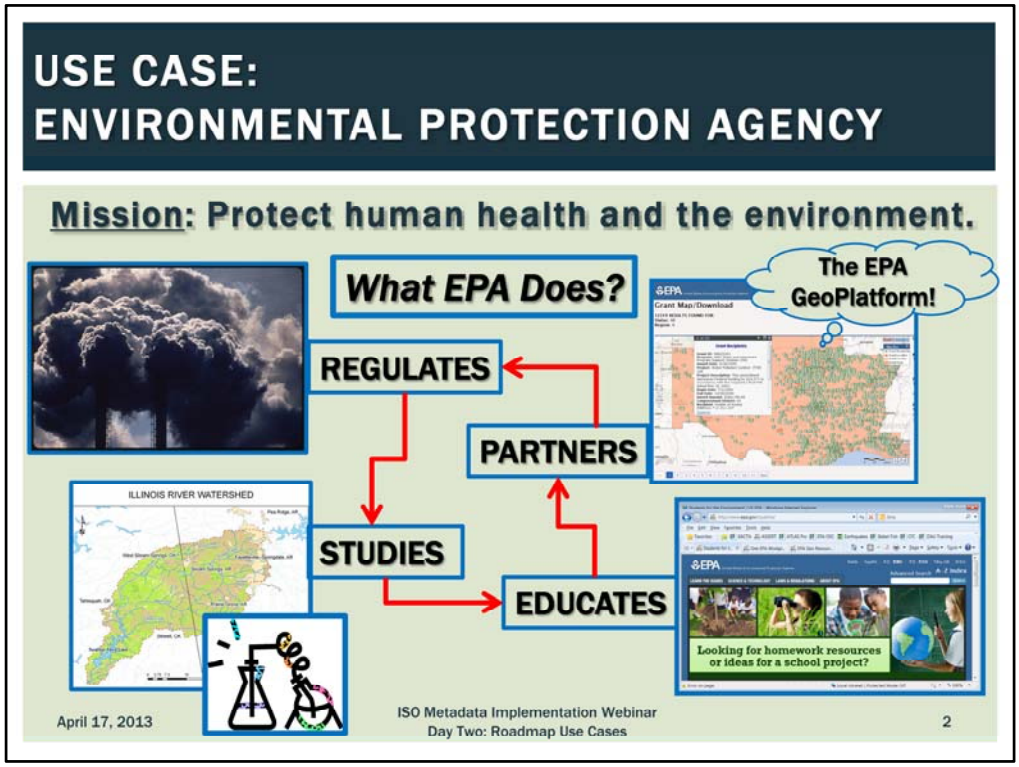
EPA, the Environmental Protection Agency, and what is our use case for implementing ISO.

Before we begin I want everyone to take a deep breath of fresh air.
As you exhale, say to yourself, “thank you, EPA.”

Because EPA and its partners are on the job, your air, your water and the land around you is cleaner.



Adapted from About EPA on the EPA Public Website - http://www2.epa.gov/aboutepa/our-mission-and-what-we-do. All images from EPA Public Website except beakers from Microsoft Clip Art collection and the EPA GeoPlatform map from EPA GeoGrants application.

US EPA's Mission is to protect human health and the environment. **To accomplish this mission, EPA:**

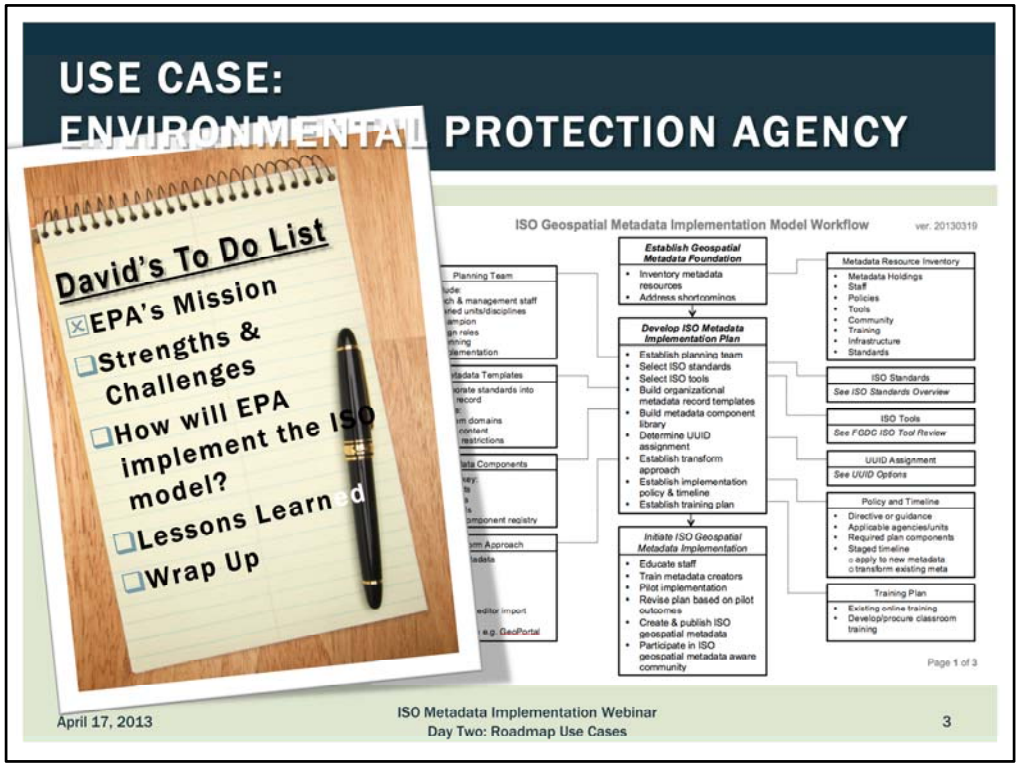
Regulates- Develops and enforces regulations for all or part of 29 Federal laws and 3 Executive Orders. These include planning, permitting, clean-ups and enforcement. (http://www.epa.gov/lawsregs/laws/index.html#env) What EPA does directly affects every member of our society on a daily basis.

Studies- To support its regulatory responsibilities, EPA conducts Studies to answer specific questions. You know some of these studies. Your utility provides a water quality report with your water bill. The TV weather man reports on the air quality index for your community nightly. And your brand new pick-up truck has the EPA gas mileage sticker glued to the window.

Educates- EPA teaches people about their environment. We conduct public hearings to update citizens about its activities, whether it is a new regulation or a clean-up in their neighborhood. EPA publishes information on the web and as reports. Including reports about the studies it conducts. EPA provides resources for environmental education to students and teachers.

Partners- And all of EPA actions involve partners. Almost half of EPA funds goes out in grants and contracts to support these partnerships. States/Tribes are delegated the authority to implement most environmental programs with EPA oversight. Plus, we have agreements with many Federal agencies for expertise and support.

Mapping at EPA shows the partnership approach. EPA Geo is a major data consumer. We use boundaries & statistics from Census, topographic maps from USGS, marine species data from NOAA, and wetlands and habitats from Fish & Wildlife, plus engineering and navigational data from the US Army Corps of Engineers. All this to support our Agency's mission.



Here is my To Do list for today. I am going to talk about

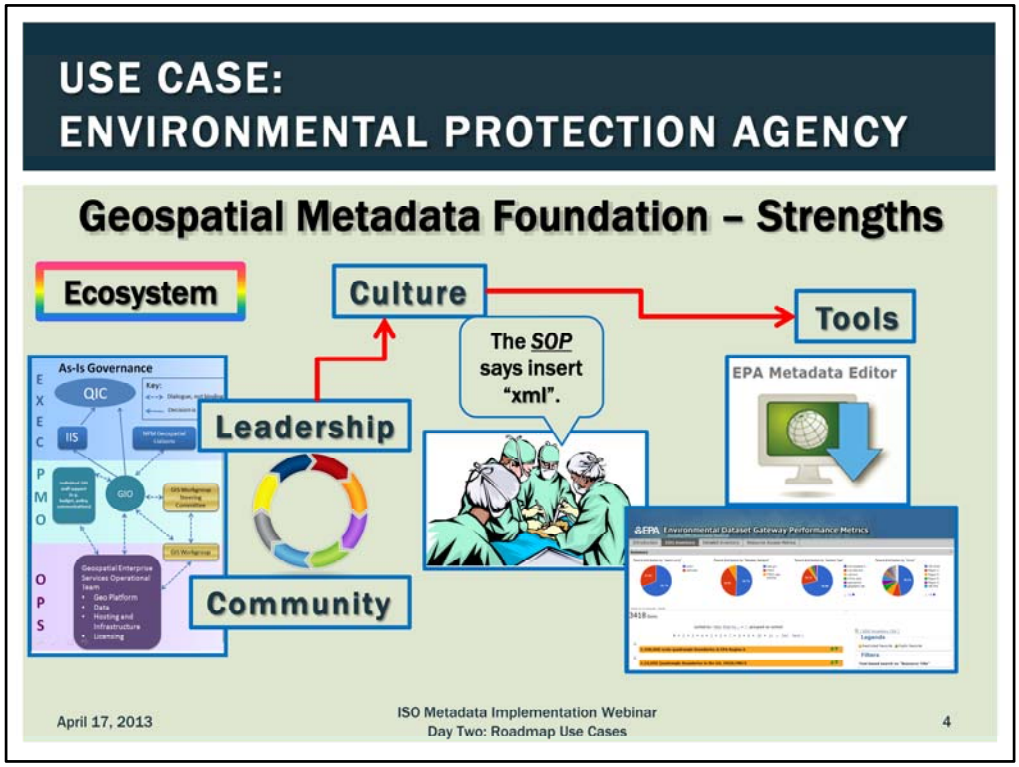
EPA's Mission- check, done!

Our Metadata Foundation, its strengths and its weaknesses or challenges.

EPA is at the beginning stages of its venture into this brave new world of ISO standards, so my talk will be more about how we plan to implement an ISO transition project.

I will cover a few lessons we have learned along the way.

And then I will wrap it up, answer a couple of questions and pass the baton to my friends at NOAA…



An dynamic GIS **Ecosystem** is the greatest strength of EPA Geospatial Metadata Foundation.

Its **GIS Community**- has over 25 years of networking, sharing and co-developing datasets and applications. It moved from minicomputers to work stations and desktops to enterprise and now (maybe) platforms. Today we support over 500 active practitioners.

GIS has grown from its grass roots beginning to a vital part of EPA organization. In the process its **Leadership** and its need for governance have evolved. We have charters and steering committees and senior management oversight and a champion in our Geospatial Information Officer or GIO.

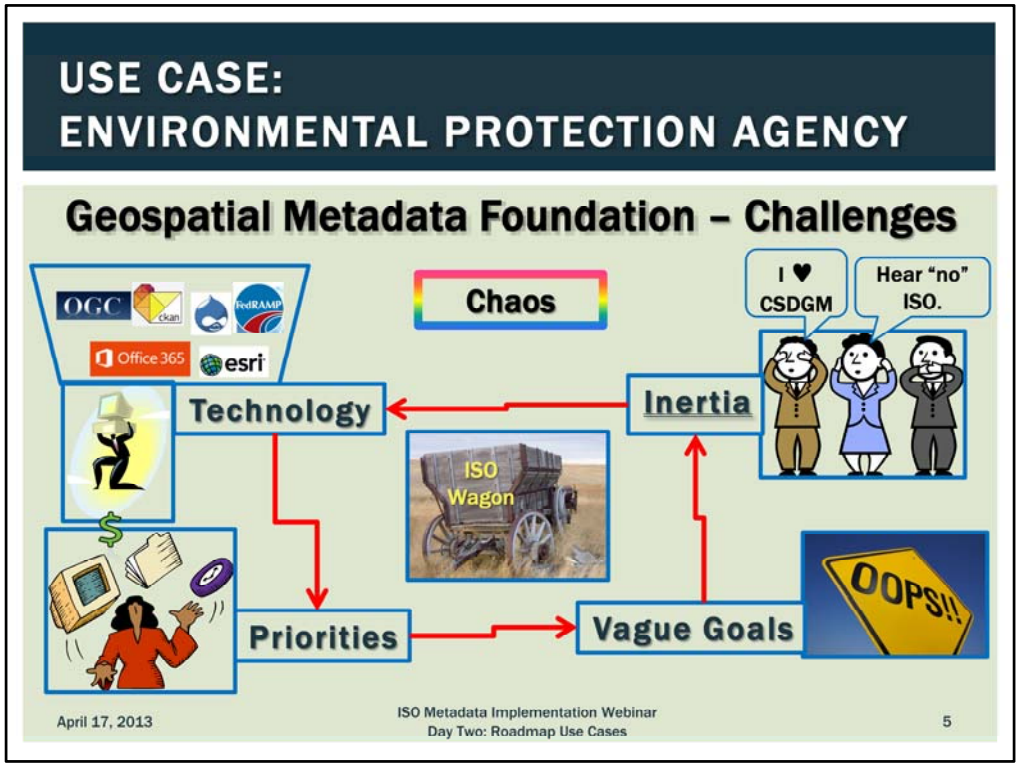
All that coupled with our mission as a regulatory and science based Agency has lead the EPA geospatial world to develop a vital **Metadata Culture**.

This has resulted an Geospatial Metadata Policy published in August 2005 and two major **Tools**:

One, the EPA Metadata Editor, which is widely used for CSDGM metadata it has a user base beyond EPA that includes over 6,000 downloads in 113 countries and we get feed back regularly. It works both as an extension of Arc Catalog and in a stand alone mode.

Second, is the Environmental Dataset Gateway which serves as EPA's primary data catalog. To date EPA users have cataloged over 3,500 datasets most of which are shared with the public at Data.Gov. The is support by my EDG Team plus 23 "Stewards" who serve as local experts on the use of the EME and the EDG for their organizations user base.

So Community and Leadership plus mission focus have lead to our vital Metadata culture which lead to both the development and the use of tools.



What is causing chaos in EPA's GIS ecosystem. That is what are the Challenges to our Geospatial Metadata Foundation.

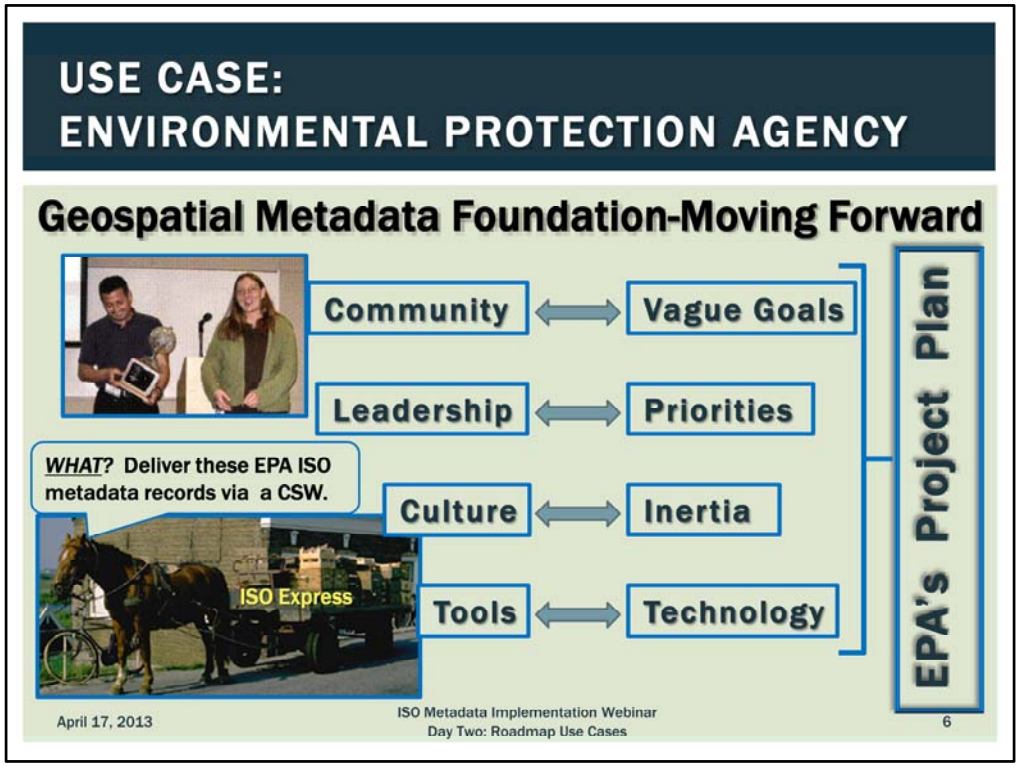
Rapidly emerging and evolving **Technology**. Two years ago we (I) was happily ensconced in the world of enterprise GIS. Suddenly, this notion of "platforms" … portals … and new emerging standards are requiring us to rethink our most basic requirements. How do Drupal and Sharepoint and ArcGIS.com and the cloud all fit in?

Priorities – As always competing priorities. The office brush fires. And more so, this year the impacts of our budget constraints on our ability to address our long term requirements …

Vague Goals – our vision of ISO and how it will help EPA geo and how it help support the "mission" is still fuzzy, we need time to clarify this vision. We get a lot of requests to fix this or add just one more feature for now. It is time for EPA to sit back a take stock, ISO is one of the key driving forces.

Inertia – why change CSDGM has served EPA so well for so many years. BUT, does the old standard still work? As it stands, we now have to cross register datasets and services and the online GeoPlatform has introduced new work flows outside of our comfortable desktop-enterprise world of a few years ago …

We know its time to get on the ISO Wagon …



Build on strengths to address weaknesses

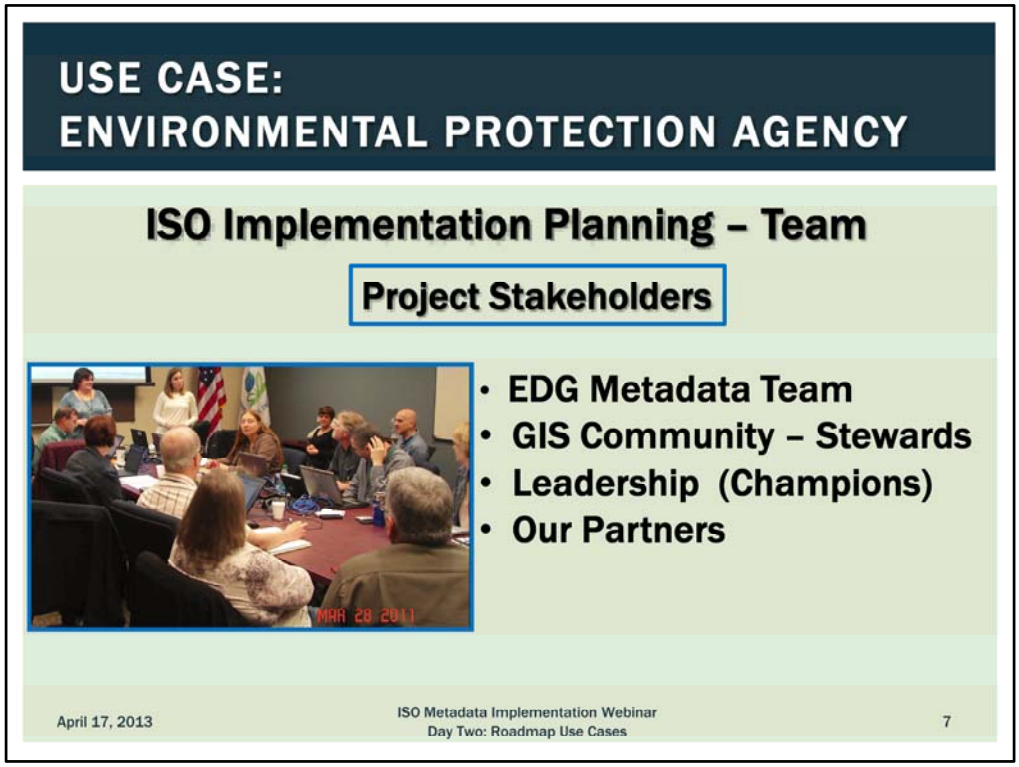
GIS Community ⇔ Vague Goals - Each member of the GIS Community is supporting the mission, we have initiated a new requirements dialog to clarify the Goals and direction for upcoming metadata projects

Leadership ⇔ Competing Priorities – working with mid-mgt and our senior leadership to keep implementation of current geospatial standards on the radar.

EPA's Strong Metadata Culture ⇔ Inertia – convincing EPA geo community will not be hard, once we hit upon the way to simplify the discussion some.

Metadata Tools and Procedures ⇔ Evolving Technology – again, once we can clarify the direction and we better understand the technolgy we can define our project plans to move the Agency forward into the wonderful world of ISO …

The Plan- Address ISO Implementation as part of a bigger "project" to provide metadata tools to support geo.



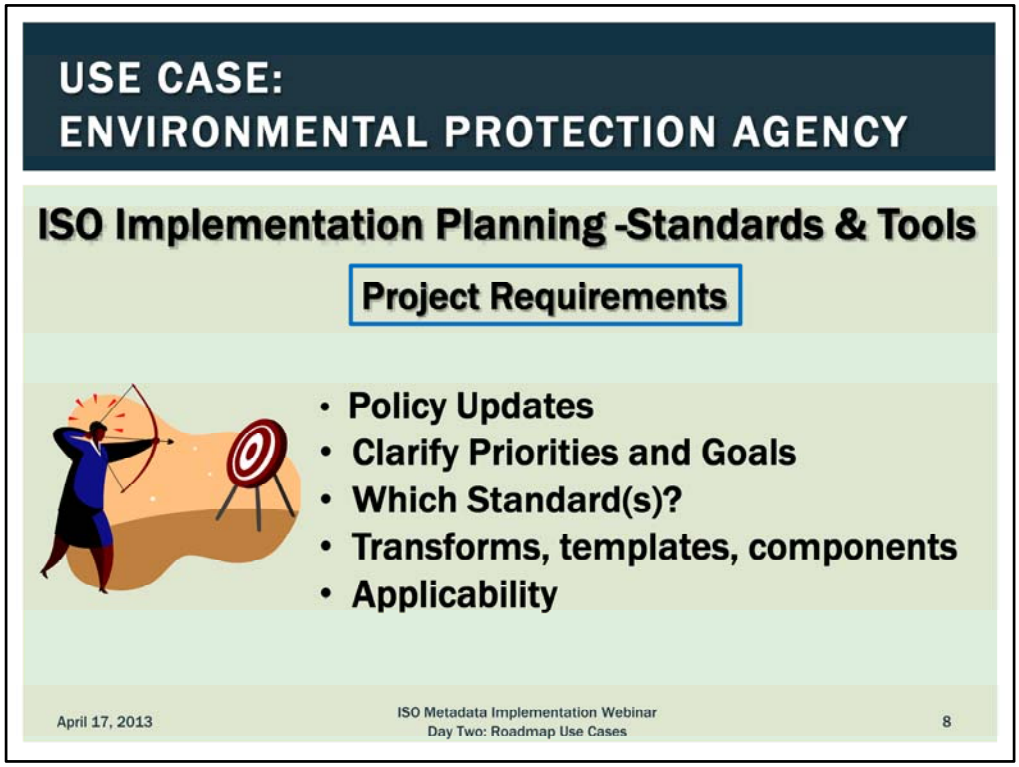
Who was on the team (formal or informal)? Who are our stakeholders.

EDG Metadata Team- myself and branch, my management and a team of contractors. We are the core resources for developing and providing metadata tools.

EDG Stewards, GIS Work Group- serve a our primary Geo customers the GIS Work Group, our network of stewards or experts who serve as our boots on the ground for their local organizations. We are also part of the GeoPlatform team which is implementing services and infrastructure for data sharing and the EPA's Open Government work group which oversees Data.Gov activities.

Did you have a champion? - Yes, our GIO, GIS Work Group Steering Committee who offer advice, and our Senior management.

Our Partners- you guys federal colleagues, states, tribes, vendors, other metadata communities who all provide us with pieces of the puzzle



Project Requirements- What is vision? What is the goal or target we want reach?

• **Policy Updates** - We have a policy for geospatial datasets. However, with Open Government, Digital Government Strategy, changes at Data.Gov discussed by Doug Nebert earlier, and the soon to be released OMB Data Policy , we are working to update the policy to address the registration of other types of resources, web services, tools, apps, and so on.

• **Clarify Priorities and Goals-** Currently, we have initiated an effort to update our requirements for metadata editing and cataloging. Much of this being forced by changes in technology, like the GeoPlatform and CKAN. ISO is also a key driver. As is maintaining a relatively simple approach for our base users and new work flows introduced by platform.

Which Standard(s)? Beats me! There will be a process to review the options and develop a recommendation to our leadership to decide on. Driving forces here include the nature of our business. Remember we conduct many studies both large programs as well as localized projects. Many use sensors or remote sensing products. My guess, is 19115-2. It seems to fit our data needs, plus services, features, and quality. Every sidebar conversation seems to lead to that conclusion.

• **Transforms, templates, components-** We already handle much of these with the EPA Metadata Editor. So, I expect we reprogram it to update the code to handle ISO standards. A little more on components. EPA has developed SOPs, standard operating procedures, and step by step directions for publishing data to the EPA GeoPlatform. We are finding the need to identify best practices for titles, descriptions and keywords. Of the first 183 map services added to the internal EPA GeoPlatform, EPA was spelled at least 5 different ways. Addressing the use of components is key.

• **Applicability-** How does EPA expect to apply the ISO standards. First, new and ongoing data activities. Second, anything going to the public, like Data.Gov records. Finally, old data sets when they a pulled out of moth balls for reuse.

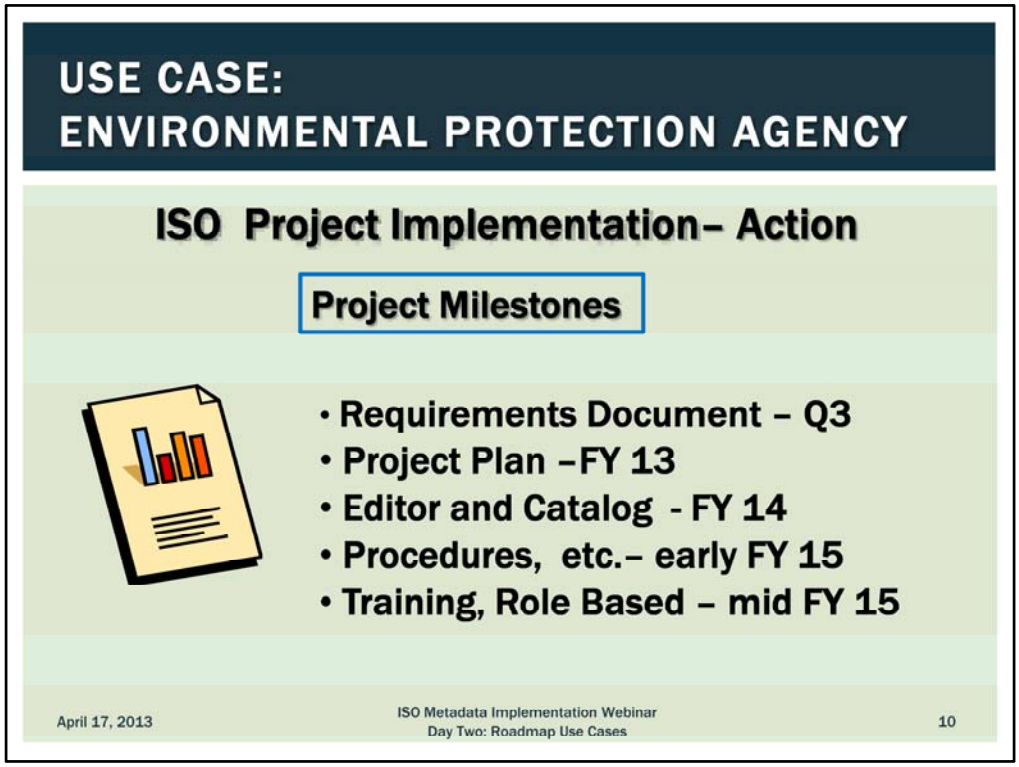
•**Tools, an Editor & a Catalog –** An updated EME and catalog. The catalog will be integrated with the EPA GeoPlatform. It will have internal and external offerings. Use the various technologies to there best advantage.

• **Technical Specifications –** Update to specifications for CSDGM and Data.Gov standards to the ISO standard and whatever CKAN requires.

• **Standard Operating Procedures -** Update currents SOPs, Develop new ones as needed. Publish simpler guides to support additional users.

• **Conventions and Best Practices -** Expand component lists and extend the use of best practices to improve the utility of our metadata for search, discovery and data access.

• **Training, Role Based-** EPA training has always been and will continue to be role based. We will have high level briefing for management. They like standards. There will be more general overviews and session for the general users. And there will intensive training for our stewards network.



So, a quick look at our time line.

• **Requirements Document – Q3 –** clarify our vision. What to do? What not to do?

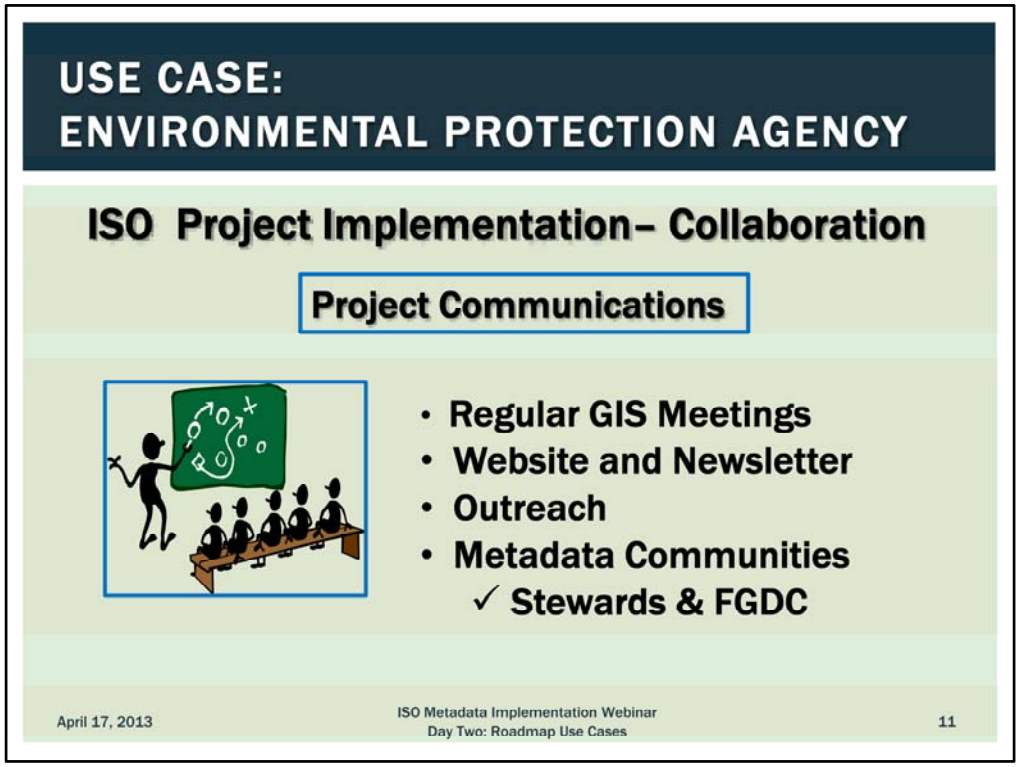
• **Project Plan –FY 13 –** Define the steps. Which standard? Our path forward on tools?

• **Editor and Catalog - FY 14** Update the tools.

• **Procedures, etc.– early FY 15** Refine the processes.

• **Training, Role Based –** mid FY 15 Develop and offer training.

All the while supporting the current tools and responding to our day to day operational issues.



Collaboration and Communication – How do we keep the ball rolling?

• **Regular GIS Meetings-** keep your stakeholders apprised of your plans and you progress,

• **Website and Newsletter-** maintain a website with the latest standards, procedures and guidance. We want everyone singing from the same hymnal. Use existing newsletters, if possible.

• **Outreach –** In addition to training we conduct ongoing outreach with our stakeholders. As well as, to a broad range of data owners across the agency.

• **Metadata Communities**

✓ **Stewards-** Just to reiterate our stewards make EPA metadata work. They serve their organizations and provide a point of contact for referrals.

✓**FGDC –** the Metadata Work Group and its members will be a great place to find ideas, resources and feedback.

Lessons Learned

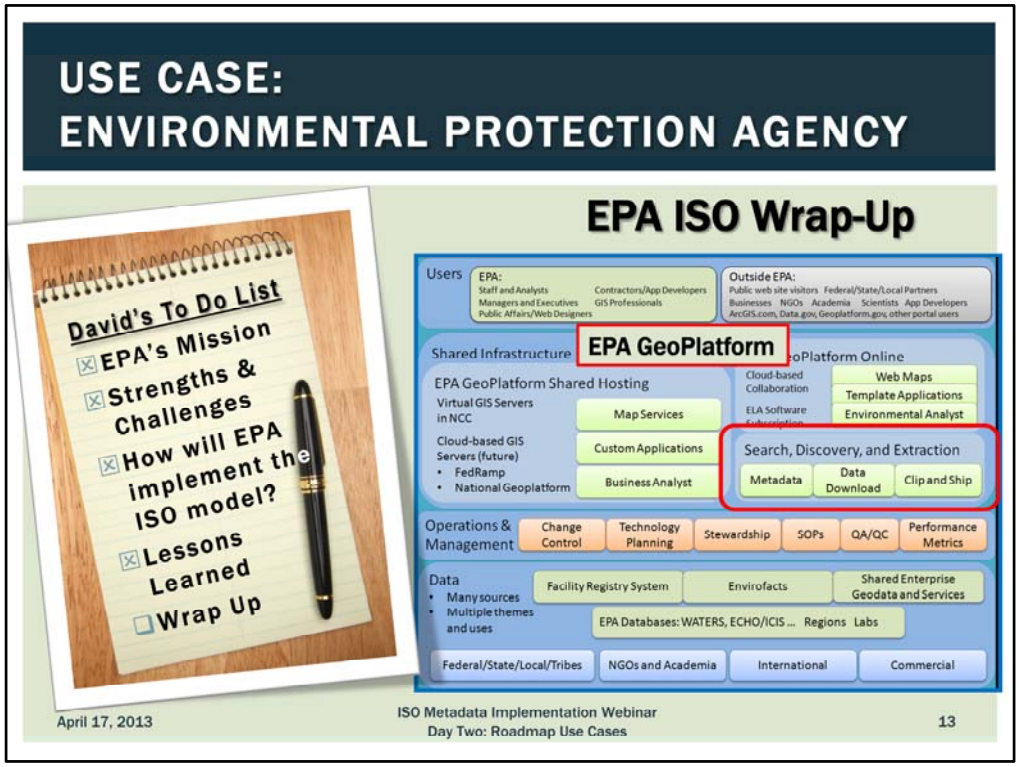
•**Build a Community –** Perhaps, the greatest strength of GIS at EPA is its active, interdependent community. We appreciate there are many commonalities. We share our successes (what's working) and our failures (the pitfalls). When Hurricane Katrina hit the Gulf coast this community, this trust was invaluable to the geospatial support for EPA's response.

• **Find a Champion –** Actually we must keeping finding Champions at all levels in all of our organization . Managers change, they move up, they move out. Keep them in the loop.

• **Focus, Focus, Focus –** Look at the requirements and the technology at hand decide what works for your agency. Develop a plan and implement it. Adjusting plans to a changing environment is part of the world we live in.

• **Frequent Communications –** Talk often. EPA holds monthly conference calls and semi-annual meetings (now webinars) to update the entire GIS work group on tools and accomplishments.

• **Embrace Metadata –** Just do it. The model presented was derived from the experiences of NOAA and the Census Bureau with some feed back from USGS and EPA. It gives you a path forward. Good metadata practices are part of data quality guidelines and ISO is the future for geospatial metadata. Just do it.



So, how did ole David do on his "To Do" list?

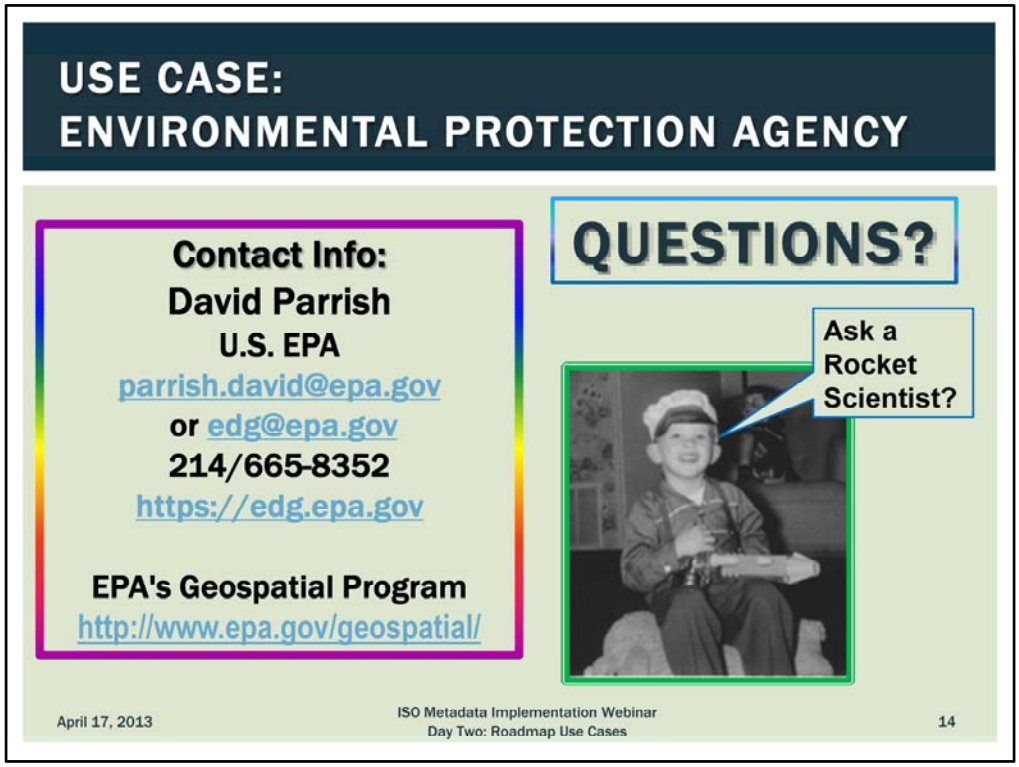
- ☑ **EPA's Mission (check)** EPA protects our Nation's human health and the environment through regulations, studies, education and partnerships.

- ☑ **Strengths & Challenges (check)**EPA long standing geospatial community has established a strong foundation and a culture that appreciates the importance of metadata. This will allow us to build on the tools and processes we have in place to move us towards ISO implementation.

- ☑ **How will EPA implement th ISO model? (check)** EPA is approaching ISO implementation as a project with key stakeholders, defined requirements, specific project deliverables and milestones, as well a effective communication and accountability.

- ☑ **Lessons Learned (check)** So, our experience over a quarter of a century of GIS at EPA has taught us that in order to implement a strong standards based culture it took a strong champion (or champions) to make our case for resources, some focus to direct those resources towards the creation and implementation of useful tools, frequent and honest communication. These lessons will help EPA embrace the geospatial ISO metadata standards.

- ❑ **Wrap Up – (this is it)** on the right we have EPA's vision for its GeoPlatform. It is important to note that metadata and data access are recognized a critical aspect of the GeoPlatform's infrastructure. It is no longer another duty as assigned but a habit expected of each and every geospatial practitioner in the Agency.



[Action: Check the time. Do we have time for questions?]

I do believe, we have (NO) time [or] for ____(?) questions…

Any questions you enter into the Chat/Question window will be answered either now or in a follow up to this webinar.

You can always reach me or my team during business hours using the contact info provided.

Thank you for your attention. I would now like to turn the program over to my friend and colleague at NOAA, Kathy Martinolich.

Kathy, take it away, …