vietnam, Sweden, Australia, South Africa, Japan, and the Seychelles. In the US, he has consulted for commercial legal publishers including West Group and Lexis-Nexis. He and his team have currently been engaged to rethink the legislative metadata models that underpin the information systems run by the Library of Congress.

Bruce has been a Fellow of the Center for Online Dispute Resolution at the University of Massachusetts and a Senior International Fellow at the University of Melbourne School of Law in Australia. He served as a member of the ABA Section of Administrative Law Special Committee on the Status and Future of e-Rulemaking, and has worked as an invited expert on legal dissemination for the Hague Conference on Private International Law. He has long been a Director of the Center for Computer-Assisted Legal Instruction, a consortium of nearly 200 American law schools aimed at fostering the use of computer techniques in legal education.

Bruce was educated at Yale College and the Yale School of Drama, from which he received the Bert Gruver Prize in Stage Management.

Mr. GINGREY. We now go to Mr. Cunningham.

STATEMENT OF KENT CUNNINGHAM

Mr. CUNNINGHAM. Chairman Gingrey, Ranking Member Lofgren, and members of the subcommittee, my name is Kent Cunningham. I am the chief technology officer for Microsoft's Federal Civilian and Healthcare Group.

I appreciate today's opportunity to share Microsoft's views on how the House can modernize information delivery, improve productivity, and reduce paper throughout the legislative process.

The first thing that I would like to openly acknowledge is that technology does not solve problems. People and processes solve problems. And before any workplace can become truly productive, we have to engage the right people and craft the optimal processes which we will utilize to reach our collective goals.

During this past year, I have responded to countless government RFPs, edited numerous public documents for Microsoft, and most recently collaborated to produce my first House testimony, all without highlighting, retyping, or even printing a single document until this one that I hold in my hand today.

Perhaps of additional interest is that, thanks to the technology advancements which I will share with you today, I have also been able do all of this while living in Nashville, Tennessee, working almost exclusively remotely from Microsoft's headquarters and my geographically dispersed teammates.

Through the use of centralized collaboration platforms, my coworkers, partners, and I routinely collaborate to create confidential documentation from different corners of the country, all while working simultaneously from various devices, operating systems, and platforms.

I firmly believe that the House can also achieve great productivity gains through the use of these tools, while reducing costs and ensuring confidentiality. As we all know, the House is inherently a collaborative body. Collaboration, relationships in the House often evolve based on particular interests or issues. This means that who you work with on one project may very well not be who you are working with on another project. And this is why confidentiality and access controls must be integral components of any system that the House adopts. Today's collaboration platforms can easily accommodate these scenarios.

And in the next few moments, I would like to highlight four specific ways in which the House could benefit from a more modern and collaborative IT environment.

First, the House could quickly expand upon its existing IT systems by providing unified access to real-time collaboration mechanisms such as user presence, instant messaging, and even real-time voice and video conferencing for the House Members and staff. These tools deliver the capabilities to quickly determine who is available for an immediate conversation and what might be the best way to engage them for a given scenario.

Second, the House could deploy technology to improve the creation and sharing of digital information. Web-based document coauthoring could be utilized to develop and refine legislation across multiple authors, offices, and computing platforms in real time. If

this information were then downloaded and shared electronically via e-mail, permissions can be assigned to the document itself which controls who can view, edit, or modify the content, or even who can copy it, paste it, and forward it to others.

Third, the House could implement enhanced search features to enable faster access to more contextual decision-making. For example, the House directory could be published in a searchable electronic format which makes it easy to discover which offices and individuals are working on a particular issue, or find someone who has expertise on a particular topic, or even perhaps build a mailing list of all LAs who cover a particular issue for Members of a State delegation, committee, or party.

Finally, the House could increase productivity by empowering people to work effectively regardless of where they are, whether they are in the office or on the go. In fact, many Members of the House are commonly adopting a broad range of exciting new devices and applications to connect with each other already.

However, many of these tools were designed primarily to meet the day-to-day needs of consumers, and not the special needs of a government institution, where security, reliability, and trust are paramount. As the House considers how to best modernize its IT system, it should keep in mind three important challenges.

First is security. The House routinely deals with sensitive or confidential information that must remain protected and secure.

Second is document fidelity. Unless the electronic system can ensure document fidelity, information or features that are embedded within the document could be lost while documents traverse various files and platforms. For example, imagine if a watermark, including the information that named a document as confidential, were lost in this process.

Third is interoperability. For the House to obtain full value from its information technology investments, the various applications, devices, and platforms used by Members must be able to access and utilize this information easily.

In conclusion, I am happy to report that the House has already laid the foundation for this framework with many of its existing infrastructure investments. My written testimony details specific measures that the House is well positioned to implement over the next 18 months. These include Web-enabled document collaboration; shared online work spaces; an electronic directory; presence features to enable real-time instant messaging, video chat, application sharing, and even group teleconferencing; and finally, federation for agency communications.

Again, on behalf of Microsoft, thank you for the opportunity to testify today. I look forward to your questions.

Mr. GINGREY. Thank you, Mr. Cunningham.

[The statement of Mr. Cunningham follows:]

STATEMENT OF KENT CUNNINGHAM
CHIEF TECHNOLOGY OFFICER, FEDERAL CIVILIAN AND HEALTHCARE
MICROSOFT CORPORATION

BEFORE THE
COMMITTEE ON HOUSE ADMINISTRATION SUBCOMMITTEE ON OVERSIGHT
UNITED STATES HOUSE OF REPRESENTATIVES

HEARING ON MODERNIZING INFORMATION DELIVERY IN THE HOUSE

"THE FUTURE OF PRODUCTIVITY"

JUNE 16, 2011

Mr. Chairman, Representative Lofgren, and members of the Subcommittee, my name is Kent Cunningham, and I am the Chief Technology Officer of Microsoft's Federal Civilian and Healthcare group. I appreciate the opportunity to share Microsoft's views on how the House can improve productivity and efficiency, and modernize information consumption and delivery, throughout the legislative process. And we applaud the Subcommittee's leadership in holding today's hearing.

For over thirty years, Microsoft has helped individuals and organizations work more efficiently, collaborate more effectively, and achieve results. In particular, our work with public sector entities at all levels of government, all around the world, has enabled us to build a deep understanding of government security, privacy, and compliance needs.

Although the House is in many ways similar to other large enterprises, it is also special in that it is an inherently collaborative body. Documents get written, schedules are coordinated, disagreements get resolved, and legislation moves from the drafting phase all the way to enrollment because people work together across office, committee, and party boundaries. Another unique aspect of the House is the transient nature of many collaborative relationships: whereas private-sector employees have an aligned interest in helping their organization execute its overall corporate strategy, in the House of Representatives two offices might cooperate on a particular issue in the morning and find themselves at cross-purposes on another issue in the afternoon. The House's operations can be improved and made more efficient by using technology to promote situational trust relationships and flexible, context-specific collaboration.

Members and staff are already adopting and embracing a broad range of exciting new devices and applications for collaboration and productivity. However, most of these devices and applications were designed primarily to meet consumers' day-to-day demands, not the special

needs of an government institution. Use of consumer tools within the House can expose the organization to certain risks and inefficiencies, which could ultimately result in more to manage and even more silos and barriers to House-wide collaboration. Microsoft has decades of experience in helping organizations implement systems that accommodate users' desire for choice, flexibility, and mobility, and still satisfy the enterprise's need for security, integrity, and reliability. Time and time again, our experience has taught us that collaborative tools work best if deployed within a unified information technology framework that permits secure, reliable collaboration across multiple devices and applications.

In the first section of my testimony, I will discuss how existing technological solutions can be used to unify the disparate systems by which House employees communicate; simplify the process of creating, editing, and sharing digital information; efficiently locate the data that people need to be productive; and empower House employees to work effectively anywhere, at any time. The second section will outline some of the considerations we believe the House should weigh as it modernizes systems and facilitates collaboration and content delivery. And finally, I will recommend several steps the House can take today to immediately realize some of the business process efficiencies enjoyed by our private sector customers.

I. The Benefits of a More Collaborative, Automated Environment

I would like to begin by highlighting four ways in which enterprise-grade technology tools can be used to strengthen collaboration and improve productivity in the House. First, unified communications technologies can integrate voice communications with email, data, and video systems, untethering Members and staff from their phone wall jacks and liberating them to communicate over a wide range of devices. Second, modern technology tools make it easier than ever to create, edit, and share digital information, while ensuring that only intended recipients gain access to confidential data. Third, better search capabilities customized around

the House's unique organization and structure can contribute to smarter and faster decision-making. Finally, technology can maximize productivity by enabling people to work effectively regardless of whether they are in the office, on the House floor, or on the go.

Although many Members and staff are already taking advantage of a range of collaborative technologies, they are doing so on an *ad hoc* basis, using a variety of tools and networks that do not always work together. The House could enhance cooperation and improve efficiency by adopting integrated enterprise productivity solutions that would free users to decide how, where, and with whom they want to collaborate.

A. Unifying Communications

The phones that sit on congressional desks have remained largely unchanged for many years. The networks over which they communicate are more sophisticated, and the units themselves have more features, but essentially the phones serve only one purpose: making and receiving voice calls. Reaching out in real time means calling the other person's number and hoping that he or she happens to be available. Collaborating on projects also consumes significant time from multiple resources. Simply getting together for a meeting often requires coordinating schedules, arranging travel, printing agendas, and distributing hard copy briefing materials in advance.

Today, technology enables colleagues to stay in continuous contact, across a variety of media. Communications can be managed from a single "universal inbox" that seamlessly brings together e-mail, voicemail, instant messaging ("IM"), VoIP, and web-, audio-, and videoconferencing. Better yet, this technology can be rolled out with minimal disruption to an organization's existing infrastructure.

Presence information (e.g., an indicator of whether a person is online, away from their desk, busy, in a meeting, on a call, or does not want to be disturbed) can also be integrated into

the collaboration environment, allowing other users to instantly see who is available and how best to reach them. Presence information can be further enhanced to make collaboration and communications even more effective and efficient. For instance, calendar information can be integrated into the system so that the user's status is automatically set to "in a meeting" when the user has a scheduled meeting. Presence information is the foundation for managing all different levels of communication, because it enables people to communicate in the way that is most suitable for the task at hand. For example, a House staffer who sees that a colleague is online can send an IM to initiate a conversation. Depending on the context and need, the parties can complete their communication via IM, escalate the conversation to a phone call or videoconference, invite others to join the conversation, or launch a collaborative online session that allows them to easily share desktop content in real time.

Unified communications are already transforming productivity at geographically dispersed organizations such as the U.S. Department of Agriculture ("USDA"), whose employees are located in 5,000 offices across the country and 100 countries around the globe.[1] According to the USDA, the ability to see colleagues' availability and choose whether to communicate via chat, voice, or mail allows its 120,000 employees to collaborate more effectively and use taxpayer dollars more efficiently.

Unified communications can even encompass communications with individuals outside the organization's network. Microsoft's enterprise tools provide a unique communication capability that we call federation. Through federation, it is now possible to communicate with IM users across a variety of third-party platforms, including AOL IM, Google Talk, Jabber,

[1] *See USDA Moves 120,000 Users to Microsoft's Cloud*, MICROSOFT (Dec. 8, 2010), http://www.microsoft.com/presspass/features/2010/dec10/12-08usda.mspx.

Windows Live Messenger, and Yahoo! Messenger. At the same time, conversations can be selectively filtered to ensure that confidential information is not transmitted to platforms that lack the necessary security. Federation has already helped businesses break down technology silos and achieve better collaboration with partners, suppliers, and customers. The House could similarly use federation to facilitate communications with other government institutions, stakeholders, and constituents, while maintaining the privacy and confidentiality required for sensitive information.

In addition, there are a variety of technological solutions that can make meetings more flexible and productive. Adopting integrated scheduling tools would make it easy for the House to prioritize and move meetings around in order to optimize scheduling. Agendas and related content can now be sent to the meeting space electronically, eliminating the need to hand out paper documents. Technology has made it easier than ever to share documents once the meeting has started, even when the participants are not in the same room: besides sharing desktop files, people can use virtual whiteboards to draw diagrams and explain things to one another. And meetings can be transcribed, archived, and indexed for search, so that anyone who missed a meeting can later replay it and stay in the loop.

B. Making It Easier to Create, Edit, and Share Digital Information

Given how far technology has come in recent years, it is easy to forget how much time and effort it once took to create documents, memos, and reports. Documents used to be typed, and mistakes were commonly corrected with white-out. Making one change could sometimes require retyping the whole document. Authoring documents collaboratively was a time- and paper-intensive process that could stretch out across weeks or months as paper copies of each revision were shuffled manually from office to office.

The widespread use of PCs and the development of standards such as XML have simplified things greatly, but technology exists today that could streamline the process even further. In today's highly connected work environment, for example, documents created by multiple authors and stakeholders are becoming the rule rather than the exception. Traditional collaboration required users to pass attachments around, then struggle to reconcile different versions, manually merge and coordinate changes, and track down who had done what. Thanks to modern co-authoring tools, multiple users now can work productively on the same document at the same time. For example, several authors who are brainstorming together can quickly capture ideas in a document that is visible to, and can be edited by, everyone involved. Or several authors can work on a composite slide show together by adding slides to separate parts of the presentation, instead of working in isolation and trying to merge their changes later. Cross-platform synchronization ensures that everyone is working off of the latest version of the draft briefing paper, Committee mark-up memo, letter to a constituent, or press release – regardless of whether they are accessing the document on their PC, on their Mac, via their mobile devices, or in the cloud. Version control tools make it easy to identify who made what changes, when the changes were made, and who has reviewed and approved the changes. Staff can also stay informed about ongoing developments in the collaborative workflow, with email alerts that notify them when new files have been created or existing documents edited.

The newsroom application being used by the Associated Press ("AP") illustrates the benefits that can be achieved through this kind of real-time collaboration.[2] The pressures of the 24-hour global news cycle mean that news organizations must produce stories faster than ever

[2] *See Associated Press' News Network Streamlines Editorial Process with Flexible, Efficient Newsroom System*. MICROSOFT (May 12, 2010), http://www.microsoft.com/casestudies/Case_Study_Detail.aspx?CaseStudyID=4000006933.

before, using richer multimedia content formats, and at lower cost. The AP's newsroom application, which is based on Microsoft SharePoint Server 2010 and Microsoft Word 2010, is helping the AP reach these goals. The application allows journalists working collaboratively on stories to instantly determine which of multiple versions of a story is the most current, reducing confusion and increasing productivity. As a story is edited and refined, editors can instantly see the entire history of a particular story. And accompanying material generated during the story development process can be gathered together quickly, making it easy to manage a group of related pieces as a single entity. One can easily envision the benefits of version control tools in the House, where Members, staff, and other stakeholders are in a continuous and highly collaborative process of shaping, refining, and integrating different parts of legislative text across multiple authors and offices.

The city of Poway, California is also taking advantage of Microsoft's enterprise tools to improve collaboration and deliver results faster.[3] Employees in Poway's Finance Department use the city's intranet site to help develop the city's annual budget. Spreadsheets and other budget documents are posted on the department's team site. Individuals can then review, edit, and update these documents without creating multiple versions or sending the files repeatedly through email, which has caused version control and document fidelity problems in the past. In the first year after Poway's Finance Department began sharing and editing documents via the team site, the budget development process proceeded significantly faster than before.

Finally, it is worth noting that the transition to new technology does not necessarily have to be a complicated process requiring extensive training for new users. Familiar, intuitive

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[3] *See City of Poway, City Rebuilds Intranet, Speeds Content Updates, Reduces IT Maintenance by 50 Percent*, MICROSOFT (May 3, 2011), http://www.microsoft.com/casestudies/Microsoft-Sharepoint-Server-2010/City-of-Poway/City-Rebuilds-Intranet-Speeds-Content-Updates-Reduces-IT-Maintenance-by-50-Percent/4000009857.

programs like Word already support multiple file formats, including the Open XML and PDF formats that the House uses – meaning that users can do everything they need to do within a single program interface, even if they need to interact with different systems used by other organizations. One of the reasons the AP built its newsroom application around Word 2010 was so that journalists could work in a word processing environment they are comfortable with. This allows the AP's journalists to spend more time reporting the news and less time grappling with unfamiliar technology. And because Word 2010 supports the standards-based Open XML file format, it is easy to connect the AP's editorial application with its proprietary content-processing and publishing systems.

C. Simplifying Information Retrieval

Employees spend too much of their workday simply looking for the information they need to do their jobs. The Congressional Research Service is a great resource when members and staff need timely, reliable research about an issue, but it is ill-suited to the task of searching information particular to a congressional office, or that was created by several offices working together on a project outside the formal legislative process workflow. The modern reality of large enterprises like the House of Representatives is that data has become scattered across network shares, email systems, hard drives, websites, and elsewhere. Only the most disciplined offices have structured file storage systems to ensure that their staff know which sources to search, and even the staff in these offices probably spend too much time looking for – rather than finding – the information they need.

Many of Microsoft's enterprise customers in both the public and private sector have deployed enhanced search capabilities to help their employees quickly and easily find relevant information, which leads to faster and smarter decision-making. Today's sophisticated search tools allow users to refine their search results based on the type of content (Web page,

spreadsheet, presentation, PDF, and so on), location, author, last modified date, and metadata tags. Many enterprises are also tailoring users' search experience based on their role within the organization. Instead of being shaped by the factors that influence consumer search portals, such as the user's recent purchases or advertisers' keyword selections, enterprise search results can be personalized to reflect individuals' particular job responsibilities, preferred file formats, which search results their colleagues found valuable, and a host of other customizable elements – all designed to help individuals navigate more quickly to the right content in the context of the work they do. The House could use these advanced search technologies to create specific search criteria and tools based on the House's unique taxonomy, organization, and contextual needs.

Technology also makes it possible to index and search across vastly disparate information sources. For instance, Microsoft recently helped the United Kingdom's National Institute for Health and Clinic Excellence ("NICE") index various databases that were using different data structures, metadata tagging schemes, and organizational taxonomies.[4] NICE's Internet portal now offers health professionals a single access point for searching more than 250 sources of evidence-based medical guidance, with filters to refine results according to areas of interest, document type, and other categories.

Thanks to breakthroughs in speech recognition technology by Microsoft Research, search can be extended to audio and video files as well. For example, the states of Washington and Montana are using Microsoft technology to provide citizens with the ability to query decades of

[4] *See National Institute for Health and Clinical Excellence: Health Agency Simplifies Information Access for Health Professionals with Web Portal*. MICROSOFT (Jan. 12, 2011), http://www.microsoft.com/casestudies/Microsoft-Sharepoint-Server-2010/National-Institute-for-Health-and-Clinical-Excellence/Health-Agency-Simplifies-Information-Access-for-Health-Professionals-with-Web-Portal/4000008943.

digitally archived legislative proceedings.[5] Users can enter search terms and then listen to the exact moments in the proceedings when the search terms were spoken. Considering how much House business – both floor and committee proceedings – relies on verbal communication, the ability to search this content could be an invaluable productivity and reference tool.

D. Working from Anywhere

Once upon a time, "going to work" meant physically traveling to an office. The office was often the only place where employees could access necessary tools such as typewriters or photocopiers. Information required to get the job done was stored in desk drawers or filing cabinets. Employees needed to be at their desks in case someone wanted to reach them by phone.

Today, we take for granted the way that laptops and mobile devices have liberated us from our offices. We can now work productively in the conference room down the hall, in the coffee shop down the street, at home, standing on the people-mover at the airport, or even in the air as we fly across the country. Tablets can now be used to look up a fact or retrieve a document in the middle of a mark-up or floor debate. Online collaboration tools make files, spreadsheets, presentations, and other resources available wherever and whenever they are needed. Security protections for online workgroup sites and rights management technology can help guarantee that only authorized users have access to sensitive or confidential information.

Even in circumstances where it is not possible to connect to the Internet, technology can ensure that users experience a seamless transition between their online and offline working environments. Changes made in the offline version of a document can be saved and

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[5] *See Audio Records*, WASHINGTON STATE ARCHIVES - DIGITAL ARCHIVES, http://www.digitalarchives.wa.gov/Collections#RSID:25 (last visited June 11, 2011); *Audio*, MONT. HISTORICAL SOC'Y, http://www.montanadigitalarchives.com/Collections.aspx#RSID:25 (last visited June 11, 2011).

automatically implemented in the online version once the user reconnects. If other people are also using that document, the updated file can be automatically synchronized across everyone's computers to ensure that everyone has access to the latest version of the document.

Users deserve to have a similarly seamless experience when using multiple devices to access their information or edit their documents. "Working from anywhere" now also means that a person can, for example, create a document on his or her computer, save it to an online workgroup, invite others to comment, use his or her mobile device during a break between meetings to review edits, then return to his or her office to implement the suggestions and finalize the document. People expect that their documents will be able to "round trip" from their PC or Mac to the browser to the phone and back, without losing any data, formatting, or edits.

II. The Challenges Associated with the Move Toward a More Collaborative Environment

Although collaboration tools can empower employees to connect and work across organizational boundaries, there are technical considerations that should be kept in mind as the House moves forward with its modernization efforts. Microsoft's experience in the enterprise space has taught us that security, document fidelity, and interoperability all present challenges when organizations transition to a more collaborative environment. These challenges can be addressed by implementing an organization-wide platform to securely manage collaboration and communication across multiple devices, locations, and users.

A. Security

Today's tech-savvy consumers are increasingly bringing their personal technology to the office, seeking new ways to work that align with how they use social, mobile, and digital tools in their personal lives. In the House, Members and staff are already using text messaging, chat services, cloud storage services, and instant messaging to communicate with colleagues and

friends. Although the House should encourage the use of tools that promote productivity, security must be maintained as well – a task which is significantly more challenging when dealing with consumer-grade tools that were not built with security in mind. For example, hackers have been known to target the personal web-based email accounts of U.S. officials in the hopes of obtaining sensitive information.[6] These personal accounts are often more vulnerable because they do not have the same level of security controls that government institutions require for confidentiality and privacy purposes. Similarly, many consumer IM platforms and text messages sent from consumer devices lack the encryption and recipient authentication requirements that are normally enforced by government agencies to ensure that information remains protected and secure.

This Subcommittee could help modernize information management in the House by developing a single, interoperable platform that accommodates users' desire to choose their own devices and applications and that also supports institutional and legal requirements for data security and retention. There are already many existing tools that could help the House manage security across a variety of areas, including:

- Content Security. Rights can be configured so that only certain individuals are able to open, modify, copy, print, forward, or take other specific actions with a file. Filtering tools can be applied to outgoing communications, allowing individual offices to determine whether a particular piece of content is appropriate for public distribution before it leaves the boundaries of the House's network.

- Network Access Security. In many instances, organizations rely on networks to provide security – an approach that may be acceptable when the user is working inside the organization's secure borders, but that may present significantly greater concerns when the same user takes his or her laptop to the local coffee shop and begins accessing content over the coffee shop's unsecured network. There are existing tools that can analyze the

[6] *See, e.g.*, Devlin Barrett & Siobhan Gorman, *Gmail Hack Targeted White House*, WALL ST. J., June 3, 2011, http://online.wsj.com/article/SB10001424052702304563104576361863723857124.html.

security of a user's network and determine whether it is safe to transmit information over that particular network at that particular time.

- Device Security. Organizations are increasingly allowing employees to use their personal devices on organizational networks. If consumer devices are going to be used to conduct official business, however, those devices need to support enterprise-level controls for authentication, security, and access. For example, several agencies are using technological solutions that encrypt and protect data when it is downloaded onto employees' personal portable devices. The House could employ similar tools to safeguard against inadvertent data losses.

- User Access Security. Existing authentication tools can help ensure that data is accessed only by authorized users. The House could use these tools to confirm the identity of a text message recipient, for example, or prevent unauthorized individuals from accessing online workspaces. And because security measures such as two-factor authentication can often be deployed in combination with users' existing personal devices, the House can take steps to ensure security while still accommodating users' desire for flexibility and choice.

B. Document Fidelity

As discussed above, people are now using a variety of platforms to access information and edit files, enabling them to be productive no matter where they happen to be or what device they prefer to use. As files move from the cloud to PC to mobile and back to the cloud, however, document fidelity must be maintained. Otherwise, data embedded within the file is at risk of being lost during the conversion process. Sometimes this data loss results in only minor changes – a lost font, some missing metadata tags, or a few bullet points that are no longer formatted correctly. But sometimes this data loss can have far more significant consequences. For example, the loss of an "embargoed" or "confidential" watermark can result in the premature release of information, or the leakage of data that was never intended for public consumption at all. In addition, there is no way to predict when data will be lost or which of the document's features will no longer work properly. In the context of the House, where even small deviations in an official document can have a major impact, document fidelity should not be taken lightly.

One way to protect document fidelity is by using platforms that support standards such as Open XML throughout every stage of the workflow. Because these platforms ensure that files are created, edited, stored, and archived in standard formats, documents can be repeatedly opened and closed across multiple devices without losing any of the features or data that are integral to the document. Being able to simply read and write standard document formats is not enough. If the documents are not also stored in these formats, that means they are deconstructed and reconstructed, a process that puts document fidelity at risk. Microsoft helped create the Open XML standard, and we remain an industry leader in delivering technological, standards-based solutions that safeguard document fidelity.

C. Interoperability

Most people today work in mixed computing environments, where legacy data is stored in a variety of formats and technology solutions are provided by a variety of companies, products, and applications. Using heterogeneous tools often results in technology silos, with each system having separate hardware, maintenance, external implementation, and internal support requirements. In order to obtain full value from their information technology investments, organizations need to be able to connect and share data among different applications, devices, platforms, and components. Unless interoperability considerations are built into a system from the start, however, the cost of achieving interoperability can often exceed the cost of acquiring the system in the first place.

Organizations can leverage their legacy data and existing assets by using standards and focusing on interoperability. Maintaining a high level of interoperability is imperative as the House seeks to reduce the costs associated with managing information technology assets, and standards are one way of achieving this goal. Because standards are designed to be implemented by multiple applications on multiple platforms, it is easy to transfer data between different

devices and applications that conform to standards. Standards also enable the efficient extraction and migration of data, making it easier for organizations to switch to a different service or provider that offers better value. Finally, standards can be dynamically updated to reflect the rapid pace of technological change, ensuring that data and systems remain relevant in the future.

In short, interoperable, standards-based platforms make it possible to provide an integrated, managed computing environment that supports institutional requirements for security and reliability while accommodating users' desire to choose the productivity tools that work best for them.

III. What Can the House Do Today?

Because the House has already made significant infrastructural investments, many of the technological advances described in my testimony are readily attainable. By implementing a technology called Active Directory, the House has already laid the foundation for a modern, collaborative, and information-driven work environment. This is the most important step our customers can take to prepare to leverage the power of modern productivity, collaboration, and relationship management tools, and the House has already taken it.

In the next eighteen months, the House could implement the following measures to further promote collaboration and improve efficiency:

- Deploy a web-enabled document collaboration platform to facilitate co-authoring of legislation, reports, and other documents. This same platform could also automate workflow capability to consistently manage common processes such as approvals and notifications of document changes.
- Empower individual offices to establish *ad hoc* online workgroups that transcend office, party, and committee boundaries. For example, members of a state delegation could easily work together and share documents regarding a particular issue that affects their state – even if they are members of different parties, sit on different committees, and are not collaborating on other, unrelated issues.
- Publish the House Directory in an easily accessed, always up-to-date electronic format that makes it easy to find out which offices and which individuals within a given office

are working on a particular issue. Such a system could synchronize the House Directory (including leadership, personal, committee, administrative and even caucus offices) in whole or part to mobile devices.

- Enable presence features, so that people know who is available for a conversation and how best to reach them.
- Federate with outside agencies and institutions so that individuals within the House can communicate with outside experts and stakeholders on an as-needed basis.

IV. Conclusion

Again, thank you for inviting Microsoft to share our recommendations with you. Based on our extensive experience in helping enterprises and government institutions develop efficient, digital workplaces, we believe that the House is well positioned to adopt a number of collaborative technologies that could improve productivity, automate workflows, and reduce paper – all while supporting the House's need for secure, reliable, and interoperable technology solutions.

We commend the Subcommittee for holding this hearing today, and we look forward to working with you as the Subcommittee continues with its initiative to modernize information delivery in the House.

Mr. GINGREY. We will now call on Mr. Reed for his testimony.

STATEMENT OF MORGAN REED

Mr. REED. I am going to make sure I eat my own dog food here. I am using a nonpaper version today.

Chairman Gingrey, Ranking Member Lofgren, and distinguished members of the committee, I am the executive director of the Association for Competitive Technology, or ACT, and we are an advocacy and education organization for people who write software programs, we refer to them as application developers, and providers of information technology services. We represent over 3,000 small- and mid-sized IT firms throughout the world, and advocate for public policies that help our members leverage their intellectual assets, raise capital, create jobs, and innovate.

In discussing this hearing with committee staff, the question was posed whether the House could conduct official business, especially hearings, using modern technology rather than the traditional binder, folder, or sheaf of looseleaf paper. Could committee members use a Windows tablet, an iPad or a Kindle during a markup or a hearing in the absence of paper? The answer is, of course. But this isn't really the whole question.

Instead, the larger question to answer is how can the House use technology that is transformative to the way that Members of Congress do the work of representing their constituents? And "transformative" may seem like a broad term, but we witnessed two different transformative events in the last 13 to 15 years. The Blackberry. Every Member of Congress' thumbs is a powerful part of their hand now, and the Internet itself.

So rather than spend 5 minutes of my time on acronyms and statistics, I thought I would look at a couple day-in-the-life examples of a Member of Congress. So let's look at the typical Thursday afternoon after last votes. Members are hurrying to the airport, staff has prepared documents for them, and they hand them on their way to the airport something that might look like that. Now, of course every Member of Congress would rather not get on the airplane with this, and rather have a device, say this thick, to go with them. But just translating paper into electronic form isn't really transformative, other than to your chiropractic bill.

But you know what is transformative is, let's say in here is a GAO report that you wanted to take a look at on the plane flight home. Instead of looking at it here, you open it up in an app. Let's look at one called iAnnotate. It is a PDF. You open it up. And instead of just reading it and trying to type notes in your Blackberry while you read it on your electronic device balanced in your coach seat, you actually can edit it with your fingertip right as you travel. You know, you see a question here in the report, so you highlight it with your finger. And you know, you are not sure where this goes, so you send a note and you mark it red so that Ted, your legislative director, can see it when it gets back to the office. And you know, you have got some graphics and notes that you think you should do when the next report comes out. And the beauty of this is when you land, this copy, this container of this information, is automatically synched up with your office back in the district. And so Ted, your LD, can look at all the questions in red and answer

them in blue so that when you open this document up again, you can not only see the questions you asked, you can see the answers.

Let's look at another one, the hearing. We all know that in front of you is folders and looseleaf binders and information that has been put in place. But we also know what happens when a vote happens. Let's say you are in another committee and there is a markup. Well, it would be really nice for you to go to that next markup and still keep track of what is going on in the hearing you just left.

Well, with TVEyes, for example, which is not even an app—this is a Web-based program that runs on Windows tablets and iPhones and even Blackberry devices—you can see what is going on and have an actual video image of what is going on in the hearing.

But you know, that probably bothers your colleagues. So instead, real-time transcript. You know, maybe this witness, maybe he said something you weren't sure about, and you want to ask him a follow-up question. Highlight it with your finger, click e-mail and transcript, and the staff who is still in the committee hearing can see the question you asked. And when you show back up, you have got a follow-up question ready, with the supporting documentation attached.

This is happening now. This can be done. But I think it is very critical to look at what my colleague here, Mr. Cunningham, has talked about, which is the ability to provide all of this information with an infrastructure that is enterprise-ready and secure.

Because I will give you another example. Let's step it up a game. Let's say that Member on the Thursday trip that you went back for the district work period, your first stop was actually at an event for your constituents. And there are five members that are going to be there, five people from your district who are going to be there, that have had contact with your district office. Imagine if you can walk in, know who they are, know who talked to them in your office, the status of their request, and change from those times when you have always had to say, "We will get back to you" to saying, "We are here for you now."

I look forward to your questions.

Mr. GINGREY. Thank you, Mr. Reed.

[The statement of Mr. Reed follows:]

Testimony

of Morgan Reed
Executive Director
The Association for Competitive Technology

before the
Committee on House Administration
Subcommittee on Oversight Hearing

on
Modernizing Information Delivery in the House

June 16, 2011

Chairman Gingrey, Ranking Member Lofgren, and distinguished members of this Committee, I appreciate the opportunity to appear before you today to talk about technology that could increase the efficiency and effectiveness of communication within Congress.

I am the Executive Director of the Association for Competitive Technology (ACT). ACT is an advocacy and education organization for people who write software programs--referred to as application developers--and providers of information technology (IT) services. We represent over 3,000 small and mid-sized IT companies which includes a significant number of mobile app developers, and advocate for public policies that help our members leverage their intellectual assets to raise capital, create jobs, and innovate.

I am pleased to talk today about technology in the House of Representatives. This institution has undergone many changes in recent years and the decision to allow the use of iPads on the House floor and in official settings reflects the growing influence these devices have on our everyday lives. This merely scratches the surface of the range of possibilities available to House Members and their staff.

In discussing this hearing with committee staff, the question was posed whether the House could conduct official business, especially hearings, using modern technology, rather than the traditional binder, folder, or sheaf of loose-leaf pages. Could Committee Members could use an iPad, a Kindle, or other tablet device during a markup or hearing in the absence of paper? The answer is "of course".

But this isn't really the whole question. Instead the larger question to answer is: How can the House use technology to conduct official business in a way that's more efficient, informative, and transformative to the way Members of Congress do the work of representing their constituents?

"Transformative" may seem too broad a term, but we've witnessed at least two major "transformative" changes in the way the Congress works over the past twenty years - the rise of the internet and the adoption of the Blackberry. I am confident that mobile computing is a "third wave," one that will rival the congressional impact of the Blackberry and internet combined.

No Member of Congress can say that the Blackberry was simply a replacement for the telephone - it transformed the way members communicate with staff and receive information from the House. Similarly, none would claim the personal computer was just a new typewriter.

There is no doubt that mobile devices can provide improved access to information. The use of tablets like the iPad and Xoom has grown dramatically in the past two years, becoming integrated in every function of business communications. 17 Million of these devices were sold last year with nearly 70 million expected to sell in 2011[1].

Can Mobile Computing Be Transformative in Congress?

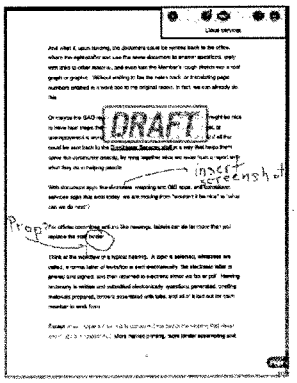
In that same way, iPad adoption on the Hill is spreading like wildfire, already transforming individual member offices. Members are using iPads, Kindles and Xooms to reduce their weekly travel burden from the heavy carry-on, to a sliver of a device.

While this reduction in carried paper is certainly nice, mobile apps, especially those tied to an enterprise infrastructure, are taking productivity and efficiency to a whole new level. Imagine a Member boards a plane with the latest GAO report containing information that needs to be analyzed and disseminated to constituents. What if the

[1] Gartner com, Gartner Says Apple iOS to Dominate the Media Tablet Market Through 2015, http://www.gartner.com/it/page.jsp?id=1626414 (last visited June 14, 2011)

Member could read the report, highlight sections, make notes, raise questions, or even use a fingertip to draw sketches and arrows.

And what if, upon landing, the document could be synced back to the office, where a staffer can use the same document to answer questions, reply with links to background material, and even turn the Member's rough sketch into a real graph or graphic. Without waiting to fax the notes back, or translating page numbers cribbed in a word doc to the original report. In fact, we can already do this.



iAnnotate

Or maybe the GAO report talks about job creation in the district - it might be nice to have heat maps that can show where foreclosures are the highest, or unemployment is worst, or what schools are doing poorly. And what if all that could be sent back to the Constituent Services staff, using what is gleaned from a report to help serve the community directly.

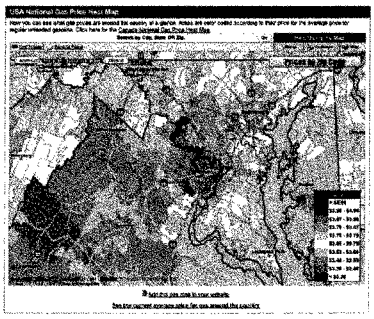
With products like iAnnotate, mapping and GIS apps, and constituent services applications that exist today, we are moving from "wouldn't it be nice" to "what can we do next"?

For official committee actions like hearings, tablets can do far more than just replace the staff binder.

Consider the workflow of a typical hearing. A topic is selected, witnesses are called, a formal letter of invitation is sent electronically, the electronic letter is printed and signed, and then returned to electrons either via fax or pdf. Hearing testimony is

written and submitted electronically, questions generated, briefing materials prepared, binders assembled with tabs, and all of it laid out for each member to work from.

Except what happens if an article comes out the day of the hearing that raises key insights or questions? More hurried printing, more binder assembling and question re-printing. We all know that mobile computing can help reduce time and waste in this example, but it's not yet transformative.



Gas Prices Heat Map

So let's take that next step: what if a witness is presenting key data that is nationally important, but also should be viewed broken down by each Committee Member's district? The Member's device can show them that breakdown in real time and even in comparison based on how the Member likes to view the information – whether by pie chart, graph or spreadsheet.

Perhaps there is a markup occurring in another committee, so some Members leave to vote, while the others continue to question the witnesses. A tablet could provide a live video feed of the hearing or provide live written transcription of the questions asked, and the answers given, so as Members shuttle between hearings, they can keep up with the proceedings and are prepared to ask a vital follow-up instead of a question that has already been asked.

And what about a witness who says something not quite right? Instead of the Member wasting the short allotment of time looking for the right tab in a binder, or waiting for staff to track down information, what if the answer was no more than a swipe or click away. Better still, what if the staff could instantaneously highlight and link to the

countering point, without the hurried scramble and note passing we have today. Just think of the thumbs we would save by the reduction in Blackberry speed typing!

These are just a few of the ways technology can transform a hearing from an exercise in "if only I'd been able to ask" to one where members have the tools to dig deeper, faster, and more accurately than they could have ever hoped to do in the paper world.

Given all of the different options before us, the question is not *can* we do it, but *how* we do it.

How do we do it?

In order to successfully introduce new technology, we must balance what innovation can provide with the needs of the individual members. To achieve this "equity," the House should take a page from the consumer-facing side of the world where the term "privacy by design" has entered the lexicon. For the House, "equity by design" needs to be part of the development process in creating any Congressional app.

Long before a single line of code is written, the development team needs to look at how an app follows three key criteria:

Neutrality
Interoperability
Retention

Neutrality

As wonderful as mobile computing can be, developers for official apps must never lose sight of the fact that the House requires enterprise grade infrastructure. An app that

subverts the process and creates a new data silo will add a host of new problems. Instead apps must facilitate workflow – both in an application or an office — within the infrastructure needed to maintain the integrity and security of the House. However, maintaining this back-end compatibility should not rely on mandated formats, but rather on a goals-based approach to neutrality. So long as the mobile app passes data in a manner that is supported by the larger House infrastructure, the internal mechanisms of the app should not be mandated.

The history of tech mandates is filled with cautionary tales, from the Department of Defense's mandated use of Ada programming language to legacy mainframe systems that must be maintained, not because they are better, but because the work of transitioning requires employees who have long ago retired!

Interoperability

To make the transition to electronic documents we have to make sure that people can still use paper. This sounds counter-intuitive, but we must ensure that no disadvantage is conferred upon those who choose to continue using traditional resources. Information exchange should be neutral. Every Member should be able to get the same content from customary sources that others can obtain electronically. Users of traditional media must also have access to information at the same time as their tablet-using counterparts.

The purpose of the dual track is to encourage adoption of new technology without forcing it. Consider how the PC was introduced to most congressional offices. Prior to 1996, Member's offices were a hodgepodge of computer systems, many still relying on dumb-terminal systems long past the time when personal computers had entered the professional workplace.

In 1996, each office was given a PC loaded with Windows 95. But only one. And soon enough, everyone in the office migrated to the desk that had the computer, looking over the shoulder of the person who got to work with pictures, who could perform important tasks, and could access an extraordinary amount of information on the internet. Impressed by the leaps in productivity, offices soon got desktop computers for everyone.

There is no doubt that as more Members see how their colleagues are benefiting from the ease of use, convenience, and enhanced productivity from new technologies, that they will want to "get one of those."

On the public side of equity, it will be critical that documents created for the public are available in paper form at the same time (or nearly) as the electronic versions. By moving to on demand printing systems, or by printing only three copies instead of 500, we can maintain equity based on demand, rather than what tradition dictates. The reality is this is already happening, committees already print fewer final copies of documents for the record, and, while I don't have the numbers, I would assume fewer copies of the Federal Register are printed each day.

Retention

One of the great benefits of paper is that, outside of fire, it is not particularly transitory. The permanence of paper is one of its greatest features. In the physical written form we have texts that have endured millennia, providing a record of civilizations past.

These archival needs underscore why it is important to keep data in a portable and enduring format unrestricted to a particular technology. If the sudden rise of tablets and smartphones has taught us anything about technology, it is that transformative changes come fast.

For this reason, the House should adopt data-centric solutions rather than platform-centric ones. In the end, mobile computing is just a vehicle for data entry and retrieval. The degree to which that remains separate from storage and analysis is the measure by which that information remains useful to those using other information models, both now and with future technologies.

Conclusion

I have devoted much of my testimony to addressing the possibility of conducting paperless hearings and related workflow issues. Yet mobile computing offers many more opportunities to simplify and improve the productivity of Congressional offices.

A simple app on a mobile device can provide schedule notifications, locate a Member during an emergency, or provide live vote tallies. One could be written to aggregate legislative information from Thomas, the Library of Congress, CBO, and Member's staff that a Representative could consult before voting or attending a markup.

If our experience with the iPad is any guide, Members of Congress will not wait for an officially sanctioned solution that provides the resources they are looking for, especially when the public sphere provides far more useful options than are available within the institution. As Congress has a particular interest in maintaining the security and integrity of its communications infrastructure, it is our hope that the House vigorously pursues the development of mobile applications services.

The transformative opportunities that mobile computing promises for good governance are myriad, from constituency communication, to information management and presentation to real time analysis of arguments and facts. It is important to remember, however, that governance is the dog and mobile computing is the tail. Rather than a

jumble of information silos that create inequity and confusion, it is important to maintain an enterprise grade system that meets the needs of all Members.

Mr. GINGREY. And I thank all three of the witnesses. We now have time for committee members to ask questions of the three witnesses. Each member is allotted 5 minutes to question you. We help each member to track the time as well, where we use the timing device on the witness table. We will alternate back and forth between the majority and the minority. And I will begin by recognizing myself for 5 minutes.

I am going to direct my first question to Mr. Bruce. I will ask each of you a question. Try to keep your answers brief, I have only got 5 minutes, because I have one last question that I would like to maybe get a comment from all three of you.

First question, Mr. Bruce. Give one example of how technology can increase practical transparency. That is not a trick question. You might refer to Mr. Reed's posters. But in regard to this idea of improving our technology and going digital just as practically as we can, transparency of course is a huge goal, as you know. And we are always looking for an opportunity to make sure that things are transparent in a bipartisan way and for our constituents. So that is why I asked that question.

You know, let me move to this. In your testimony you talk about how the Congressional Record Daily Digest is sometimes too detailed, and other times not detailed enough. How could users get just the right amount of information?

Mr. BRUCE. Okay. Well, if we reconceived the Congressional Daily Digest as a document that is linked out to other information rather than existing in itself, it could be in its root form, the form that is transmitted to you, a much more compacted document, from which you could then click through to detail on any matter—voting, for example—for which you wanted detail, rather than having to read through it page by page. The idea is to create summaries that are linked out to broader bases of data that are of interest to the user. And you can only obviously do that in digital form.

If you have ever worked with newspaper reporters, you know they use AP pyramidal style. This is AP pyramidal style created electronically. You start with the small lead and link out to greater and greater levels of detail as the user requires.

Mr. GINGREY. Thank you.

Mr. Cunningham, we all read about hackers and data being compromised. What is Microsoft—what is your company doing to make information more secure?

Mr. CUNNINGHAM. Well, sir, first the foundational component, Mr. Chairman, to any collaboration environment is a shared work space. And those shared work spaces must have controls placed upon them to provide access to the people—for the people to have access to those documents, the people that are working with you on any specific project. The controls are placed into the system to give us capabilities to determine who has accessed the document, who has modified what documents.

Interestingly, we are in a similar business, in that we are in the intellectual property business. So these controls are very important to us as well. And at the same time, we use a technology called information rights management, which then says if I distribute that electronically via e-mail, I have controls available that restrict who

can open the e-mail, who can forward the e-mail, who can edit that, who can forward that on to others.

So from every step, the security actually is part of the document, part of the content itself, where we are validating who accesses it, the network style they are accessing it across, and what they are trying to do with that content.

Mr. GINGREY. Thank you, Mr. Cunningham.

Mr. Reed, this is a similar question, but more pertaining to your testimony in regard to mobile devices. And by the way, I think the last thing you mentioned, I don't know if I can hold this up and show you, but we can actually look at this monitor and tell whether or not you shaved this morning. We also can follow our other committees. And that is a very good point that you brought up.

But my question is security is, of course, a hugely important issue. Mr. Cunningham touched on that. How can data on these mobile applications be protected?

Mr. REED. Well, I actually think that part of it is understanding how our mobile devices actually work with the kind of enterprise-grade infrastructure that Mr. Cunningham's company is creating. We actually rely on them to provide a lot of the backbone infrastructure for how we then contact a product that the House has created. We tie into it, we make a request for the information, and that information is given to us and is securitized by the House and its enterprise-grade infrastructure, given to us. We then display it. And the real question is to make sure that our mobile devices don't create new kinds of information silos.

So it will be very critical that as the House decides on rules, how my mobile devices might interact with your enterprise infrastructure, that you establish good rules for our behavior as well as for the behavior of the enterprise-grade stuff on the back end.

So I think that the first answer to the question is you start with security by design and that you recognize that although Congressman Walden's point about small business behavior was critical, that the House is at the enterprise level, and not strictly like a small business with only eight employees, and that we need to respect that and build with that in mind.

Mr. GINGREY. I see my time has expired, so I won't ask that last question of all three of you. I will go ahead and defer to my colleague from California, Ms. Lofgren, for her 5 minutes of questioning.

Ms. LOFGREN. Thank you, Mr. Chairman. And I will be relatively quick. I know votes are coming up soon. I think this testimony has been very helpful. And I do appreciate each of the witnesses as well as our colleagues who preceded you.

Listening to you and Mr. Reed, it was so fun to look at your exhibits, and I think we all want them. I am mindful that Members of Congress are elected by their constituents for a lot of reasons, and rarely is it because of their capacity to be technically proficient. So we are going to be able to move forward as an institution only so far as we can move our colleagues along. And I know, I am not going to mention any names, some of our colleagues who are quite intimidated by technology. I would say it is a minority at this point, but they have just as much right as those of us who like technology to participate in the legislative process.

So a component of this has to be dealing with the people themselves. And if we can't get people to use it, we are not going to be able to move there. I just think it is important, before our colleagues start talking to us about this, that we say that and we understand and know that.

That goes also to some extent for the population itself. I mean about a quarter of the American population does not currently have adequate access to the Internet. And they have just as much right as Americans to know about what is going on in their government as the people who do have access to the Internet.

Now, we are making big strides, and we want to deploy broadband, and certainly rural areas are most disadvantaged, but there are inner-city areas as well, but I am mindful that that element of our society needs to be included.

As we move forward, I am thinking about not just those issues, but also some principles that need to be adopted. We need to have open source. We need to have interoperable. We need to have security. And understanding the security most—I don't want to say that—what can we say that are not classified? People are our weak link in cybersecurity. That goes back to my initial statement, which is not every Member or staffer is necessarily understanding the systems that they are using. And that poses challenges to our cybersecurity environment.

So I am wondering in view of your testimony, which is really welcome, to aggressively move forward, how do you incorporate these issues that I have just outlined? Or do you think I have got them wrong?

Mr. BRUCE. If I may, I think that the digital divide problem that you are mentioning, first of all, the 23 percent number that you mentioned is heavily skewed, as we know, both toward the elderly and toward lower-income households. And it may well be that the information needs of those people and those households are equally definable.

It seems that that might separate out into two different classes of problem. One are areas where as a matter of public policy we want to have some sort of universal service mandate, things that we want to just make generally available to people probably through intermediaries.

Then there is also the need for targeted programs that gets specific kind of information to specific populations that may be Internet-disadvantaged. Public libraries do a great deal along those lines.

Now, what doesn't make a whole lot of sense to me is to imagine that the minimal number of printed copies that we are now requiring to be generated as a statutory matter are going to reach a population of 300 million people. I don't think they do. But as long as we have digital information available, there is the possibility of localized print on demand, which I think holds a lot of promise for the sorts of problems you are discussing.

Mr. CUNNINGHAM. Ms. Lofgren, if I could add as well, I spent several years as a technical trainer myself. And when you work for a company such as Microsoft, you quickly learn how many of your friends are a little bit technically adept as well, and family members, and those who are not.

One of the things that we have learned is that versus presenting people with countless interfaces and applications, if you can create some fashion of a standard tool, a standard platform, a standard interface using these open standards that you mentioned, but not present them with a different interface and a different tool every time they need information to do their job, they will proceed much faster.

The last thing I would like to mention is we certainly participate and collaborate and leverage a lot of open source at Microsoft as well. But I would like to mention and just toss out that you can certainly be open source but be closed platform. And that is certainly not what we want. Interoperability is key to success in this model.

Mr. GINGREY. Mr. Reed, did you want to comment quickly, please?

Mr. REED. Just quickly, I would say that in my written testimony I talk about equity by design. And I think that addresses what the Congressman has gone to. And I want to echo what Mr. Cunningham said. I think that the design should be goals-based rather than technology-based. And this is for terms like "open source," which has a broad meaning.

Last but not least, I say that we have to remember that what I am doing here and what our folks are doing here is the tail, and not the dog. So we need to remember that the tail can't wag the dog here, the business of the House needs to be the first and primary focus, and that we will provide that which makes it better.

Mr. GINGREY. Thank you. And now we will turn to Mr. Nugent for his questions.

Mr. NUGENT. Mr. Cunningham, one of the questions, in particularly some of the districts that do not have broadband availability, how would we operate within that confine?

Mr. CUNNINGHAM. For those who do not have broadband that are within the House themselves, but have access to the infrastructure while they are here—I heard earlier about a wireless network—there are tools which will give you the capability to provide real-time synchronization of documents and applications while you are here within the facility, even if you don't know you need that document. Maybe you are working on three projects, you are on multiple committees; all of that information would be updated on your device before you go back to the rural suburbs where I live, for example, and maybe don't have that type of access. So the information would be there when you want it on that device. And it can actually be very slowly streamed in the background from the device.

If you do go back to your house, your location, and then need to access or even update a very large document, that can be done as a background process while you are still continuing to use your computer for other tools.

Mr. NUGENT. To Mr. Reed, every day I receive a stack of correspondence that I have to read and then also change. The staff writes a response, and then I will change it. So I was quite intrigued by the iAnnotate ability, particularly if I had an iPad, which I don't. I think you heard that, right? Because it was always a question. You know, when you have that hard copy, I can sit

there and scratch through it, make a note. And I was unaware of iAnnotate. Is that commercially available? I mean is that a——

Mr. REED. Yes. In fact, not to plug one specific product, because we have got a lot of folks who do similar stuff, but iAnnotate is actually a product that has been customized for some city councils and some locations for exactly this purpose. I mean, it obviously relies on the ability to securitize the data on the back end. But as far as your ability to do exactly what I showed you, I am happy to come into your office and give you a demo, because it is pretty cool stuff.

Mr. CUNNINGHAM. Can I touch on that one just for a second, sir?

Mr. NUGENT. Yes.

Mr. CUNNINGHAM. Very similar controls also exist natively in the Microsoft Word products, to be able to annotate, do the yellow markup and the red markup, as was mentioned earlier; be able to determine who is simultaneously editing a document; look to see who those editors are; read all the revisions.

So there are also in many cases, as have been discussed here today, opportunities to leverage tools which the House already has and already has deployed to do these types of things.

Mr. NUGENT. As the ranking member had mentioned before, we all have different skills when it comes to technology. The more complicated, it won't be used. If it is simple for somebody like me to utilize it, then it is more likely to be utilized. But if it is complicated, it just makes it much more difficult. So the seamlessness of it obviously is hugely important to the end user.

I know one issue on security, I am still—I am always concerned about security and how do we utilize that to make sure that the documents that we are working on do not get corrupted? And how do we know at the end of the day—I know watermarks—how do we know at the end of the day that is the correct document that we worked on? I mean what are the security features?

Mr. CUNNINGHAM. So there are absolutely—there are versioning features that you can use in the various products. We can go back to a previous version of a document if you would like to. But at the end of the day the real question becomes: Are we using open standards as we transfer that document from one device to another?

So as I was creating this testimony today, actually I used a tool which is available on multiple platforms. That tool uses standards-based such as XML and Open XML, which were mentioned here earlier today, to make sure that as I edit that from my iPad, my cell phone, my Windows PC, that document fidelity is maintained. And it is making sure that we rely on those types of standards and controls to make sure that we do not have document fidelity issues.

Mr. REED. I would say that I actually did exactly what he said. So I wrote it in Word on a PC, and then I translated it—I sent it over via Dropbox to my iPad, which is an Apple product from a different company, and it is open and it shows docx at the end. So I am using an open standard to move it between multiple platforms, multiple devices, and through the cloud. So exactly your question, I am doing it right here right now.

Mr. NUGENT. That was always a concern when you get into closed systems, we are held hostage in regards to cost. So we certainly want whatever we do need to be on open platform.

Thank you very much. I appreciate your testimony.

Mr. GINGREY. Thank you, Mr. Nugent.

I would like to now enter two documents into the hearing record. The first is a statement from Chairman Dreier of the Rules Committee.

The second is a statement from Chairman Hastings of the Natural Resources Committee.

Hearing no objection to that, so ordered.

[The statement of Mr. Dreier follows:]

Committee on Rules
U.S. House of Representatives
H-312 The Capitol
Washington, DC 20515-6269

Statement of the Honorable David Dreier
Before the Committee on House Administration
Subcommittee on Oversight
Hearing on Modernizing Information Delivery in the House

Thursday, June 16, 2011

Thank you, Mr. Chairman, Ranking Member Lofgren, and Members of the Committee. I am pleased to be able to submit testimony regarding the Committee' on Rules' methods for automating our workflow and improving the quality and speed of the product we deliver to the House.

THE RULES COMMITTEE WORKFLOW

Before explaining the role technology plays in our work, it is important to understand what tasks the Rules Committee needs to complete in order to report a rule to the House. Keep in mind that the Rules Committee functions both as a traffic cop and first responder for the House: we are responsible for maintaining the orderly flow of legislation to the floor and providing a structure for the House to work its will. We must also act immediately when the Speaker asks us to respond to an emergency or restore order to the consideration of legislation. As a result of our dual role, we have certain freedoms not enjoyed by other committees, as well as constraints — chief among them, time — that other committees do not have to factor in to their work processes.

The end result is that when called on to act, the Rules Committee must be ready. And when we do act, we must do so within mere hours or minutes and without error.

When reporting a rule, the Rules Committee must produce two documents: a resolution and a report that accompanies it. The resolution contains the specific provisions of the rule that have force and effect in the House. This is the document that is put before the House for a vote.

The report contains a summary of the rule and other material, such as an explanation of any waivers granted. It also contains a list any roll call votes and, most importantly, the actual text of any amendments made in order or "self-executed" by the rule.

Figure 1 illustrates the steps in our workflow for a structured rule, where Members submit amendments to the Rules Committee for its consideration, and the Rules Committee chooses which amendments are made in order.

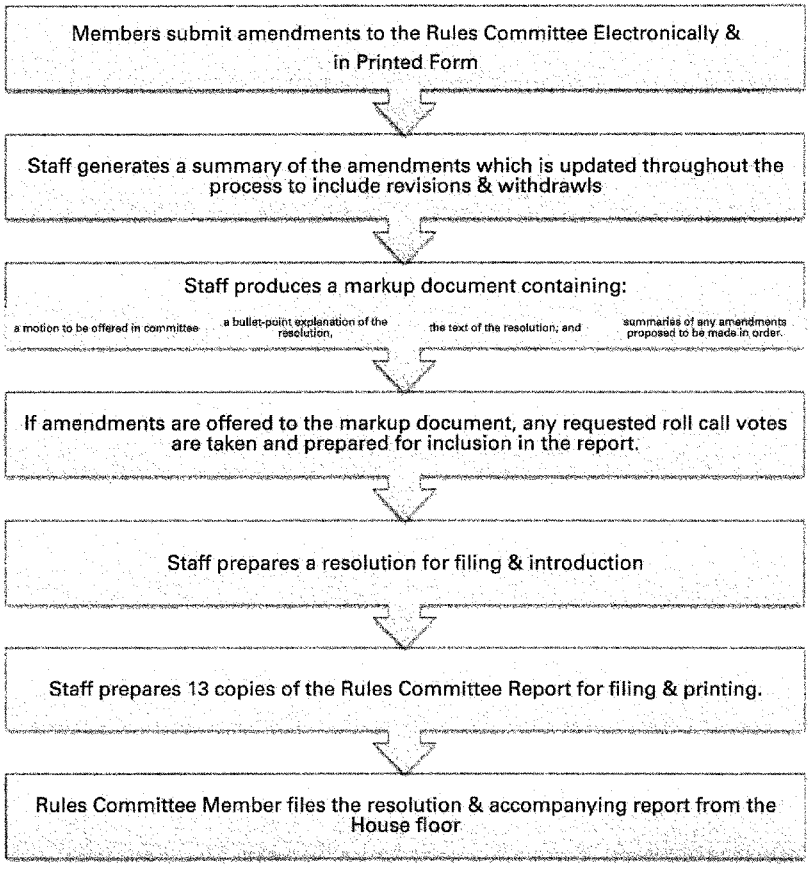


Figure 1. A basic workflow for a structured rule.

The traditional method of preparing all of these materials is highly labor-intensive: generating documents used to involve a significant amount of typing and re-typing, cutting and pasting between different documents, and a considerable amount of photocopying. Additionally, there was an extensive proofing period to ensure that all of the component parts were correct, complete, and in the right order.

Additionally, whenever the Committee needed information — such as a Member's amendment submission history or the Committee's record on open versus closed rules — that information needed to be compiled manually and often required significant lead times.

The Development of CORED

In the 109th Congress, the Committee began development of custom database software to track the bills, rules, and associated amendments. The Rule and Amendment Tracking System (RATS) was designed to allow the Committee staff to answer the routine questions that came up during development of a rule: How many Republican and Democratic amendments are made in order? When was the last time a particular Member had an amendment made in order? How many open rules did the Committee report versus closed rules?

The Democratic Majority continued development of the system in the 110th and 111th Congresses, and extended its functionality to manage the workflow associated with producing a rule. They also changed the system's name to the Committee on Rules Electronic Database (CORED) to reflect the broader purpose of the system and moved it from a desktop to web-based application.

In addition to its statistical record-keeping functions, the software currently:

- Allows the electronic submission of amendments (though the Committee still requires a minimal number of paper copies for use by the Committee's Members);
- Automatically generates the Summary of Amendments Submitted for use by the Committee Members, which is also posted on the website;
- Automatically generates the Committee's agenda of witnesses, along with versions containing contact information for use by the Committee staff;
- Generates the markup document, including the motion, "roadmap" bullet points explaining the provisions of the rule, the resolution, and Summary of Amendments Proposed to be made in Order;
- Tracks roll call votes in committee and generates tallies to be included in the Committee's report; and

- Generates the text of the resolution and the report (with the exception of the text of amendments made in order) in either Word or XML format, although we are still working on bugs associated with reports in XML format.

Figure 2 is a sample screen from CORED for a rule considered this congress.

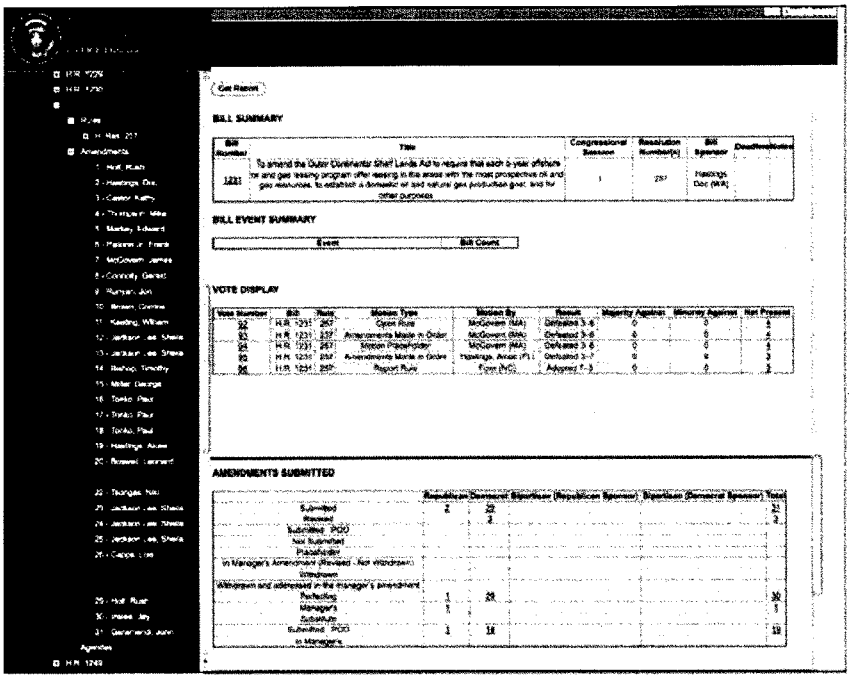


Figure 2. Bill dashboard screen from CORED for H.R. 1231

The Future of CORED

We are continuing to develop CORED in an effort to increase its functionality and usability. Currently, our contractors are working on a complete overhaul of the CORED user interface to simplify its use and increase performance. This latest phase of the project was started last Congress under Chairwoman Slaughter. We hope to be able to complete that work this year.

We are also working closely with our contractors and other House offices to produce a more efficient process for the internal generation of documents for filing in XML format.

The benefit would be two-fold, as we would be able to: (1) generate a document that, when printed, looks like other House documents prepared by the House Office of Legislative Counsel (HOLC), and (2) provide a file to the Government Printing Office (GPO) which they can easily use to print, reducing the need for "re-keying" or coding of documents we currently prepare using Microsoft Word.

Ultimately, we want to get to a point where we prepare near-final versions of both the resolution and report for filing in XML. This will speed up the production of these legislative documents by GPO and allow us to post these documents on our website, without having to wait on GPO's post-processing. In the near-term, that will likely mean using both CORED and the House's implementation of XMetal to produce a final document. Eventually, however, we hope to be able to generate the documents entirely in CORED.

Conclusion

The unique function the Rules Committee serves for the House necessitates that we be able to produce legislative documents quickly, efficiently, and without error. Faced with the ever-increasing pace of legislative business, we have turned to technology to allow us to meet those needs.

This project, started by Republicans in the 109th Congress and continued by Democrats in the 110th and 111th Congresses, represents a significant investment in human and monetary resources. We believe that our results have demonstrated the value of these investments and we plan to continue them into the future.

I appreciate the interest of the Subcommittee, and stand ready to assist the committee should you have any further questions.

[The statement of Mr. Hastings of Washington follows:]

Doc Hastings of Washington
Chairman, Committee on Natural Resources
Statement for the Record before the Committee on House Administration
Subcommittee on Oversight
"Modernizing Information Delivery in the House"
June 16, 2011

Chairman Lungren, Ranking Member Brady, I appreciate the opportunity to submit this statement for the record on the issue of reducing printing costs for committee documents. In this statement, I will outline several practices that the Natural Resources Committee has adopted to save money on printing costs. As you know, these savings do not accrue to the committee's budget, but they do accrue to the taxpayer. These practices, developed over a period of time, are a fiscally responsible way of fulfilling our constitutional duty of informing and educating the public about our important proceedings.

While this is my statement, credit for the information, details and expertise it includes goes to the committee staff, and in particular to the committee's editor and printer.

The first practice is very simple: reduce the size of printed hearings. Most committees send all testimony, Member statements, and documents submitted for the record to the U.S. Government Printing Office (GPO). GPO takes a picture of each page and creates a graphic file, which is then inserted in the transcript prepared by the Official Reporters. This substantially increases the size of each printed hearing. Moreover, the per-page rate charged by GPO is higher for "camera copy."

Currently, GPO charges $65 per page for electronic copy; $72 per page for camera copy; and $112 per page for manuscript copy, which has to be typed and coded.

To save money, the Natural Resources Committee's editor/printer formats and codes each of the hearing documents. The documents are sent to her electronically in Word or WordPerfect, and she converts them to the technical language used by GPO. By formatting the documents, the number of pages inserted into the hearing can be substantially reduced, often by as much as half.

She also eliminates the "cover page" for each witness. It contains the witness information, committee or subcommittee name, subject of the hearing, and date of the hearing. There is no need to pay for an extra page for each witness when it is on the first page of the testimony.

Further, she standardizes Member and witness titles. This takes up one or two lines rather than a whole page if the camera copy method is used. It also gives each prepared statement a uniform appearance.

A second practice is to increase searchability and accessibility. Another benefit of formatting documents is that the PDF and text versions created are searchable. Camera copy cannot be indexed by Google or other search engines, which means it is not searchable or available for review by constituents and other interested parties.

If documents are not formatted, there are still some simple practices that can be followed to cut costs if the camera-copy method is used.

- Require that all submissions for a hearing be single spaced. White space on a page costs as much as typed text.

- Eliminate the witness testimony cover page. Most testimony has a separate cover page identifying the witness, organization, subject of the hearing, date of the hearing, etc. Including this identifying information at the top of the first page of the witness statement would save $72 for each witness. When you multiply that by the number of witnesses that appear each year, it adds up to real money.

- Be aware of the cost of submitting information for the record for hearings that are printed. Documents submitted for the record can greatly increase the size of a printed hearing. This can add thousands of dollars to the cost of a hearing. It is also an option to not include information in the printed hearing and instead include material in the committee's official files, which are archived at the end of each Congress and are available for review when necessary. Consideration could also be given to creating a web archive system where permanent URLs are listed in a report rather than a multi-page document submitted for the record. This would require a dedicated, permanent web archive.

Third, reduce the number of hearings printed. Be selective about what is officially printed. Some hearings are highly controversial or of significance, while others may be very narrow in focus with limited public interest.

Next, monitor GPO billing. Our committee editor has found overcharges and even charges that belonged to other committees. When she discovered that GPO charged for blank pages, she worked with them to get that practice changed. Blank pages are inserted to force certain pages, like the table of contents and first page of a hearing, to start on the right side since hearings are printed double-sided. Also, blank pages sometimes occur at the end of a hearing because of the way the paper is run. At $65 per page, it seemed excessive to pay for blanks.

Even after GPO agreed not to charge for blanks, the committee was often overcharged. Our editor worked with Congressional Affairs and developed a strategy whereby she identifies the page count in the transmittal letter to ensure we are billed correctly.

While the Committee reviews its GPO printing bills, this practice may be rare. At the Natural Resources Committee, these bills are treated just like a grocery store receipt or itemized credit card bill – they are checked to make sure that what is being paid for is only what is owed.

Finally, consider processing graphics within the Committee or change how GPO conducts and charges for this work. The normal procedure is to send graphics to GPO, which scans and places them in an FTP site. There is a charge for this service, and the process usually takes about two weeks. Our editor found that on a number of occasions, the documents were scanned incorrectly and had to be sent back to GPO for rescanning.

She now scans our own graphics rather than sending them to GPO. By obtaining Adobe Photoshop and producing our own high-quality graphics, our committee has shaved off two weeks in the hearing production process and we no longer are charged for these graphics.

One way to save money if you choose to have GPO scan the graphics is to instruct GPO to "tight crop" all graphics. It can save a great deal of space in the printed hearing by allowing additional data on that page. A small chart, map or graph that only takes up one-fourth of a page will be a full-page graphic if you do not ask that it be tight cropped, which adds costs to a hearing.

By using some of the aforementioned methods and practices, the Natural Resources Committee has seen substantial savings in the cost of printing our hearing proceedings. If some of these practices and savings were replicated by some of the 20 permanent, joint, and select committees in the House, and another 20 committees in the Senate, that could add up to very real and measurable savings each Congress, potentially in the millions of dollars.

I hope this information is helpful. Please let me know if I, or the Committee, can provide further assistance.

Mr. GINGREY. The Government Printing Office has provided information that up to 70 percent of the costs of publications is creating the PDF file prior to printing the first copy.

I would like to thank Chairman Dreier for submitting his statement that describes the work of the Rules Committee to automate its markup processes. This approach shows great benefit for the Rules Committee, and we should examine how we can apply this approach more generally in the House of Representatives.

And I also would like to thank Chairman Hastings for his statement describing the practical steps the Natural Resources Committee uses to reduce the cost of producing hearings. Committees should consider how to apply these lessons. And I appreciate the unanimous consent to include these two statements in the record.

I want to finally, of course, thank all of the witnesses on the second panel, and for the members of the Oversight Subcommittee of the Committee on House Administration for their participation as well.

I think this has been a very, very good hearing, with a lot of useful information. Be sure and leave your business cards behind and your e-mail so we can contact you. We may very well want all three of you in our respective offices to learn how to better use some of this technology.

But, again, the purpose of the hearing is once again to look for ways that we can in a very practical manner save money for the taxpayer in regard to the Government Printing Office. As I said in my earlier remarks, wonderful men and women, Federal employees, many of whom have spent their entire careers, as do other Federal employees in the many agencies, over 60 of the Federal Government. But we have to—we have to as an obligation to the taxpayer, to our constituents, when we are sitting on $14.3 trillion worth of debt, long-term debt, not accumulated overnight of course, several administrations have their fingerprints on that—and Congresses I should say—but it is time to stop. I mean we can't continue to spend 40 percent more than we take in in revenue. So that is really what this is all about. And I appreciate the bipartisan spirit of cooperation and testimony. And we are going to look for best practices and make sure that we don't throw the baby out with the bath water. I just had to use that expression. As an OB/GYN for 31 years, I like that one.

Thank you all very much. This hearing is now adjourned.

[Whereupon, at 11:33 a.m., the subcommittee was adjourned.]

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Congress of the United States
House of Representatives
Washington, DC 20515

June 20, 2011

COMMITTEE ON ENERGY AND COMMERCE
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HEALTH
COMMUNICATIONS AND TECHNOLOGY
OVERSIGHT AND INVESTIGATIONS

COMMITTEE ON HOUSE ADMINISTRATION
CHAIRMAN, SUBCOMMITTEE ON HOUSE OVERSIGHT

COMMISSION ON SECURITY AND COOPERATION IN EUROPE

POLICY COMMITTEE

CO-CHAIR, GOP DOCTORS CAUCUS
DOCTORSCAUCUS.GINGREY.HOUSE.GOV

Committee on House Administration
Subcommittee on Oversight
1309 Longworth House Office Building
Washington, DC 20515

I would like to enter this statement from Google into the record for the Subcommittee on Oversight hearing on "*Modernizing Information Delivery in the House*."

Regards,

Phil Gingrey, MD
Member of Congress

Google

Statement of Mike Bradshaw, Director, Google Federal, Google Inc.
House Committee on House Administration

"Modernizing Information Delivery in the House"
June 16, 2011

Chairman Gingrey, Ranking Member Lofgren, and members of the committee, thank you for the opportunity to discuss modernization of the legislative process for the House of Representatives. My name is Mike Bradshaw and I lead the Google team that provides cloud computing services to the federal government.

We are enthusiastic about the benefit of cloud computing, the way most Google services are made available to users. Assisting federal agencies in their transition to the cloud has helped these organizations work better and lower costs. We think this technology can also help Congress do the same. Cloud technology has the the potential to streamline legislative operations by making them paperless, secure, and maintainable.

In my statement I would like to discuss why a cloud computing system for Congress is a good fit from technological standards, efficiency, and security perspectives. There are several key points I would like to emphasize to you as you consider this issue.

- Any new system to effectively streamline legislative operations should include a standard format for data in the system, version tracking capabilities, transparency along with the ability to keep information confidential, and state of the art security.
- Cloud computing saves money through more efficient processes and paper reduction. It can streamline workflow among individuals in Congress and makes members and their staff less dependent on hard-copy amendments and correspondence.
- Finally, cloud computing enhances security for Congress by enabling data to be stored centrally with continuous and automated network analysis and protection. Security patches can be installed automatically, and data loss from misplaced or stolen devices can be more easily addressed.

We are excited about the cloud, and we are proud of our achievements in this space. But it is important to note that Google is only one of several companies driving innovation and competition in cloud computing including Salesforce.com and Amazon. There are many cloud solutions available, and many more are on the way.

Features for Congressional IT Systems

We are not here to advocate for changes in the way that the legislative process works. The information technology systems in the House should facilitate the legislative workflow and other Congressional operations, not shape it. As you deliberate about bringing the benefits of 21st Century technology to Congress, you should consider the following goals, key decisions, and technical requirements for sourcing an information technology system.

Any system to modernize information delivery in Congress should achieve four goals:

- it should allow for paperless operations for any office that chooses;
- it should provide world-class security;
- it should allow routine auditing to ensure that it is working properly, and that information is being accessed by the proper users; and
- it should be easily maintainable.

The technology should be able to evolve as the process evolves, enabling improvements as they become available with minimal cost and disruption. Off-the-shelf solutions are not well-suited for the needs of the House; we recommend that the House source a system that is well-customized for the special needs of the House. A system that is centrally administered, like a cloud system, is much easier to maintain and to evolve as legislative processes evolve and technology advances.

One of the most important decisions to make when designing a modern information system is how it will exchange information, and whether it facilitates interoperability with other systems. It is critical that the system can talk to others and doesn't "lock in" data permanently to one vendor. Any data format that is used by a House information system should be royalty free, allow the use of a single format across the system and throughout the process, and allow effective tracking of changes to the document (including divergent changes). Formats involved should be open and well-documented, allowing users to access the text of the document as well as the structure of the document, and encouraging interoperability and new functionality.

Any new IT system must empower the kind of iteration, collaboration, and confidentiality that are all the lifeblood of the legislative process. Staff should be able to work on legislation and know that their edits are saved, and that they can keep annotations private to any group they choose. Such a system should merge together disparate drafts to show progress on the bill in collaboration with other offices.

An effective versioning system has the potential to provide a useful system to track bills and changes. Versions and revision history should be recorded as a standard part of editing and changing legislation. This system would allow multiple copies of any document to be edited, separately or collaboratively, and without laborious processes to merge or compare the documents by staff. In fact, an effective group collaboration system will not require the staff to interact much with the system – instead, the system can take care of many tasks, like versioning and authoring information in the background while staff work. This type of system would also allow amendment documents to be generated and published simply, with a clear display of the differences between two versions – replacing cumbersome instructions to the reader to "strike the test on page 36, paragraph 2, and

insert the phrase...". Version control systems can make it clear that this change has been made, and allow staff to annotate their thoughts on it.

Any legislative authoring system must provide powerful tools for attribution and auditing as part of this versioning system. This way, staff can see who made what changes or added sections to documents being drafted, and compare various versions in order to evaluate impact. Currently, it is not possible to track changes in documents after they are passed out of the committee; staff may be able to see that the committee made many changes, but not which committee member made those changes. Allowing staff to see the attribution of these edits would make collaborative drafting much easier, and would allow offices to approach each other earlier in the process.
Given that documents are often under review and being edited by multiple staff and offices, the system must have a reliable and easy to use interface to resolve conflicts between branched versions of a document.

The cloud can also bring new functionality to the legislative drafting process, making it easier for legislators and staff to track changes to legislation, share ideas, and suggest changes. Members' staff can collaborate more easily and effectively because information and applications run in a shared, secure space in the cloud, allowing people to more easily work together outside normal office hours, late at night or on weekends. Two or more people can, for example, edit a cloud-based document together in real time while they are away from each other, rather than sending it back and forth as an attachment and going through the laborious process of incorporating edits on top of edits as more people weigh in. Running these applications in the cloud means that they can be accessed more easily and securely from any device -- a netbook, a smartphone, or any desktop computer where a user happens to be located.

Confidentiality of private documents is another important part of the system, giving role-based access control to private documents (*e.g.*, annotations to public documents, draft versions of not-yet-public documents) to allow collaboration throughout the drafting process, with easy to use controls.

Such a system should also provide the ability to quickly secure lost data through password changes and to quickly push out security fixes directly to users without the need to install new patches on each device. The traditional PC model creates significant security vulnerabilities in these areas that are not easily addressed.

A new information flow should also facilitate more efficient publishing. Currently, Congress uses significant time and effort in order to produce legislative materials. A new information management system could significantly streamline this process, and make it much easier to share the materials as well.

It often takes at least a week (and sometimes up to a month) to make materials available publicly. Sometimes, the text of amendments does not show up for months. A cloud-based system with interoperable formats could speed up this process, and make bills available to the public in much closer to real-time.

When documents are published, their electronic versions should include metadata that allows sorting, understanding, and consumption of the document. This metadata should include simple fields such as date created, date last changed, authors – and other simple fields from the legislative process such as sponsorship and committees. Some metadata could also be included for archival purposes, though we focus on metadata that will allow the public to understand the document, rather than the data that might help future historians. This metadata would also make it much easier to search old legislative documents, a task that is currently difficult. The document should also include, in the metadata, a list of congressional actions on the bill and other events around the bill, to help create an accurate record of the document. This will allow an easy search for related legislation and similar language across bills and sessions.

Legislative drafting solutions must also take into account verifying authentic copies of documents. This means that a version control system needs to be secure and verifiable. Most distributed version control systems use secure signature methods to ensure integrity and validate that history has not been modified, giving all users confidence in the system as a whole.

Similarly, knowing that the documents can be validated, and that a full audit can be completed on the document, gives it an important authentication for the purposes of historical records and public trust. One example is the signatures used by the Government Printing Office to authenticate electronic document, making sure that you can prove that the document is authentic and comes from the government. There are many well-understood and well-standardized techniques for signing documents and distributing the signatures, and many of them would work for both these purposes.

Using technology to enable the legislative drafting process also has the potential to add transparency to the system, and to make it easier to create transparency in the process. However, not all annotations or edits are necessarily intended to be public-facing, so it is important to be able to make changes that will not be publicly available, such as discussion comments.

One guiding principle should be that anything the public could get by going to Congress and watching the markups and getting the printed results should be available electronically in formats that actually represent this history and what occurred. Any information management system for the House must make sharing some of the information from legislative processes easy.

Cost Savings, Efficiency, and Other Benefits of Cloud Computing for the Public Sector

Cloud computing is being used today by many consumers, businesses, and increasingly those in the public sector. In February 2011, the "Cloud-First" policy introduced by Federal CIO Vivek Kundra marked a drastic shift by many agencies to move to cloud computing. Currently, more than three million organizations use our cloud service, Google Apps. In the cloud, everyday processes and information that, in the past, have been run and stored on local computers – email, documents, calendars – can be accessed securely anytime, anywhere, and with any device through an Internet connection.

Like many federal agencies, Congress has taken significant steps in the last decade to integrate the Internet into its operations. It has created systems, such as posting the Congressional Record online

and incorporating systems such as THOMAS and Fedsys into its process, to increase its efficiency, production, and transparency. The shift to cloud computing brings even more demonstrable benefits as it reduces the costs of maintaining infrastructure and paper. I'd like to turn to some examples in both the public and the private sector to demonstrate the cloud's potentials.

Cloud computing does not just save money through its applications, but it also reduces infrastructure and personnel costs. In April 2010, the Brookings Institution found that government agencies that switched to some form of cloud computing saw up to 50 percent savings overall. According to Kundra's Federal Cloud Computing Strategy, the federal government can reduce its data center infrastructure expenditure by approximately 30% by using the cloud computing model for IT services. He further stressed that the federal government can save $5 Billion annually by moving services to the cloud. The City of Orlando predicted it would save $200,000 annually after it moved to Google Apps in 2009. Agencies are moving to the cloud because it has proven to be more efficient and less costly than their current systems. The House of Representatives can also reap these significant cost savings.

Not only will moving to the cloud reduce energy spending, but it could also cut printing costs. According to GPO estimates, congressional overall printing and binding spending is approximately $96.83 million. Every page of the Congressional Record costs $727 dollars to print. With over 30,000 pages printed annually, congress could save approximately $22 million simply by printing fewer of these. By moving to more electronic copies, the GPO has decreased its spending on printing the record significantly, but it could reduce it even more. According to its recent report, current law regarding paper production, authentication, and preservation prevents the GPO from eliminating paper versions completely. While physical copies of the legislative history may be important, actions during drafting will often benefit from the speed and efficiency that a cloud system could provide.

The GPO also estimated that a bill costs $50 *per page* to print, and that over 140,000 pages - including bills, resolutions and amendments - were printed this year. There are seven possible steps in drafting legislation, each of which may require the GPO to re-print the bill. Measures are printed when a new report, passage or an introduction to a second chamber is made. Current law even requires the GPO to reprint a measure at the written request of a sponsor if 20 or more co-sponsors join the bill since its last printing. Streamlining this process, and making copies available immediately online and only printing as many copies as necessary at any given step in the process, would make it much more efficient. Congress can reduce the number of times a document is re-printed by making it easy for offices to track changes to legislation throughout this process, and having different versions of a document stored on the cloud. Of course, there will always be a need for paper copies - but we hope that Congress will adopt a system that allows users to choose whether they need a paper copy at each step in the process.

The cloud can also bring new functionality to the legislative drafting process, making it easier for legislators and staff to track changes to legislation, share ideas, and suggest changes. Members' staff can collaborate more easily and effectively because information and applications run in a shared, secure space in the cloud, allowing people to work together on documents. Two or more people can, for example, edit a cloud-based document together in real time while they are away from each

other, rather than sending it back and forth as an attachment and going through the laborious process of incorporating edits on top of edits as more people weigh in. Running these applications in the cloud means that they can be accessed more easily and securely from any device – a netbook, a smartphone, or any desktop computer where a user happens to be located.

Cloud Computing Enhances Security

Cloud computing also provides users with enhanced security. Google's cloud applications live on secure servers, with a team of the best security engineers in the world working day after day to ensure that the data is as well protected as possible. Rather than storing sensitive or confidential information on a laptop or local computer, the information is safe in the cloud, accessible only to authenticated users who have been given access. Essentially, it's the difference between storing money under a mattress or in a bank – one provides you with the promise that a team of security professionals who will watch your money.

Today, there is significant government data stored on portable devices like laptops and USB thumb drives, which can – and often do – get lost or stolen. Federal agencies have experienced these security issues in the past. In 2007, a Transportation Security Administration external hard drive that contained the names, bank records, Social Security numbers, and payroll information of up to 100,000 TSA employees went missing. An Army National Guard laptop that contained the personal information of 131,000 soldiers reportedly was stolen in 2007. A Department of Veterans Affairs portable hard drive that contained sensitive VA-related information on approximately 535,000 individuals was also stolen in 2007. As these examples demonstrate, government agencies have struggled with security under the traditional desktop computing model.

Congressional devices could face the same security risk. A 2009 Government Accountability Office report on the deficiencies in government's Information Technology security confirmed that many of the data losses occurring at federal agencies over the past few years have been the result of physical thefts or improper safeguarding of systems, including laptops and other portable devices.

Cloud computing can protect Congress against these vulnerabilities. Moving data across portable devices becomes unnecessary, as cloud computing enables data to be accessed securely from anywhere with an Internet connection, but not stored on the local device.

The most important component of switching to the cloud is feeling comfortable with one's data with an outside provider. Most people probably do not realize that they have been doing this for years with web-based e-mail or common services like online banking. With Google products, users and administrators have greater control over their data. They can set fine-grained access controls for documents, calendars, and other types of information commonly stored in the cloud.

And when your applications are in the cloud, it is much easier to make sure that security updates – typically the most common security vulnerability on a computer – are applied quickly and consistently. Our research shows most organizations take between 25 and 60 days to deploy security patches (even when they are critical for maintaining a secure system), and some corporate chief information officers admit it can take up to six months. Google's cloud services allow all our users

to get security updates as soon as they are available, not weeks or months later. In addition, the information stored in our custom-built data centers is monitored around the clock by our software and our security team. If a threat is found, the system responds automatically and immediately, and allows us to detect security threats across the web early and prepare appropriate defenses, sometimes even before anti-virus companies know about the threat.

Security is at the core of our design and development process, and is built into the DNA of our cloud products. We use a combination of people, process, and technology to help secure our systems. We employ a dedicated, full-time security team with some of the world's foremost experts in information, application, and network security. The security team can collectively anticipate and fix security issues more quickly and effectively than most single companies or individuals. Google stores data in the cloud in geographically distributed data centers equipped with security technologies. The data is replicated several times and split across numerous servers and centers to make it less vulnerable to an attack or natural disasters. Many governments' information remains safe with the cloud, and the cloud can offer Congress the same protections.

Conclusion

We at Google thank you for the opportunity to explain the benefits of cloud computing, and how it can both help make Congress more productive, more cost effective, and more secure. And we look forward to working with you and other government officials to address your questions about how this revolution in computing can transform and improve the work of the Congress.