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>> Greetings. We had a technical glitch this morning. My name is Gwendolyn. Welcome to today's webinar. I do have a few technical announcements that I do want to make. If you have or having any difficulties connecting with the webinar, please call go to webinar at 18263617. 263-6317 and go to webinar people can assist you with any technical problems. They're going to be taking questions, please enter your question in the chat box and we will pass pass them on to their respective panelists answer. We are going to be recording the webinar and it will be available soon on how to.gov. Finally we will ask for your feedback and you will get an e-mail shortly after the webinar is over that will provide information on how to provide feedback.

>> At this point, I am going to turn it over into turn it over to Gray Brooks the senior API strategies for GSA digital services information Center.

>> Great. Thank you very much. I would like to welcome everyone on today's event. The subject today is what you experience with API and government and that is more of the -- -- for little bit [audio not understandable] and what his overall -- eight part webinar series that GSA -- digital government strategy and implement certain aspects of that. And most important supporting government agencies as they create and maintain API. API is one of the more technical it turns terms that you are here to stay and one of the things I will show you is -- very practical and something very accessible to you and your agency. A few quick points and then we're going to go straight into more of the meat and potatoes of the event. Today's schedule touches on the most common operational issues to come up when you or your team implement projects that -- API. And those sentiments go around -- revolve around how you contract -- and what are common legal questions that come up. Also what are common IP security questions that come up? Each of those areas, I am sure you are familiar, there are [audio not understandable] context in the agency that you coordinate with. You have officers and contracting officers with whom you maintain and manage your contracts. You have the General Counsel and other legal advisers who you coordinate with on any legal questions. And lastly your -- you have an IT security team who is a part of any public rollout of applications or programs providing -- the reason I stress these things, as we get into the common questions that come up in these areas, it's important to recognize that you're going to be dealing with the same people on these aspects even if you or day have never worked on API before and they will be -- become aware of the fact that API are not something you in scope rather just a different way of doing the same thing and you should be able to coordinate with the same teams and -- checked the same boxes to ensure a successful launch. Today we will be hearing from a few people. I will be talking about the contracting dynamics and also have a friend from OMB, -- who is able to provide some good context of contracting side. One of the presidential innovation

Fellows in [audio not understandable] will review easy legal issues that we found pop up a lot at the Federal Communications Commission and other agencies. And lastly, J five who also works for APIs at the federal commission will go over the IT security questions that have come up and after we go through a few minutes with each of these -- go through a few minutes with each of these issues, we will then switch over to questions and please, do save your question for the last part and we will like to answer anything that comes to mind. To that end, I will get started to the contracting side of things. The biggest thing I hope you get to get a is that this part of the digital strategy which hopefully many of you have seen that talks about how to get started or move forward with APIs. The framework for that is to look for [audio not understandable] right now, every agency has projects which are either currently in the planning, the procurement or the early implementation stages. It's crucial to not get caught up in trying to redress all the existing systems which your agency maintains instead recognize that there are no contracts that are going to be posted in and awarded next month in the next six months over the coming year. Right now, -- [audio not understandable] to make sure that you coordinate with the stakeholders or contracting officer representatives for those projects. And make sure that future projects, the projects which are getting started have even as little as one or two sentences of language edited to the requirements so that the application is watch with APIs as an early intentional part of it as opposed to active part. So that contract -- I know at the federal communication -- we have a dozen databases. I want to show -- if you go to the FCC's website, one of the things that you will see is a drop-down at the top -- business and licensing and actually online filing which is one of the major systems. These systems cableoperation -- authorization systems are discrete large databases. Inseveral of them are a number of-years-old and already [audio not understandable] I will give some advice in a minute on how to deal with those. What's more important is if you actually go back, there was another database that recently launched and it actually supports -- there were two, one was that -- Bureau electronic system recently went through a system upgrades and the other was the original -- TV section file switch went to a number over [audio not understandable] public inspection files database. I know that's very telecommunications centric. What's relevant is a new system. The contract posted this year and the stakeholders for the contract went to the system owners of the data went to the contracting officer and even though the were not the contracting officers, they were able to insert a couple sentences into the requirements for the system that said and when you post this, you need to make sure that it also makes all of the data of the system available via APIs. Vacancy rates you for the developers this has a lot of great functionality that is the whole reason behind the APIs work that we're doing here. It wasn't difficult because it was a requirement from day one. Over the coming weeks and into November we are assembling some different agencies -- that they use for requiring APIs in the project. It's discrete -- in a couple sentences. Over all the requirements are very straightforward. Build the database that does X Y and Z to ensure [audio not understandable] and we make sure in the contract [audio not understandable] should be available to APIs. If you are dealing with a legacy system, one of the systems from earlier that I mentioned [audio not understandable] What I point out is you usually have a contractor who maintains that system at the moment. If you have an existing contract for instance the electronic filing system which is not having any Web services, what we have been trained to do and -- is to think about how you can go to the stakeholders for the system, go to the contract which currently maintains this and request a modification to the contract that supports -- provide the resources for the contractors to go back and add the API layer for the system. And that is

something you don't need to know how to do it or what's going on behind the background, the bigger point is to think along these lines and put in a request for the modification of the contract to add these as a requirement. I know that's a bit of -- simplistic but we have found it to be straightforward. I was wondering if in your experience have any thoughts that modifies that are otherwise adjust any way other way either way to think about.

>> I agree with that. I can't necessarily say that contractors would include something like that at a no-cost. There may be some adjustment, but when we think about what types of adjustment or magnitude of adjustment may be in the cost of the contract, when we are talking about APIs, we are not talking about big teams of people who need to go and do a lot of heavy lifting and work for a ton of hours to try to achieve the results. We are talking about very, very small compact teams probably one developer on -- in the group to deliver a very, very small finite capability. While I think that sometimes there will be vendors who go ahead and adopt that sort of language at no cost, some of them may say, we would like to cost adjustment, but keep in mind this course in coal tars that they cost adjustment tment should be fairly small scale adjustment because the number of hours that will take to accommodate one of these adjustments is not typically significant left.

>> The other aspect I would like to hit on, great, is the consumption is API within the enterprise. So if you are building a new system or have an existing system, there are APIs within the enterprise which are dedicated to things like authentication. For example, I came from USDA and when we were at the USDA, it was very easy. You never have to worry about creating a capability or including specific detailed requirements on authentication because virtually every system uses the enterprise shared capability. A set of APIs that you consume within your application. That gets you the capability to leverage the overall departmental authentication capability. I would stress for any of those functions specially commodity function, there could be APIs that are available in your enterprise, you just have to go and seek them out. Once you do you may find that UD -- you are decreasing the overall requirements the development team needs to deliver. That has a positive impact on price as well as schedule. For your investment.

>> Thank you. Earlier point that I think you mentioned I think is relevant this, the new system that -- and included simple requirements of two sentences in the contract saying we should include APIs. The additional cost because of that requirement the there was negligible. We know that from experience. It significantly lower to include a new contract going forward. Then it is to build the system, go back and have to add in -- -- have added. You don't have to figure it out all the way. Have the conversation with any current project in the preparation stage is now so it's very straightforward tickly in the requirements and contracts.

>> From that perspective, it's a good way to -- some other parts of we can transition to Ben Balter, he will go through some overview, common legal questions that.

>> Okay I can see your desktop.

>> You're having trouble hearing you.

>> .

>> Ben, take yourself off the mute.

>> It will be one minute till we get this set up.

>> Ben, while you are getting your audio going all provide some background. I want to stress the point that the agency has to make their decisions for themselves. A big problem that people bump up against is in your organization you may have a general counsel that has never been asked questions about APIs. For a project that involves that. But they have been asked questions before about what is relevant when watching the website. What is relevant when doing any sort of companion digital campaign. We have been having these conversation with the general counsel for a while now. So for them there may be uncertainty that surrounds a new term. Actually I wouldn't let that continue in [audio not understandable] suggests that if your needs as a stakeholder or advocates driving them -- driving, I suggest I would suggest making sure that you come for them and help them understand -- it is actually not -- nothing to be afraid of this type what I would say. That the production of an API of data is actually no different than the production of the website of data. You are choosing to putdata of information public. There's few specifics that will, that are unique and we will be getting to those in just a minute.

>> Can you hear me now?

>> Yes we can.

>> Sorry about that. I am Ben Balter. This it integrates in transition. The first thing I want to point out. APIs I'm nothing to be scared of. No way different than the plane websites [audio not understandable] put out. The only difference is while it is more structured, it is easier to query. On the normal webpage you might use a search engine, the APIs is no different from a legal standpoint. It is different only in the sense it is more query able and people have a different approach to look at it because it has a tendency of scale. So Gray gave an introduction and I would like to say I am not a lawyer and I play one on TV. I am in law school, but nothing that I say today should be taken as wrote. By all means,, take it as guidance. If you found it on the Internet, so it must be true, by all means follow up with an ounce in-house counsel and the appropriate folks before moving forward.

>> There's really two big buckets I would like to talk about. The first is consuming API. Using private sector data and bring it in. And producing API. It might be offsetting the think about consuming APIs in a context, but I am a big fan of the leading a, we can learn from the pilot sector and how the private sector does things -- [audio not understandable] and two, in order to be a good API producer, you first need to understand what is you support, to use the API and consume the API it is good to be an API consumer. In terms of consuming APIs, but the problem is most APIs have terms of services associated. This isn't not similar to the Twitter twitter of terms of service that might prevent you from using online service manually, often APIs might have separate terms of service associated with them. We want to look through the APIs documentation if there's a different terms of service that is associated with it. The problem is even though there's no I agree your signoff for using APIs the term of service both state that the use of the API is considered tacit consent meaning that you agree to the terms and a lot of

thinks in the service that would be bad for the government to agree to. What are the solutions? Checking up apps.gov the GSA website which has a lot of services, API and nine. For most of them -- if you have a terms of service, it allows you to use that Tweeter the twitter website to post, nine times out of 10 you can cover that APIs no reason why you can't build a mobile app or something like that. The other option if it is not in apps.gov, negotiate some key terms on behalf of the government. If there is an API that you want, chances are down the line another government agency will have a need for that. It's best not to just negotiate with your own needs in mind, but on behalf of -- but negotiate in mind of the entire government and circle back and get that added to apps.gov so others can benefit from the effort.

>> In terms of what is in the terms of service, -- the anti- deficiency act, just good business sense. Most terms of service for APIs personal use perception. They say you, they say I. Individuals that use API should something go wrong should be individual [audio not understandable] we are not going to see any issue here not like twitter or Facebook, it will turn around and do it -- sue the federal government, but it is good business sense that your eyes are dotted and T's crossed. The big bucket is a dumb mitigation and limitations on liability. If you build our service, you put up that information, you can hold them not liable. . Inform selection, if something were to go wrong, and the most likely set up, would not help window locks applied and in California, general thinks the government can -- determination and change of notification. If you want to run the terms of service, -- the General Counsel office and you can use that term of service in apps.gov starting point. Make sure the agency needs are covered and concerns have worked out.

>> The other side is using -- producing APIs. There's nothing inherently unique. It's putting up content like on a daily basis. The only difference is it is more structured and -- like eating Doritos and drinking Mountain Dew's. The first thing that developers look for is documentation will be the terms of service. Not assess the Northwest a normal term of service would be like signing up for social media, because imagine if you are the developer the start up and Department X has to cool data that affects my industry. If that start upward to go -- entire business model on the API put out from agency X, and two weeks later if that disappears and a change the schema or they are limiting the -- and turns out it's not fast enough, then the business model fails. The developers will look at the terms of service as a promise that we will provide its service in this context. The things you will look for is school. What does it apply, this it apply to all the APIs, use, what can I use it for? Can a zoo for website or nonprofit, attribution, do I have to put agency logo? Take credit for the data? This claim I got the data from you? Modification, you want to make sure that the person using the data does not take it and change it. If you have a national broadband data you don't want AT&T or carriers to take the data claim they use that data and double. Download speed. Right to limit term and nation, changes these are looking up for the agency. Say if you use the service, we have direct make sure you can't use the service and terminate you and limit your ability to use the service and change the terms and claim that we are not liable. All of this is good business sense making sure that the legal issues of agencies are covered and not exposing us to liability. The other big little bucket is API keys. It identifies a developer or application to the API itself. Because it requires registration, it may open up legal issues that are unrelated to that API, but still legal issues. The forks question is are they actually necessary? Often times you go through wrote MSU put an

API, but in keys. I would recommend that weight until someone is abusing the service and you need to -- it simplifies the time to get off the ground and the problem is when you are developer strong login, here's my company and his main aim and here's my address now give me a key. That could be the normal personally identifiable information collection, it could run a file of the OMB sign on. Just to simplify the legal issues either don't use an API key or make it simple, maybe you sign in and a Google account hit the button and get a key. Get the key or use rate limiting.

>> AT&T uses signs up for API key and you are the FCC and you have information that that AT&T is constantly looking in Southern California. That might be revealing for trade secret and they might be looking to build their or spend there. We have to be careful around what information API gives you and who has access.

>> The last close-up, a couple of resources. The FCC has boilerplate terms of service on their API. You are welcome to copy and paste and find a place where they can fit in the agency name and it goes through that big buckets in the previous page. This presentation is up online. Every blue word that you see here is a link. If you want to go and grab the FCC terms of service, click on it and it will come up. Two things I think that are really driving the future of where a lot of terms of service are moving, the idea of simplifying the terms of service and making them user-friendly. WordPress.com the blogging platform has to cool terms of service that is easy to read, it has bullet points. It is licensed under creative Commons, an open license for -- and you can take that tinge it update and use for inspiration. Another kind of website is T -- tossed ER. It ranks the big buckets on the terms of service, either good or bad are they friendly. Familiarize yourself with a kind of things people are looking at and what they are look for. This presentation is online. If you have any -- want any of the links. Thank you very much.

>> This presentation is an API. When you click the link on the bottom corner, you can click and they will, pass -- API.

>> .

>> We will have a link to the presentation the same page after.

>> I can put in the chat as well. I can try.

>> Great. And then G5.

>> Thanks a lot. --

>> All right. Again thanks, I'm going to be go over a few key things in terms of API security. First off I will give you a quick overview of the security and what are the basic principles. What we need to know from a very high level but technical perspective. API security issue, what are some of the most common issues associated with API what the need to be concerned about in terms of deploying and somebody trying to steal your information. API security team, what can you do to secure an API? What resources are needed? It is going to come down to a whole lot of now additional resources that are needed to secure an API if you have strong security. One quick step back. APIs are similar to websites from security

perspective. The same vulnerability checks that will work against website are going to work against API. As I mentioned this makes it fairly easy to secure if you have a strong website security program. The risk can be mitigated by using the same measures to secure a website. This includes from HR perspective as well as technical perspective. Strong application secure the program is already in place an additional resources are not going to be needed when securing API.

>> As I mentioned, APIs can be treated like a website. Similar and often times the same technology getting used in the back end. URLs are used to access information within API as well as in the website. Information is requested an action is performed, and intermissions return. There are a couple key differences between the website and API. From a security perspective, they don't look much different. A website is meant for it humans to look at. APIs are for machines to look at. They are intended for automated ingestion of that data in some way by a developer.

>> A quick example. This is an example of how some APIs work. If a resource is requested from a browser, it's going to look like a pretty picture like you see here. Nice formatting and easy on the eye. When a developer request that API using some of their tools, the website can known exactly what format the data to return and in this case it is less human readable, but essentially the same information. Already you could start seeing, and IP security perspective what we are concerned about his information. We don't care that much what format that information comes back in. It is all information we don't want everybody to see. As I mentioned, the same data might be returned accept one is pretty for humans and some are pretty for developers. I have developed a number of APIs and work to secure a number of APIs. I would fall into the left-hand column. Some quick security principles. Common website security checks can be used for APIs from of technicals perspective, the APIs will look like any other link on the website. We want to ensure that well-known and secure protocols are being used such as HTTP and HTTPS. We want to conduct secure code reviews on the code and should be reviewed for vulnerability as well as best programming practices. We want to conduct vulnerability scanning. Regular automated scanning as well as application or website site should be done. A core principle of all security is that data can be returned can sometimes be sensitive. It should be treated as such. We want to limit access to specific URL and data when necessary.

>> Before deploying the API. You want to get a feel of what additional resources that will be needed. I want to have a good idea that. Automated web scanning tools will be needed. Website full of Verity scanners will work on the API portion as well and truly effective. Server-side scanners. In manual checks for vulnerabilities. This is essentially the exact same tool from a technical perspective needed to secure the API and secure website. Secure code reviews are another thing I mentioned. They are very important and from a coding perspective, API code is extremely similar to website code, same technology same protocol, same language is used. Essentially identical and sometimes a couple correctly with the website. Conducting the code review for the API is can't -- can be done with the same resources as a website.

>> That is all good news. If an effective website security program already exist, does not additional resources needed to secure an API. Due to similarities of APIs and websites, and existing security team

can handle API security. Since noon no new security technology need to be adopted, the cost are very minimal. That's it. Thank you very much. I'm going to turn it back to Gray.

>> Great. Thank you very much. A couple of things if I can get desktop control again. Here we go. Okay. A couple things I want to stress is why we are having this conversation. I will tie it back again to digital glove strategy. All of our agencies have been working on and have a lot of hope coming up in the coming months as well. That is if you actually look at the very first section under information systems, your several related dynamic and milestones and requirements for all of government going forward. They are based on what is clearly happening in the private sector and clearly happening in government. Appropriately, a shift toward the role of API fundamentally projects because [audio not understandable] the right thing to do. You see that in November, OMD will be releasing governmentwide open data content and best practices for these things. Keep an eye out for that coming. I think each one of and the call will have a responsibility to not necessarily be the owner and end point for that, to be a supporter of it and to make sure that conversations are taking place with contracting, with general counsel and IT support. Also in such a way that you are able to help other people who -- who might be less new -- to understand [audio not understandable] that is why you are seeing the requirements for agencies themselves are highlighted right here, very important to read the section and take it to hide. To look forward and to look back approach. To jumpstart agency progress, all the agencies are working to make at least two systems API accessible. Either being if you think it's important to make that data or service -- to the public, then they use case for allowing [audio not understandable] to make the data and content available to the public, -- the classic example for this is the weather service, it doesn't put out an iPhone app where you can get accurate data. Instead, they put it in such a way that everyone else in the world can build apps that give you weather data in a way that is best for you. That works and we talked about how you can apply that to the contract that is upcoming or the system that is in development now. If you have a system that is to launch in April, you can ensure that requirements of the data will be accessible and API will be included and they can take that into account. There's also a part part about making sure you have a plan to transition your existing services to an API accessible model as well. From that, please hear me say that digital services innovation Center at center at the GSI which I'm a part in several others are working hard to make ke sure that we are there for you. So your agency, please, my contact info will be up in a minute. Feel free to reach out. They are a very easy pragmatic ways to get the conversation going and looking forward to your agency wherever you are at. We want to convey in the call that all you have to do is get started and let us help you. The contracting and security and legal problems, these things are not problems, they are the same questions you always have to have an ensure the security of your website, we always had to ensure you call [audio not understandable] in contact and regulations. Nothing new, just taking a new model and running through the same system. To that end, I want to transition to do some questions and answers. A few people sent in questions during the event, but also there's a number of things I want to make sure [audio not understandable] a couple presentations are really good. -- and 10 from the legalperspective, have -- which ch are different. And if you're dealing with good legacy or institutions experts in the area and have never experienced [audio not understandable] talk about the common questions that come up, is there anything else that might be extraordinary or blank tape people.

>> I heard a couple that when we have -- when we are traversing systems that have different levels of security, that could officially pose a risk for problem. The trick on that in my experience has been to be very deliberate when working with the business owners and system owners for those particular investments. And to carve out what's known as the interconnection security agreement. I SA. So we are all in agreement about what particular data is being shared, how it is being shared and how it is being consumed and percentage. That was probably one caveat knowing in. I was not sensitive to. Once I encountered that, there was a reasonable way ahead. I was going to say something similar. This is Jay. It's easy to say we're putting we are putting out files now or XML files that are exported, why don't we just go ahead and build API on top of the database. What I realized is that when you are doing the export, you are selecting certain columns and rows and cells filtering that data. You could open yourself up to some liability if you released data that was not previously released and that maybe should not have been released. To make sure to have that conversation with the subject that are expert in legal department. Is there data that has not been previously released. Why hasn't it been released, and Mr. Any problem with us releasing it? The related issue is a bigger difference between -- putting on a monthly file and putting putting out a real-time setting more real-time API. Is that you're getting theoretically, if say you are a regulatory agency and one of the -- within normal report and of their activity. Previously under the CSP model that activity report would have been available to their competitors one month after submitted. You can go to a timely API. It is available to their competitor immediately the regular -- not be happy and might cause the issues. Make sure the pictures, there's no wiggle shift from a theoretical standpoint, but from a practical standpoint the information you lose depending upon how you release it and when you release and how it affects your customers.

>> From a technical standpoint, don't be scared off just because you have a table and database that have confidential and public information and you can't build an API on top of that to be able to filter out a column or row of table from an API is trivial from a technical standpoint. Don't think that is a barrier but don't think that it's -- it's a very purposeful conversation you need to have.

>> To echo that, I was going to say the practice this is technology that we figured out a long time ago. I went to echo that don't be concerned. The call should not be distinctly different. IT is used to how you make certain parts of public and private, straightforward ways.

>> Another? Came in, either still legal issues -- even in APIs and agencies, -- strategy. The way I understand is what is it like consuming other agencies -- and what you will find this is very good community of agencies making -- making -- available for each other. For instance, when federal communication -- was printing -- building the broadband. It was in need for the census block. That could take [audio not understandable] From the census bureau. And if you [audio not understandable] In attendance, that was not [audio not understandable] available [audio not understandable] the FCC had to build [audio not understandable] It turned out to be one of the most popular published [audio not understandable] in an ideal situation I think -- I would ask the service provided by the Census Bureau that we could see soon. There's a lot of [audio not understandable] virtue in making the data and services available for API just for other agencies. You just have to make sure that you keep an eye on systems of service and dynamics [audio not understandable] the agencies are very friendly to other agencies. I think there's a lot of efficiencies

that we all know we can get it we can get our data available to each other more fluidly because instead of having to have a phone call and meetings, 20 people are in the room together a few times over a few months, you can start building the apps.

>> If there are other questions coming in from the public?

>> One of the? I would have, Alejandro touched on API not being different from websites. I believe I understand that at the end of the day, the website is basically [audio not understandable] it this the URL. [audio not understandable] consumed URL query. What I would love to hear from Tim and Dave, how do you articulate that -- is the purpose of the conversation.

>> In some ways I think the distinction is very gray. If you have a website driven by content management system. Then essentially what is happening is when the display data on the website, we are querying a database to figure out which data to display. And when we display an API, we are essentially querying a database to figure out which data to display. The only difference is the web content management system is dedicated solely for the purpose and an application database is not necessarily. For that sole purpose. It has a business application and that's to try for four, but they're trying to do. Ultimately I think the distinction is very, very gray. The step Does that make sense?

>> I would say [audio not understandable] if you have an existing system -- and you put out content API which put out the same content in XML or machine-readable format, then from a legal perspective there's little difference, you might as well be serving the background in blue versus the background in red. Just a different form of markup. The issue comes in as Tim says if you are pulling in a system that was not previously public, you get into a legal concern if you put that out that's not an API by the flat file and publish it to the website. It is how the APIs used the type of data we are serving than that API. The last thing that we did not touch on and may come into play in the near future and something to think about is we see website at one way, they are broadcast and here's -- there's a potential with API tool allow two-way communication so if it is a regular citizen wants to file a complaint for -- or file the form submission that they do it through the API itself and go through some intermediary. The point that you are allowing those who regulate access to the Vista system in a secure way, it can be some legal issues that works with the General Counsel.

>> Alejandro, one of the things that you referenced earlier, the IT security team at each agency leads to basically when the new product is being created, provide service outstanding -- [audio not understandable] vulnerabilities and take those back to the developers to mature they are addressed, in your experience so far, are there any common misunderstandings that IT security teams might have that are worth addressing or is it your impression that they usually are perfectly comfortable with this and straightforward?

>> That's a very good question Gray. I have seen it very. The notion of of an API sometimes isn't that well understood even among technical folks. Sometimes engineers might need to be educated from a very high level since you can say in APIs basically learned that returns data and very special format even engineer sometimes need to be educated because a lot of times they don't use API. It is a very specific niche for developers that are able to do something with that data. Definitely an important conversation

to have with the engineering team. Mystify it in a very quick conversation about that and they should be able to understand that relatively [audio not understandable] Question.

>> Leslie, I would love to go down the line of each of the three of you and you have been focusing on your own area of procurement and legal and IT security, you have do you have any questions or points that you have for each other or do you feel things are pretty well [audio not understandable]

>> I would only -- a lot of our push is in his in data and capability to the public. That is one portion of the capabilities I think we should be focusing on. I think there's equal value equally in identifying the data and capabilities that we could expose internally within an organization to really share data and do provide different levels of visibility into other sort of related capabilities. When I was at housing and urban development, there were opportunities to share some of the housing data across the disciplines of housing and urban development, but to a great extent, the data was locked in our systems and there was nothing that forced us to share the data and enter into the collaborative relationships with the other parts of the department. That is where there will be some value to make sure that the government is driving efficiency and better able to leverage the information we already.

>> Ben, Alejandro any parting thoughts?

>> This is Ben. Very similar question to what you asked me, Gray. From a legal and contracting standpoint. Do you guys find that there's a lot of misunderstanding of what an API is and what they think is the best way to educate the non-technical folks kind of in my technical bubble, it is sometimes difficult to get a feel for what the non-technical side understands or does not understand. Can you recommend maybe some effective strategies for educating non-technical folks to what an API is and issues around it?

>> In a good way, voters are risk-averse. They will naturally push back against doing crazy crazy ideas. Then you piece of ID I give this to talk about what's happening. In addition to say we are putting out an API. Chalk practically what that means for the agency. That might mean we are serving the same content, we are just doing it in a more structured format to allow developers to build apps on it and we are just serving additional content but already been approved. Don't talk technically, talk practically that is where the laws that if not asking whether you are using an open source, server to serve the API or whether her -- API, practically what's the implication of that technology. Second, try to talk analogously possible for show the fact that this isn't new, this isn't crazy that lots of other people are doing it. Take an example from the private sector to say the reason we want to put out the data is because Twitter puts out there treats as an API or Facebook with other -- as API and -- or Barlow quest, and say the FCC puts out this block API now everyone is using it and it's really cool. Talk practically an implication an analogous cost government.

>> Contracting officers are sometimes going to be nervous about the fact that specially if you have written some sort of limitation in terms of the scope to which contractor can perform, then they should rightly push back on some of that. I think it's important for us to make sure that we don't write any of those types of limitations into our work statement. When they go up for bid. If we try to draw system boundaries, now we are creating API and capabilities that go beyond the system boundaries and the

contracting officer will likely say I'm sorry that is beyond the scope of what this particular company is allowed to perform for you. We just have to be very diligent about.

>> Overall what I take away is that there are solutions for all these. This is going to . The people that you work with [audio not understandable] might have uncertainty or unfamiliarity. That could be addressed. I want to encourage everyone going forward. Something to keep in mind, if you were spouse or kids, everybody -- every major website you visit today in your personal life is already doing this. The trends are unavoidable for government agencies, the right thing to be doing the right time to be having conversation. We child and let us help you if you need help. The movies to work on this stuff. One more? Came in. ForBen whether to use keys for performance concerns.

>> I want to plug the next seminar. In two weeks from today on the 25th, we are scheduled to have the next API webinar series that will focus on advanced technical issues including API keys, analytics, documentation, format and virtual control. There's all the technical questions that you might have or want to see coming we'll get into that pretty in-depth. Please, everyone come back and join us in two weeks. We can keep an eye on that. I will try to send you an e-mail inviting you. Come back. There's a lot more. [audio not understandable] otherwise, I want to thank everyone for coming. I really appreciate the -- presenters were talking today and have a good morning.

>> [Event Concluded]