

The GIS Analyst as an institutional resource

Afternoon Technical Session

*1:00-2:30pm
Rm 317*



Panelists

Mark Joselyn
Grete Roeckers
Cathy Walker
Tim Dewland

Facilitators

Chris Behee
David Howes



*2014 Washington GIS Conference
May 12-14 Tacoma, WA*



Welcome!

Chris Behee - GIS Analyst
City of Bellingham
Planning & Community
Development



BOILING THE SAUCE DOWN

As GIS analysts, most of us find ourselves in a daily race to keep up with the continuous stream of system upgrades, with weekly production schedules, and helping our colleagues figure out how to set up projectors, fix jammed copiers and locate extension cords. While it's true that we all will likely continue doing these things for the foreseeable future, there is a broader role and a larger responsibility we all share. This facilitated panel will focus on the role of the GIS analyst across the institutional landscape. The discussion will cover a range of issues centered around the idea that the analyst's job is a multi-faceted one of data-steward, modeler, statistician, cartographer, advisor, and educator, to name a few. We are responsible for helping maintain the health of what used to be a series of disconnected GIS databases and have now become the integrated data backbones of our respective agencies. **As GIS has become pervasive across many disciplines, there has evolved a critical need for informed, articulate communicators who know enough about the data, the applications and the end-user's needs to provide help when needed**, and to maximize the resource value. Panelists in this discussion will share from their unique experiences, highlighting successes, evaluating failures and illustrating how the role of the analyst in their organizations continues to evolve.

As GIS has become pervasive across many disciplines, there has evolved a critical need for informed, articulate communicators who know enough about the data, the applications and the end-user's needs to provide help when needed

Communicators who... provide help

Agenda

- Introduction
- Panelist presentations
- Q/A with audience (PLEASE be active participants! We want to learn from you too!)
- Panelist final comments
- Wrap-up.



~~Our contestants~~ panelists

Mark Joselyn

Grete Roeckers

Cathy Walker

Tim Dewland



Our panelists

Mark Joselyn
Grete Roeckers
Cathy Walker
Tim Dewland

65+ Years experience!

**Working for
City/County/State/Private**

**Sciences, Planning,
Utilities, Education,
Resource Mgmt.**



A few thoughts to
get us started:

**Permit
Center**

Operations

Parks

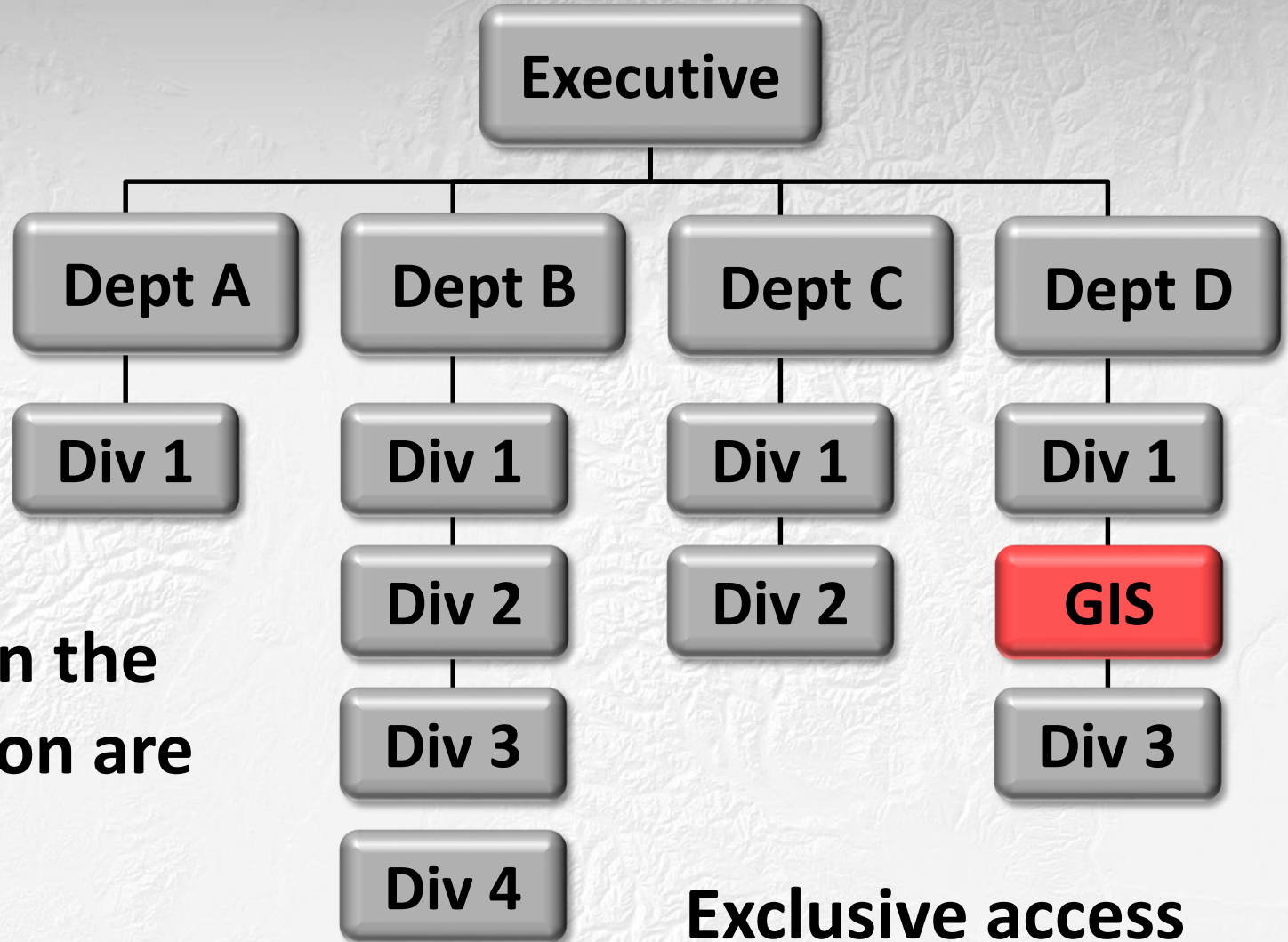
**Where did you start
with GIS? or Where
are you now?**

IT Dept

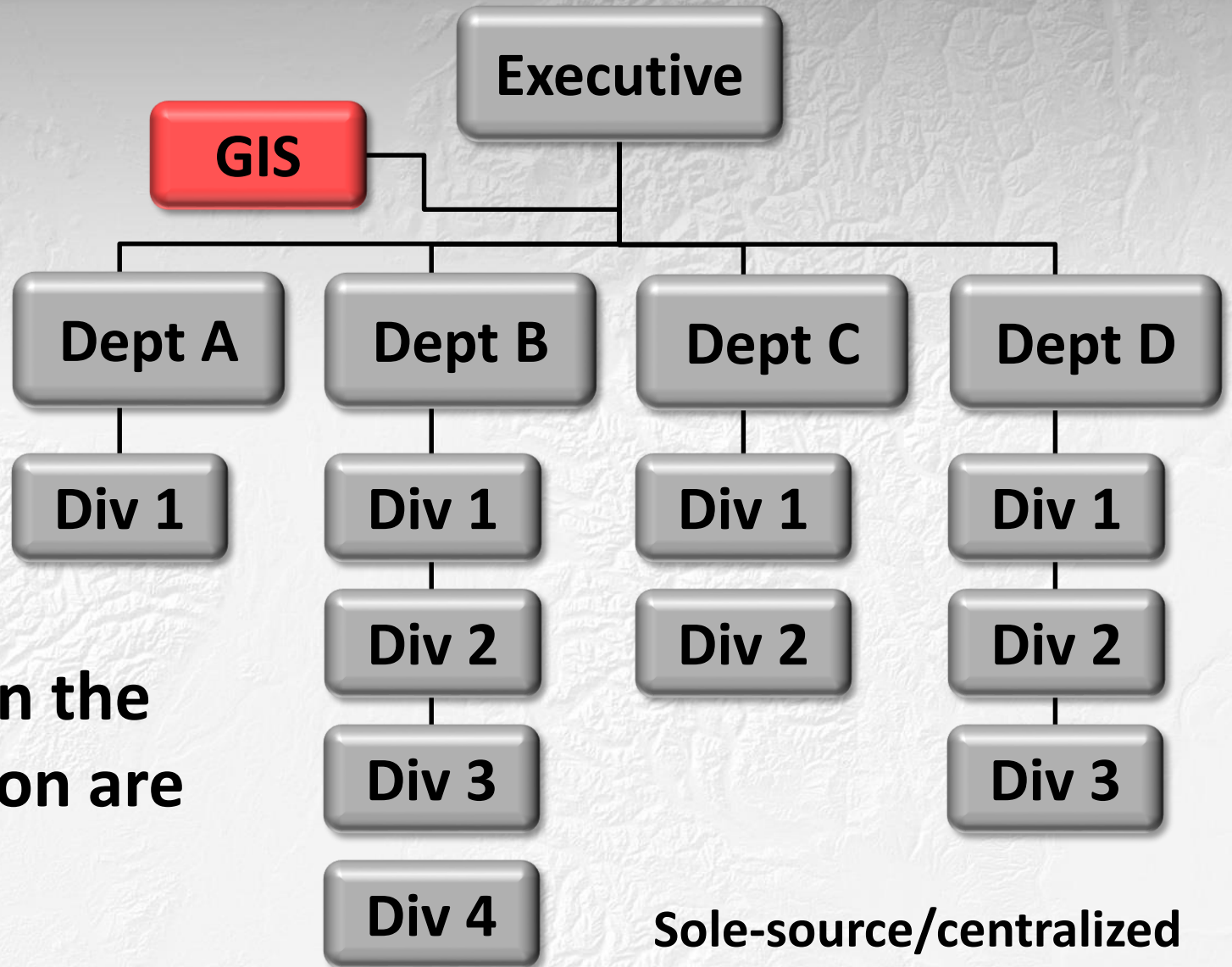
Planning

Engineering

Marketing

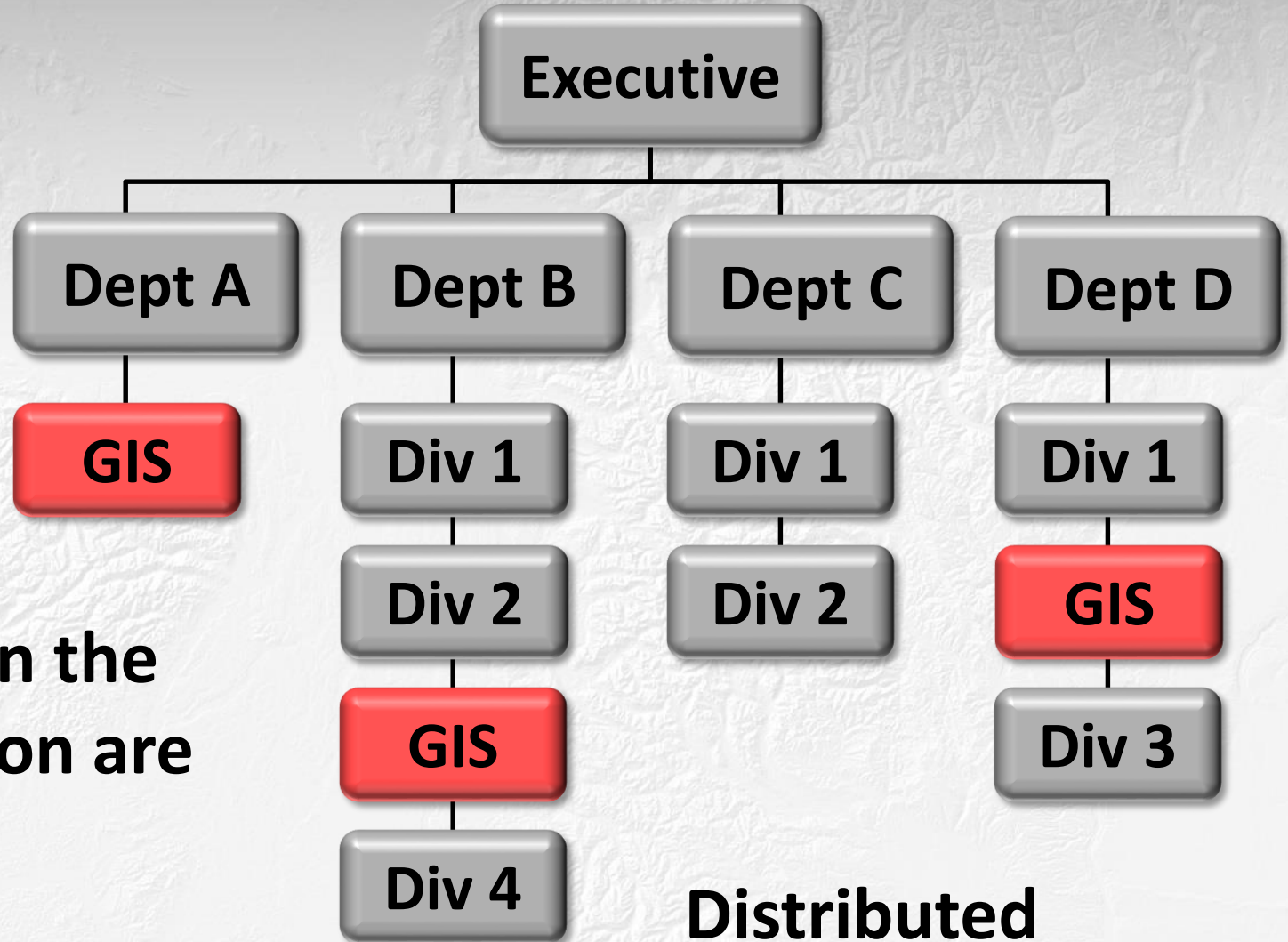


Where in the institution are you?



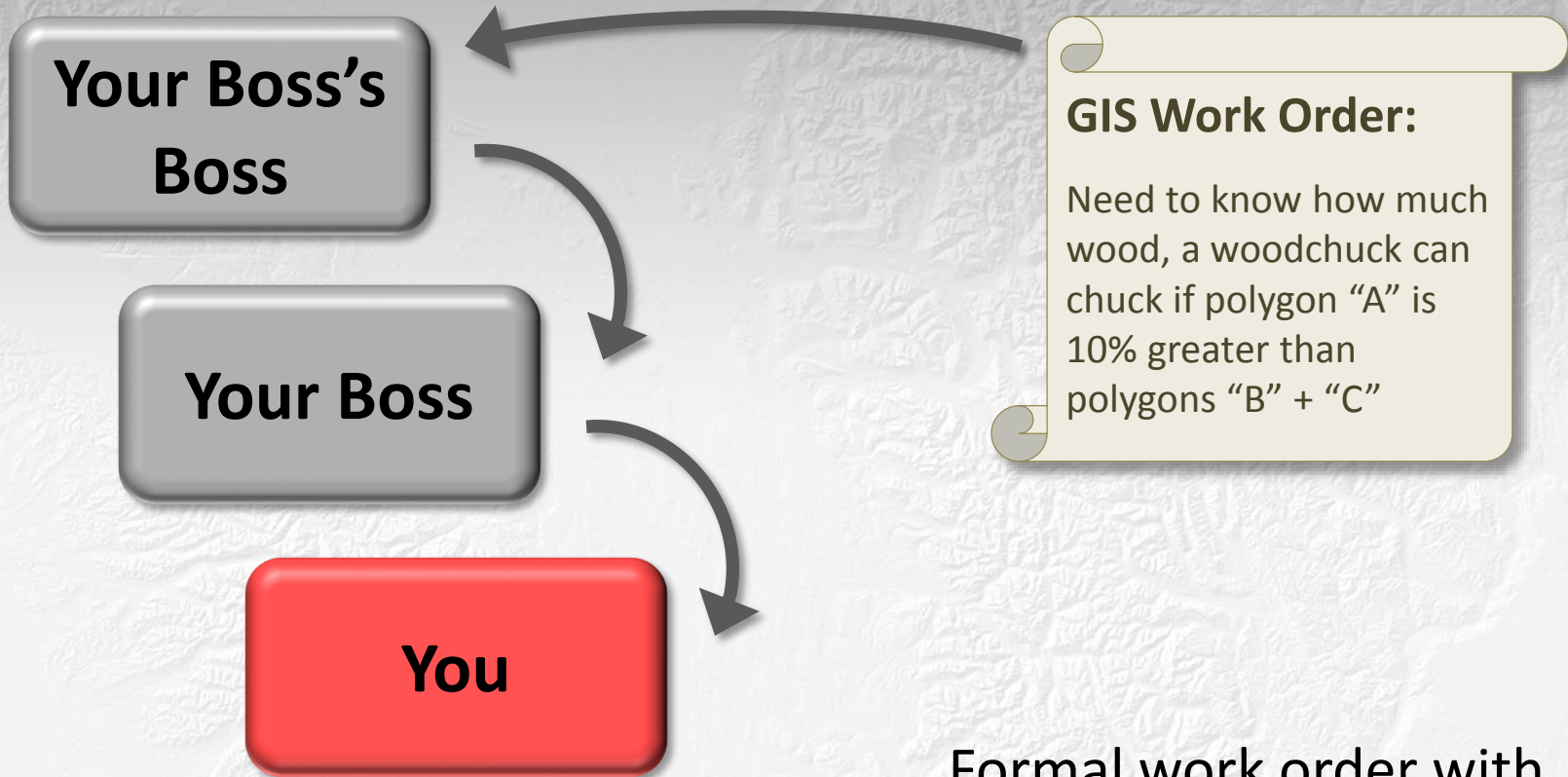
Where in the institution are you?

Sole-source/centralized



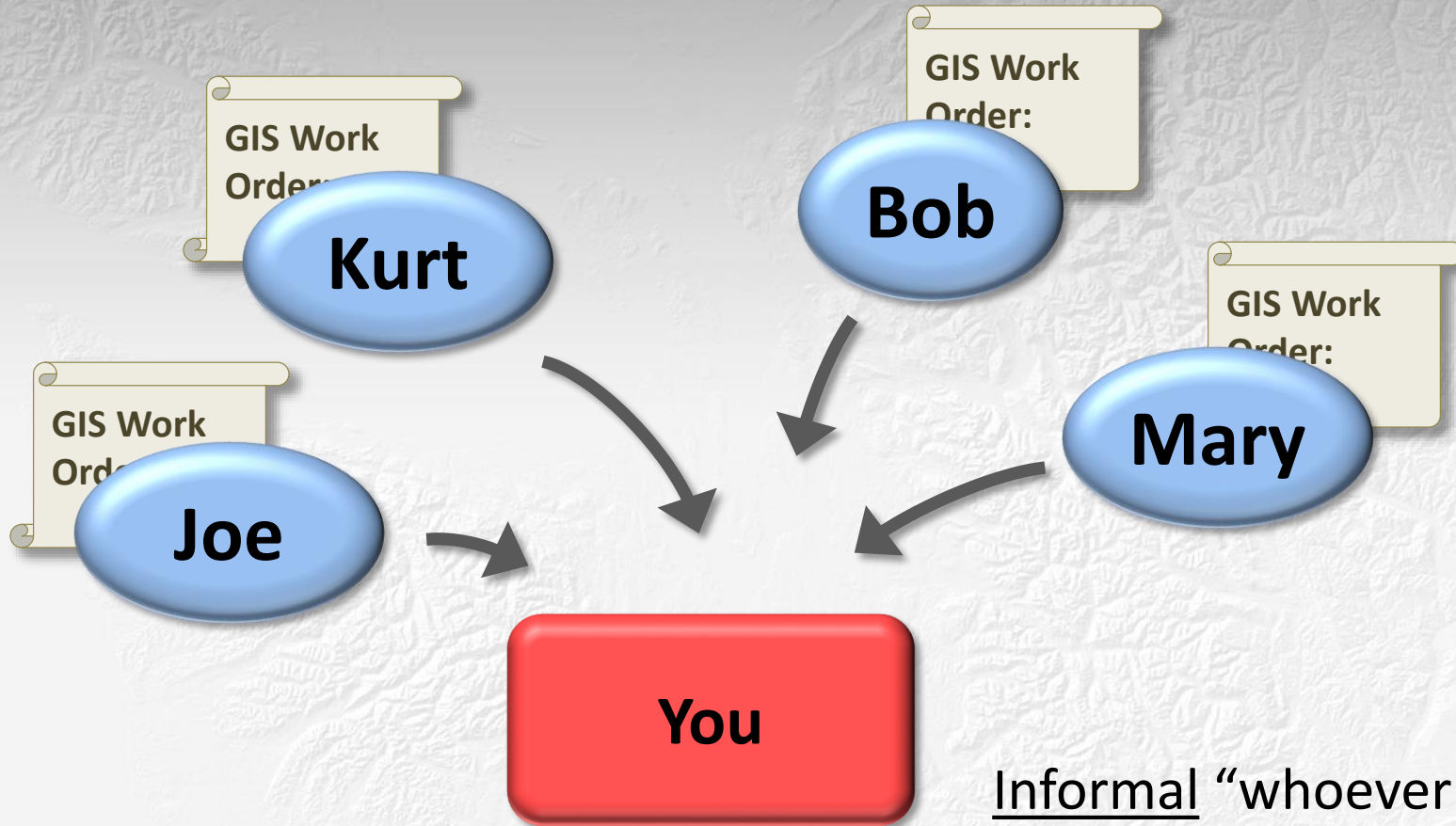
Where in the institution are you?

Distributed



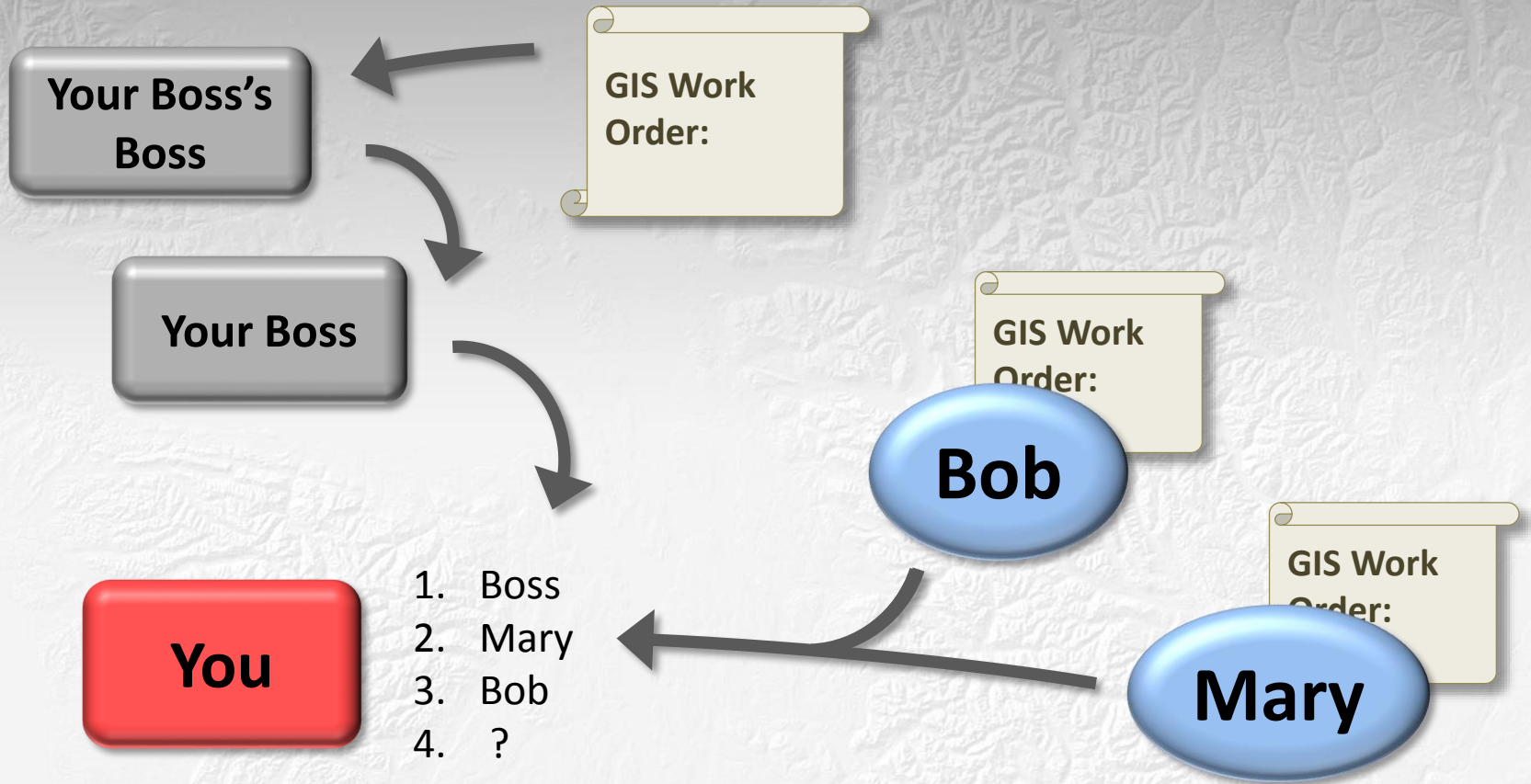
How are your GIS services provided?

Formal work order with "chain-of-command" access/approval



Informal “whoever walks in and asks” approach.

How are your GIS services provided?



How are your GIS services provided?

Hybrid/semi-formal
prioritized approach

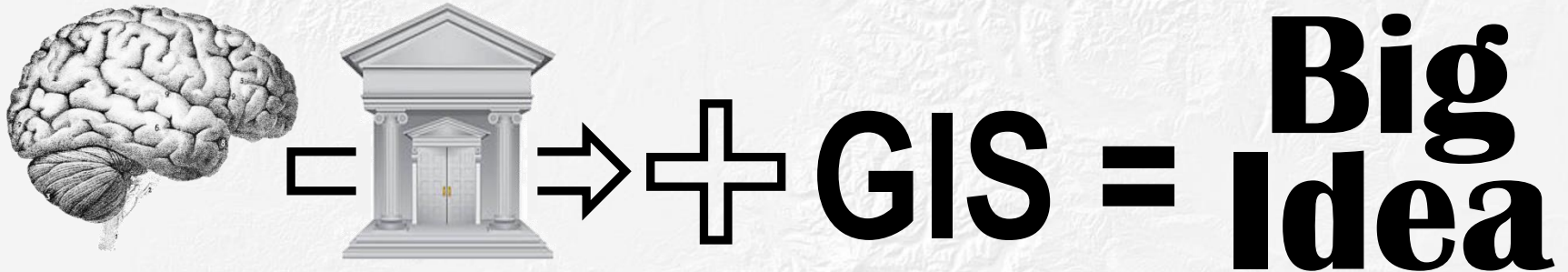
From the software development world - SAD (systems analysis design) the role of the analyst is described as being:

- Change agent
- Investigator & monitor
- Architect
- Psychologist
- Salesperson
- Motivator
- Politician

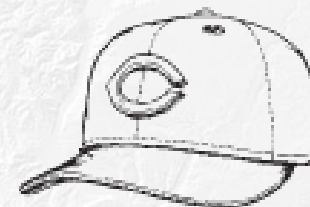
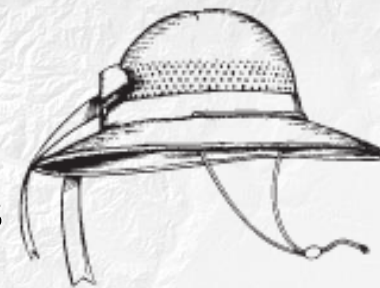
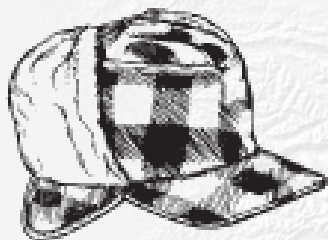


Looking over most college-level GIS programs, or any of the GIS training I've had over the past 20-years, I've never had a course with any of those words above in the title.

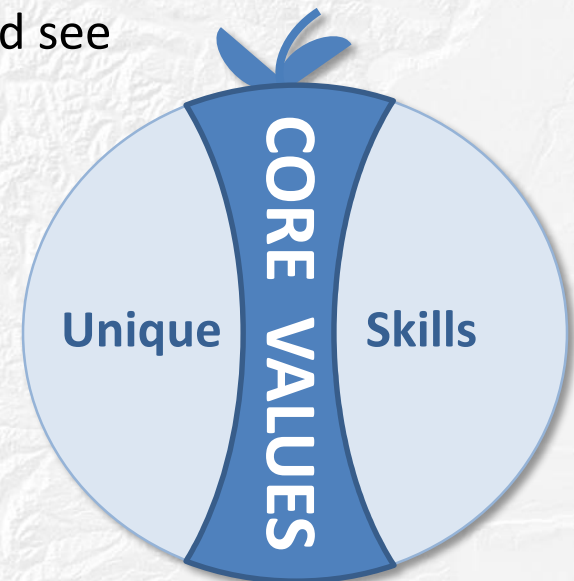
What this definition is really about, and the "big idea" this session is trying to convey is that while the technology of GIS is an amazing thing, the real value of the tool is the institutional knowledge users impart to it. And in the same way, the real role of the GIS Analyst is to use good communication to build relationships, to foster trust, and to serve as a facilitator of a "community" of users.



You will hear from our panelists about a wide variety of backgrounds, showing that there are many ways to arrive at a career in GIS. They will discuss the many roles, or hats that they have worn and continue to wear. Each panelist has unique skills, experiences, and perspectives to offer. They also all share a common core set of values related to their roles as analysts. You will hear these values echoed in each of their comments, and see how regardless of the customer, project, application, or data – effective, articulate communication is the key to success.

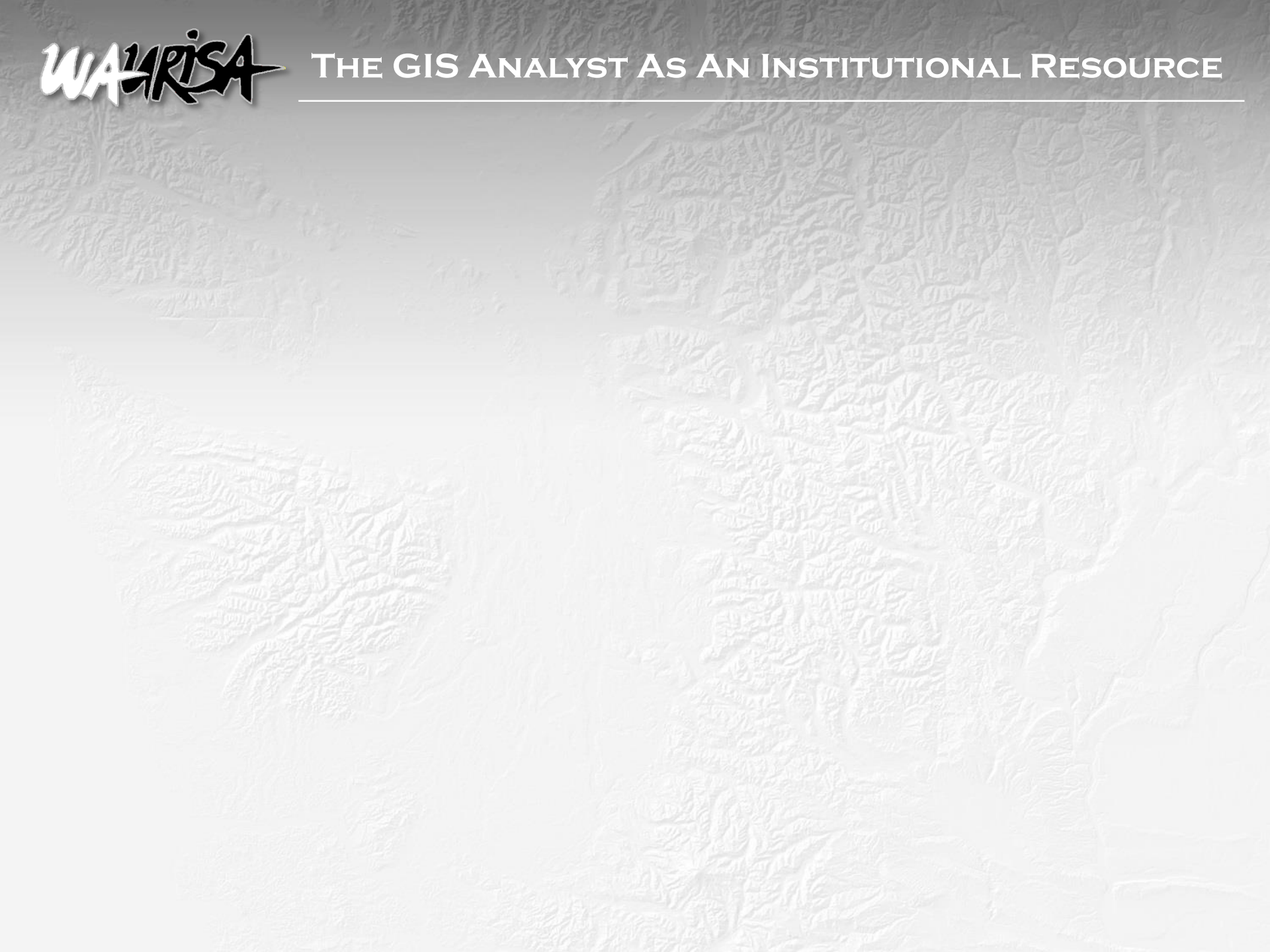


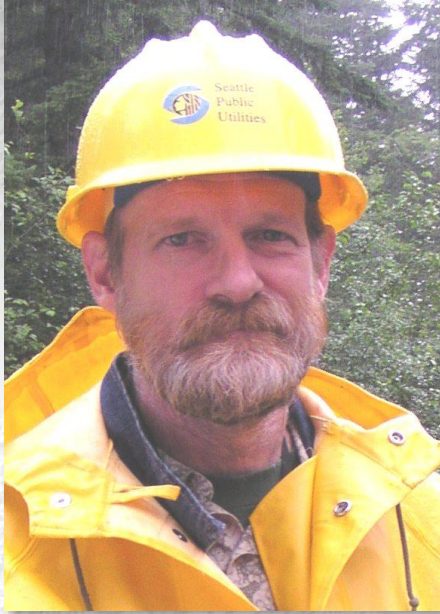
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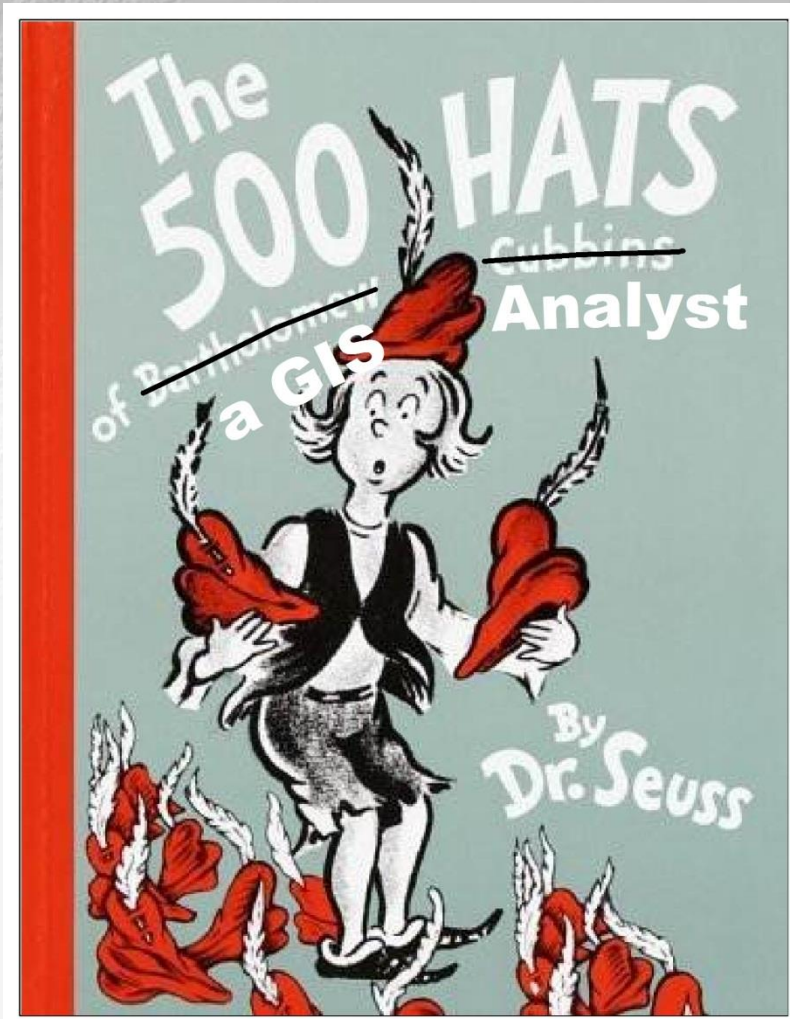
THE GIS ANALYST AS AN INSTITUTIONAL RESOURCE





The 500 Hats of a GIS Analyst

Mark Joselyn
Watershed Services Division
Seattle Public Utilities
City of Seattle



The 500 Hats of a GIS Analyst

Mark Joselyn
Watershed Services Division
Seattle Public Utilities
City of Seattle





THE GIS ANALYST AS AN INSTITUTIONAL RESOURCE

BA Geography, Minor in Cartography, University of Minnesota
Internships with Minnesota DNR using first release of
ESRI Arc/Info (3.3) software

Study toward a MA in Geography, University of Washington
TA for Remote sensing and many cartography classes

Cartographer, Washington State Department of Transportation, 1985-1987
Intergraph workstations and Fortran programming

GIS Analyst, Illinois Natural History Survey, 1987-2000
ESRI Arc/Info, AML, GRID
Co-Author of a statewide land cover database of Illinois

GIS Analyst, Seattle Public Utilities, Watershed Services Division, 2001 to present
ArcGIS, Python, Spatial Analyst
Support the Cedar River Habitat Conservation Plan

Allow me to share some of the many hats I have worn...



GEOGRAPHER, studying and representing the physical earth, it's environment and the humans who inhabit it

TASKS:

Understand that 'Location' is a unifying and integrative principle and a property of almost anything we witness or interact with

Appreciate the value of inter-relationships and holistic approaches

Know that integrative thinking facilitates collaboration

SKILL SETS:

Possessing the ability to ask and answer geographic questions and to acquire, organize, and analyze geographic information.



INTERPRETOR, translating what is desired to the realm of what is possible

TASKS:

- Listen carefully to the questions being asked.
- Understand the limits and capabilities of spatial representation
- Produce results that satisfies the audience

SKILL SETS:

- Understand ESRI vocabulary: coverage, shapefile, feature class
- Geoscience: precision, accuracy, resolution, coordinates and projections
- Appreciate that points, lines, and polygons are the building blocks of spatial representation



CARTOGRAPHER, design, create, and reproduce maps

TASKS:

Map design and production

Atlas production

Template construction

SKILL SETS:

Ability to discern who the intended audience is

Understanding of basic cartographic principles such as design, figure/ground, classification, extent, and scale.

Knowledge of classification methods and their potential pitfalls

Knowledge of output and reproduction



STATISTICIAN, manage and analyze data to discern pattern and relationship

TASKS:

Represent scientific understanding in a visual, cartographic display

Avoid misrepresentation of data or the information it contains

Help discern patterns in data and spatial relationship, or lack there of

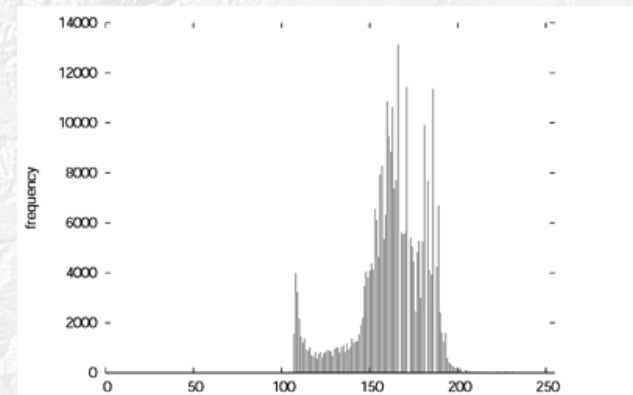


SKILL SETS:

Basic understanding of statistics and statistical concepts

Understanding of approaches to cartographic representation and classification

Particularly relevant when working with surfaces and surface generation





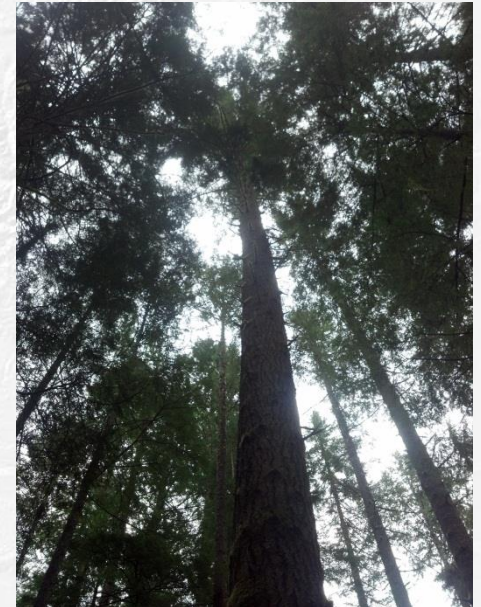
SUPPORTIVE SCIENTIST, communicate with subject matter experts

TASKS:

- Manage and display scientific data and observations
- Associate knowledge or understanding with location

SKILL SETS:

- Possess a basic understanding of ecology and ecological principles
- Good communication skills in translating concepts of grain, extent, resolution and scale.
- Understanding of foundational concepts in scientific disciplines:
 - River Pulse Concept – floodplain delineation and mapping
 - Index of Biological Integrity – quantitative assessment of health
 - Canopy closure and the Rumpel Index - canopy surface roughness)
 - Leaf area index



Remote Sensing/Image Analyst, manage and derive information from raster images

TASKS:

Derive information from a variety of raster data or imagery

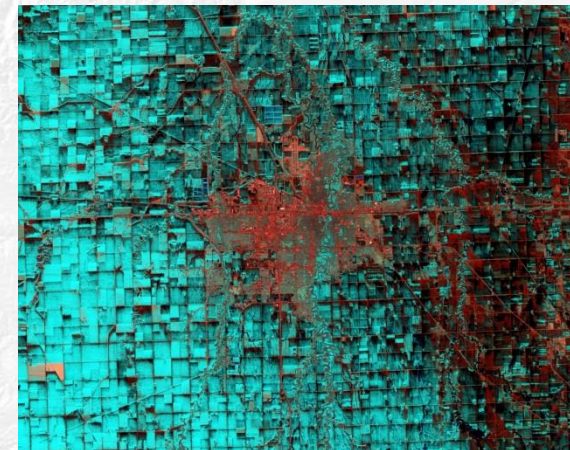
SKILL SETS:

Understand the nature of multi-band raster imagery and data

Familiarity with concepts of errors of commission and omission

Familiarity with statistical models and spatial data exploration and surface generation

Georeferencing, control points, and transformation methods



PROGRAMMER / DEVELOPER, facilitate use of, and access to, geospatial data via the internet or local area network or manage, analyze, and maintain geospatial data

TASKS:

Application Development

Search, retrieve and display spatial data and attributes

Data sharing and distribution

Any number of data maintenance and upkeep functions

SKILL SETS:

Operating systems: Android, Flex, IOS, Java, JavaScript,

MacOSX, .Net, Qt, Silverlight, WPF

ESRI uses Python as a scripting language





WEBMASTER, push geospatial data and related content to the web

TASKS:

Design web pages that provide access to geospatial data

Support search

Support Map Services

Implement design standards to provide consistent 'branding'

SKILL SET:

HTML / CSS

Familiarity with content

Infrastructure support



LIBRARIAN, document, store retrieve and be an institutional resource as it relates to spatial data, past projects and spatial analysis

TASKS:

Manage and document spatial data sets and imagery

Respond to requests for data from other agencies or consultants

Provide access to maps and other products

SKILL SETS:

Organizational skills

Familiarity with spatial metadata standards and content



OTHER ROLES:

Historian

GPS Data Collector

IT Technical Support

Educator

Customer Support

GIS Evangelist

Patience

People Skills

Database Administrator

WebMaster

Researcher

Technical Writer

Trainer

Persistence

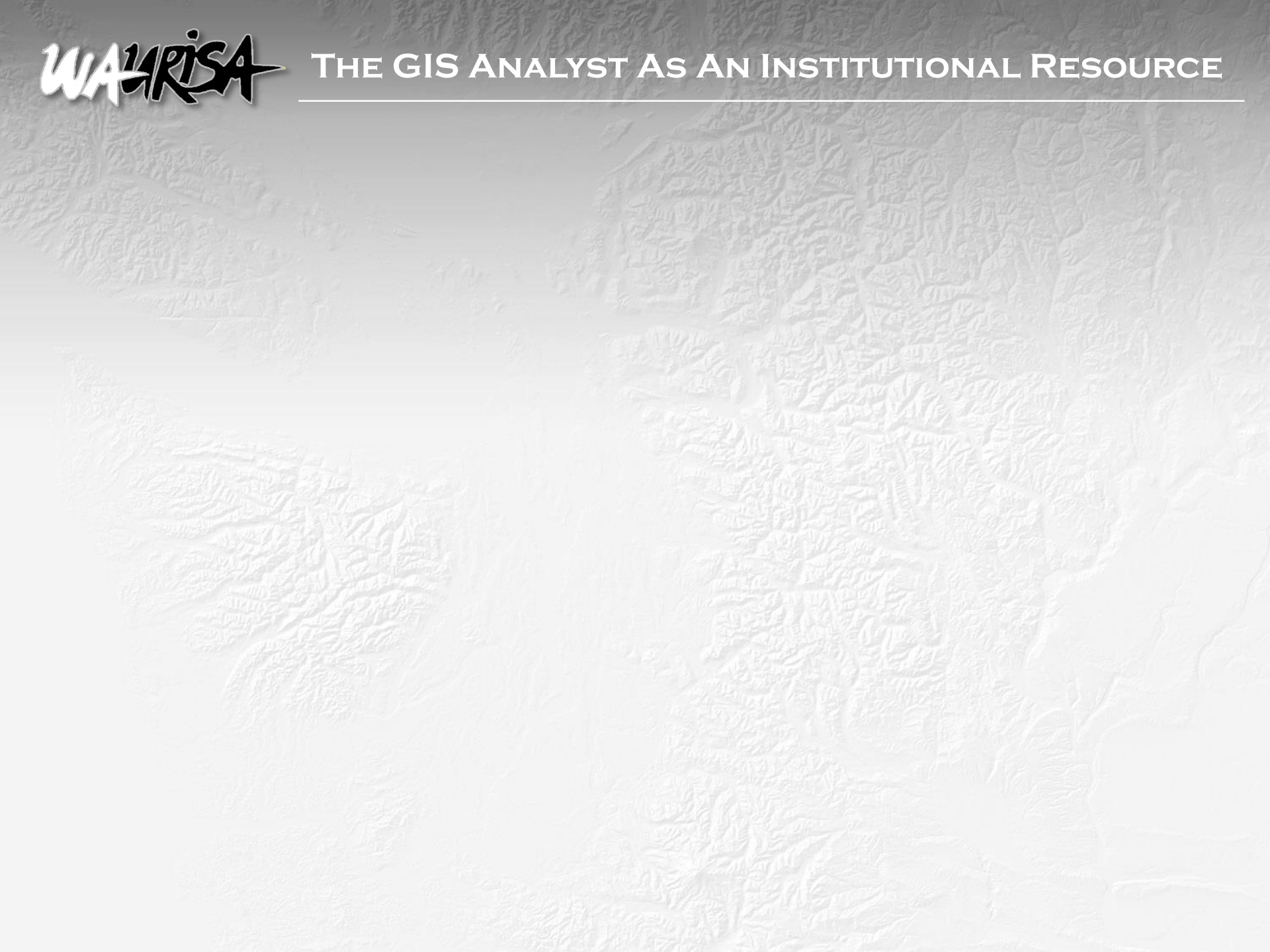
Humility

...





THE GIS ANALYST AS AN INSTITUTIONAL RESOURCE



Grete Roeckers

GIS Analyst III

Thurston County

GeoData Center



**Thurston
GeoData
Center**



roeckeg@co.thurston.wa.us

Background

- Mechanical Engineer in Norway.
- Left Norway to go to Sunny California where I worked on Space Shuttles as structural engineer.
- Cut back in flights → Computer Networking.
- Networking → GIS setup from scratch in N. Charleston, SC.

- **Note:** There was no such thing as a Computer degree or a GIS degree when I was in college way back when – not so long ago...

Motto from College Days

**My Design professors comment that I live by:
(paraphrased)**

“Our goal is to teach how to analyze and think about things in a logical manner so you can come up with a good plan with a possible solution.”

“Technology is always a moving target: What you learn today is old tomorrow.”



Biggest Hat...

Understand hardware / software needs to convince non GIS IT staff we need it.

“Why do you need so much more powerful systems than anyone else the county???”

Do you REALLY need your own SQL server with that much RAM - Prove it!!!

You want an iPhone because you are going to do what with the cloud???

Why should we let you do that?

Convince us this is safe to do?

How does it work?

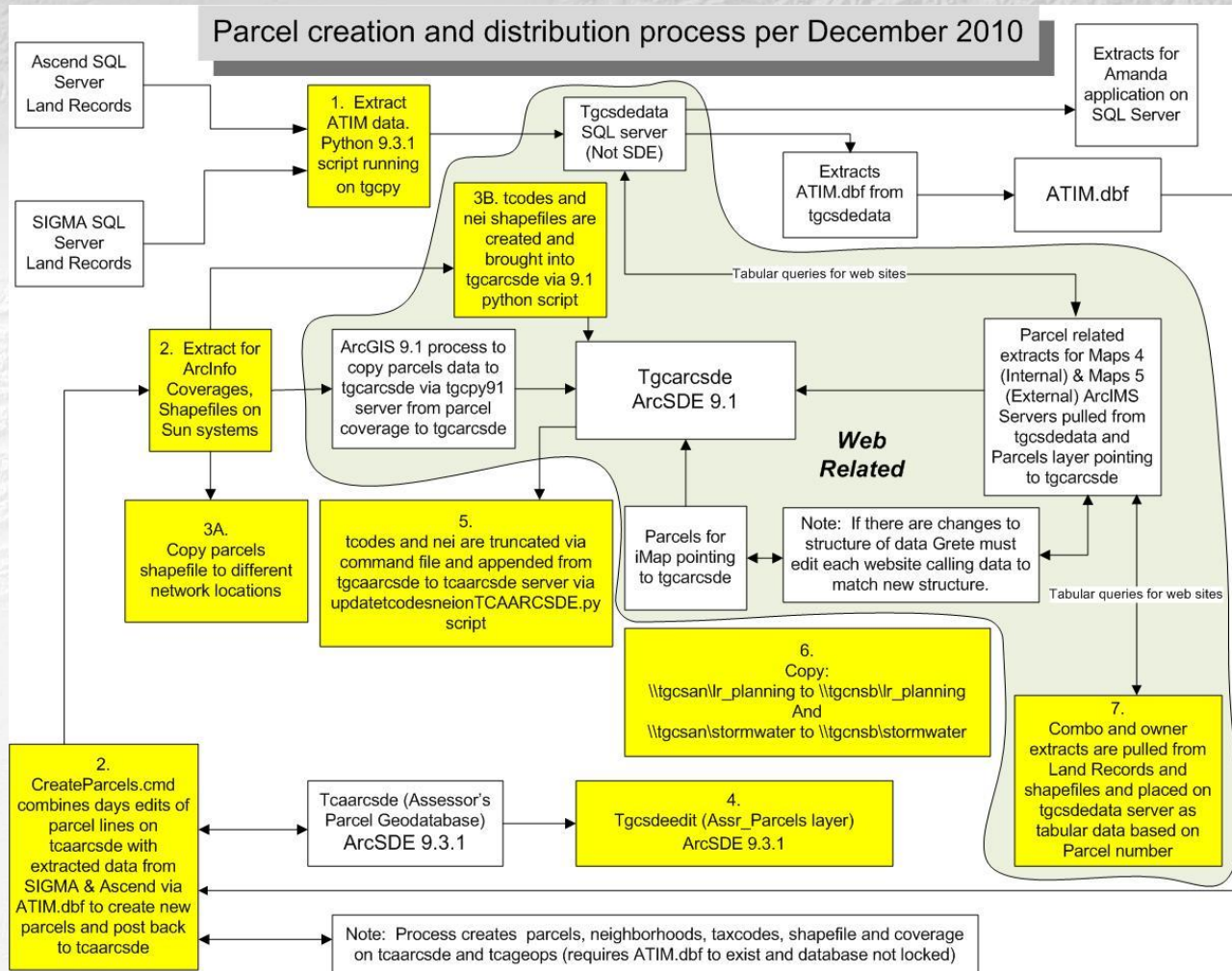
Why do you want to put data in the cloud?

How can we control it?

You're Department is such a hard disk hog!!!!



Understand/document workflows...



Key – Trust and respect...

Won't share workflow...

Concerns:

Protecting their current work process.

Scared change will take something away from them.

Make them less important for the process...

Key:

Get them to **own it and feel pride in it**. **Make sure they** get credit for any improvements that result from their input.

Find a champion in the group...

Always someone in a group that likes technology...

Showed on fireman how to collect hydrant gps with a data dictionary. Soon all hydrants in the City of N. Charleston were collected by firemen and they **were proud to say all current inspection records were attached to hydrants they had collected.**

Feedback loop...

Make sure that what you thought you understood and heard was really what they said and asked for.... Multiple check backs with customers so they are a part of it and own it.

This also part of the “**buy-in**” from the customer.

Workflow - clearly understood and documented and signed off by customer.

Come up with a **suggested workflow change** - automation process.

Make sure they **approve** the suggested solution.

During and after completion of change:

Make sure they **feel they own it** and

Comfortable using it – Training / handoff / follow up.



THE GIS ANALYST AS AN INSTITUTIONAL RESOURCE

Now for some other hats...

The collage consists of several overlapping screenshots:

- Task Scheduler:** A screenshot of the Windows Task Scheduler interface showing a list of tasks. A yellow box labeled "Programmer..." points to a task named "BulkProcess.py".
- SQL Manipulator:** A screenshot of a database management tool showing a table of data. A yellow box labeled "SQL Manipulator..." points to the table.
- Documenter:** A screenshot of a Microsoft Word document titled "Assessors-daily-Parcel-building-proc...". A yellow box labeled "Documenter..." points to the text "1) - Atimloader-python-documentation".
- Web Designer:** A screenshot of a web browser displaying the Thurston County website. A yellow box labeled "Web Designer" points to the website content.
- GIS Domain Admin:** A screenshot of the Active Directory Users and Computers console. A yellow box labeled "GIS Domain Admin" points to the list of users and groups.
- Trainer:** A yellow box labeled "Trainer" is located in the upper right area of the collage.
- Projector setter upper:** A yellow box labeled "Projector setter upper..." is located in the bottom right area of the collage.

Back to Biggest Hat...

Being the bridge between what customers need and getting groups / old isolated processes to work together.

Once again – need to be an **advocate for different departments** and convince IT / other Departments with valuable data / technical resources, why do they need this change?

Not against progress – but need to be able to explain on their terms **why this change makes good sense** and how will this **Benefit:**

- a) The County
- b) The Department(s)
- c) The Public

Why Server technology is the Biggest Hat for me...

- To maintain our GIS backend, we need to control our own server environment.
- Concerns from IT staff as they **don't want to know details** of GIS server technology, but worried about the resources this requires and all the networking permissions needed for our GIS world to run smoothly.
- **History:** GIS was "**a bad self grown domain network group**" that grew on it's own without IT being involved and was for a long time perceived as a threat to the regular domain network.
- Now merging technologies.
- Need to speak "IT" on their level so they understand what is going on from a network point of view.
- Working as a team – **building trust over time and mutual respect...** Same thread though all of these tasks....



Not all is GIS centric...

We would like to think it is, but GIS might just be a small part of a persons job...

Example:

A person who only had to do a simple point **attribute update once in a while does not want to learn ArcGIS Desktop.**

Here a simpler option would be more interesting for them.

Maybe ArcGIS online with editing rights for that person???

Now back to Motto from College Days...

**“Technology is always a moving target:
What you learn today is old tomorrow.”**

How do you try to stay on top of this forever changing target?

Key is always keep studying and learning the latest and greatest.

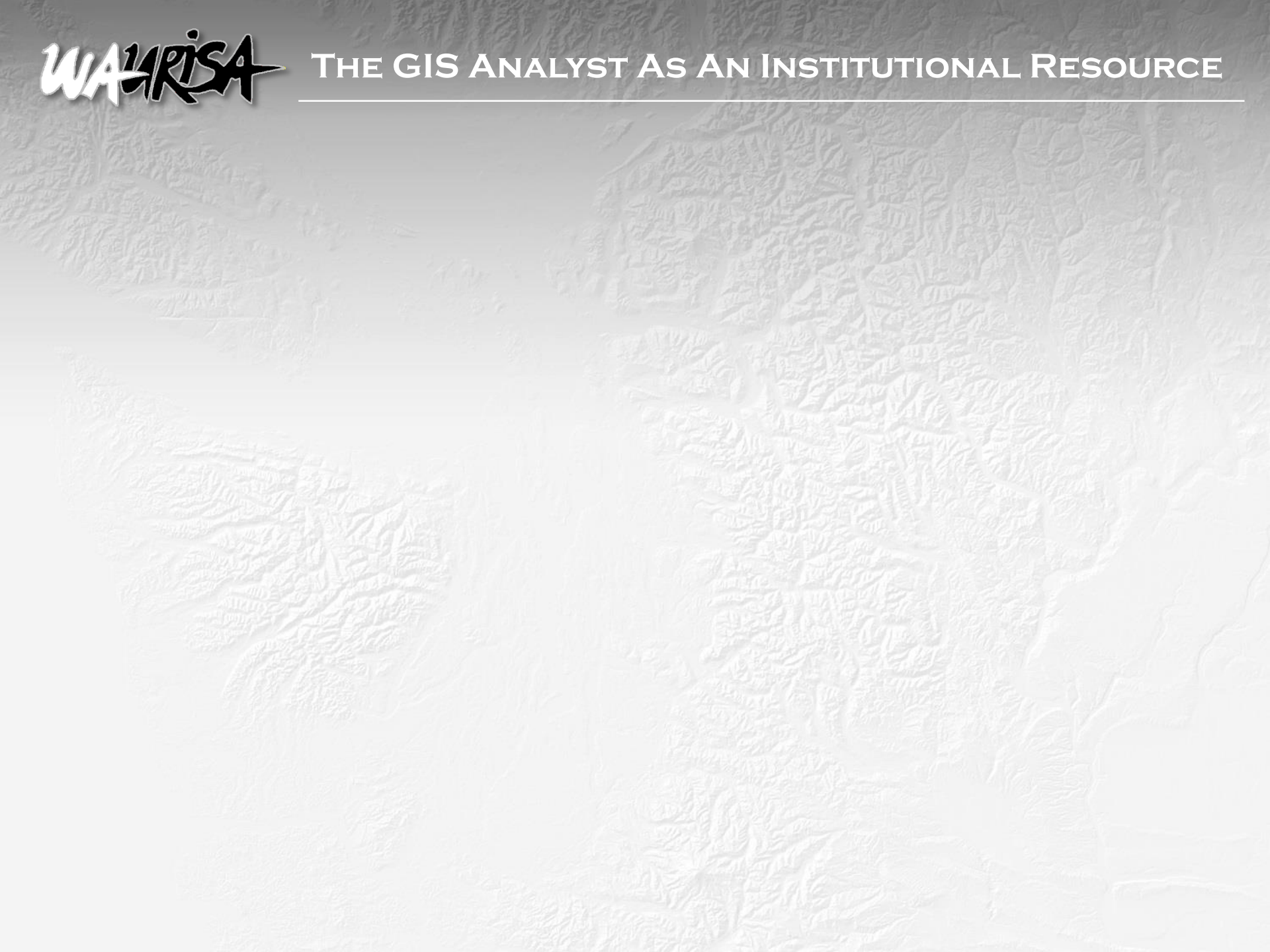
The fun of technology: Always changing 😊

The challenge of technology: Always changing... 😞

Now for an instructors input... **Cathy**



THE GIS ANALYST AS AN INSTITUTIONAL RESOURCE





Cathy Walker

GIS Data Administrator/Analyst

WA State OSPI



Instructor – GIS Certificate Program

South Puget Sound Community College



cathy.walker@k12.wa.us



How to Keep Up with the Rapid Changes in the Field of GIS?

*Cathy Walker, MS GISP
GIS Analyst*

*Office of the Superintendent of Public Instruction
GIS Instructor*

South Puget Sound Community College – GIS Certificate Program

Background

- Prior to 2007, I was working as a **Research Chemist** in the **Reliability Physics Laboratory at Hewlett-Packard** in Vancouver, WA performing reliability and environmental testing on new and in-development printers and ink formulas.
- After a sudden family event, I decided to move back to the Tacoma area and look for a job where I would be able to utilize my BS degree but also be able learn something new and possibly get out of a lab.
- I was hired at the Washington State Military Department in June of 2007 as a GIS Analyst-in-Training to support emergency management planning for the Emergency Management Division and was given **a year to learn to the ins-and-outs of the field of GIS.**

GIS Training – *Where to Start?*

- **Some questions to ask yourself before you start...**
 - The type of GIS Training you'll need will depend on what your current situation is and what will be expected of you at your job.
 - **Will you be working as a GIS Analyst or Technician in a GIS or IT Department?**
 - If so, what types of GIS technology (desktop, server, AGOL, etc.) is your current department using or plan on using in the near future?
 - Do you see yourself staying in your current position for the foreseeable future? Do you want to move up in the ranks within your current department?
 - **Will you be using GIS as a tool to perform your job?**
 - What types of work does your industry tend to utilize GIS for?
 - Do you plan on taking the GIS skills you acquire and use them to transition into a more GIS-centric job

GIS Training – Where to Start?

- **GIS Technician or Analyst**

- *If your planning to work as a GIS Analyst or Technician, you'll need to immerse yourself in the field of GIS by taking advantage of the many training opportunities available in the area.*

- ESRI Virtual Campus and Instructor-led Training
 - Community Colleges, Continuing Education, and University Level classes (online and classroom)
 - GIS Publications (ArcUser, ArcNews, URISA Journal, etc.)
 - Local and International Conferences and Trainings (WAURISA, ESRI UC, NW GIS Users Group, etc.)

- **GIS as part of your position**

- *If your planning to use GIS as part of your already existing position/career you'll need to research how GIS technology is used in your field.*

- Look for published papers/journal articles for your field that used GIS
 - Look at ESRI's Industries website for (<http://www.esri.com/industries>) for white papers, best-practices, success stories, etc.
 - Contact organizations in your field to see how GIS is being used.
 - Talk with your supervisor to see how they envision GIS is going to be used to enhance or enable you to do your work

GIS Training – *ESRI*

- **ESRI Virtual Campus Courses**

- Courses cover the basics of ArcGIS Desktop software and the extensions, as well as specific advanced data management and analysis topics.
- Prices range from **\$32 to ~\$160**, although there are **many free courses** available too.
- If you have a **.edu e-mail address** and use it to register for the Virtual Campus course, you can get **30% off** the price of the class.

- **ESRI Instructor-led Courses**

- Courses include introductory ArcGIS Desktop training, courses for the GIS Professional, Data Management and Server Management, and courses for Developers.
- Classes are usually 2-3 days with some being 5 days
 - Most classes will require travel to training site
- Classes are \$1,010+ depending on the course
 - Some training budgets may cover these costs.

GIS Training – Classes, Degrees, Certificates

- **GIS Classes**

- Several local community colleges, training centers, and universities teach GIS classes. Depending on what you are looking for you can learn the basics to advanced GIS skills.

- **Training Centers**

- **Washington State Department of Personnel**

- » ArcGIS I: Intro. to GIS (2 days, \$795), ArcGIS II: Essential Workflows (3 days, \$995), ArcGIS III: Workflows & Analysis (2 days, \$795)

- **King County GIS Center**

- » ArcGIS I, II, III (\$955, \$1,315, \$955)

- » GIS Academy (5 days; \$1,435)

- » URISA Workshops (Cartography/Map Design; Prog. Management; GIS ROI; Strategic Planning; 1 day, \$160)

- **Community Colleges**

- **Tacoma Community College**

- » Geography & GIS classes

- **Pierce College**

- » Intro. to Geography

- » Technology in Emergency Management

- **Green River Community College**

- » GIS Certificate

- » AAS in GIS & AAS in Natural Resource Management

- **South Puget Sound CC**

- » GIS Certificate

GIS Training – *Classes, Degrees, Certificates*

- **Universities**
 - **UW-Tacoma**
 - » GIS Certificate Program (*Urban Studies/Environmental Science*)
 - » GIS Certificate (*KeyBank Prof. Development Center*)
 - » M.S in Geospatial Technologies (*Starting Fall 2014*)
 - **UW-Seattle**
 - » BA in Geography with GIS Concentration
 - » GIS Certificate (*Professional & Continuing Ed. Center*)
 - **WWU-Huxley College of the Environment**
 - » Introductory & Advanced GIS classes
 - » GIS minor for BA/BS degrees
 - » BA/BS degrees with GIS courses
 - » MS in Geography
 - **CWU**
 - » GIS Certificate
 - » BA in Geography
 - » MS in Resource Management (*some GIS courses*)
 - **WSU**
 - » Geospatial Analysis minor

Once you get the job, get the degree, take the classes, get the certificate, ...

How do you keep up with the changes in GIS?

Massive Open Online Classes (MOOCs)

- Free or low-cost online training
- Certificates of completion and verified/official certificates you can add to your resume.

Udacity

- *Intro. to Computer Science (Python)*
- *Intro. to Object Oriented Programming (Python)*
- *Web Development*
- *Mobile Web Development*
- *HTML5 Game Development*

EdX

- *Intro. to Computer Science (Python)*
- *Intro. to Computer Programming*
- *Intro. to Computing w/ Java*
- *Intro. to Computer Science & Programming with Python*
- *Building Mobile Experiences*

Coursera

- *Learn to Program: The Fundamental (Python)*
- *Learn to Program: Crafting Quality Code (Python)*
- *Intro. to Interactive Programming in Python*
- *Principles of Computing*
- *Intro. to Databases*
- *Programming Mobile Applications for Android Handheld Systems*
- *Creative, Serious, & Playful Science of Android Apps*
- *Pattern-Oriented Software Architectures: Programming Mobile Services for Android Handheld Systems*
- *Programming for Everyone (Python)*
- *Programming Cloud Services for Android Handheld Systems*
- *Intro. to Data Science*
- *Metadata: Organizing & Discovering Information*

Conferences

(Local, Regional, etc.)

- *Attending conferences allows you to keep up with the changes and developments in GIS technology.*
- *Earn points toward GISP Certification*
- *Network with fellow GIS Professionals*
- *Pre-Conference GIS training classes are usually discounted.*

Upcoming Conferences

- NW GIS Users Group (Oct. 13-17, 2014; Lynwood)
- ESRI User Conference (July 12-18, 2014; San Diego)
 - ESRI Business Summit
 - ESRI National Security Summit
 - ESRI Education GIS Conference
 - ESRI 3D Mapping Forum
 - ESRI Arch./Eng./Constr. (AEC) Summit
- HAZUS User Conference (Aug. 4-6, 2014; Indianapolis)
- GIS-Pro (URISA) Conference (Sept. 8-11, 2014; New Orleans)
- GIS in Action (April 2015; Portland, OR) (OR/SW-WA URISA)
- Intermountain GIS Conference (April 2015) (N.Rockies URISA)

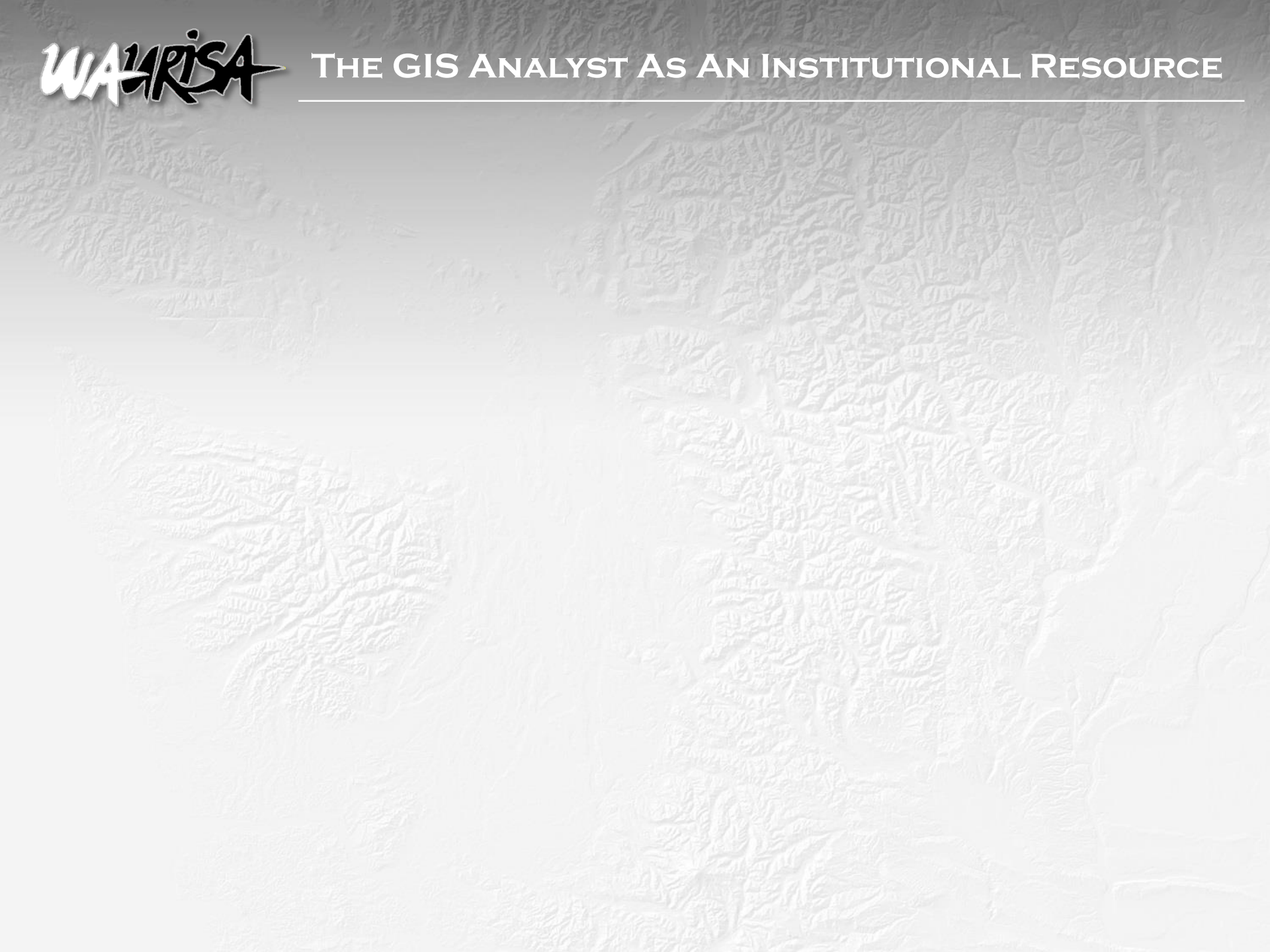
Publications

(Read, Read, & Read some more)

- *Subscribe to ESRI Publications*
 - *ArcUser Magazine*
 - *ArcNews*
 - *ArcWatch*
 - *ESRI News for ... (Industry Specific Topics)*
 - *Education; Federal, State, Local Government; Natural Resources; Business; Public Safety/Emergency Management; Transportation; Utilities/Communications, etc.*
- *The Summit Newsletter (WAURISA)*
- *The GIS Professional Newsletter (URISA)*
- *URISA Journal*



THE GIS ANALYST AS AN INSTITUTIONAL RESOURCE



Tim Dewland GIS Analyst (MGIS)

- Conservation
- Resource Mgmt
- Urban Planning

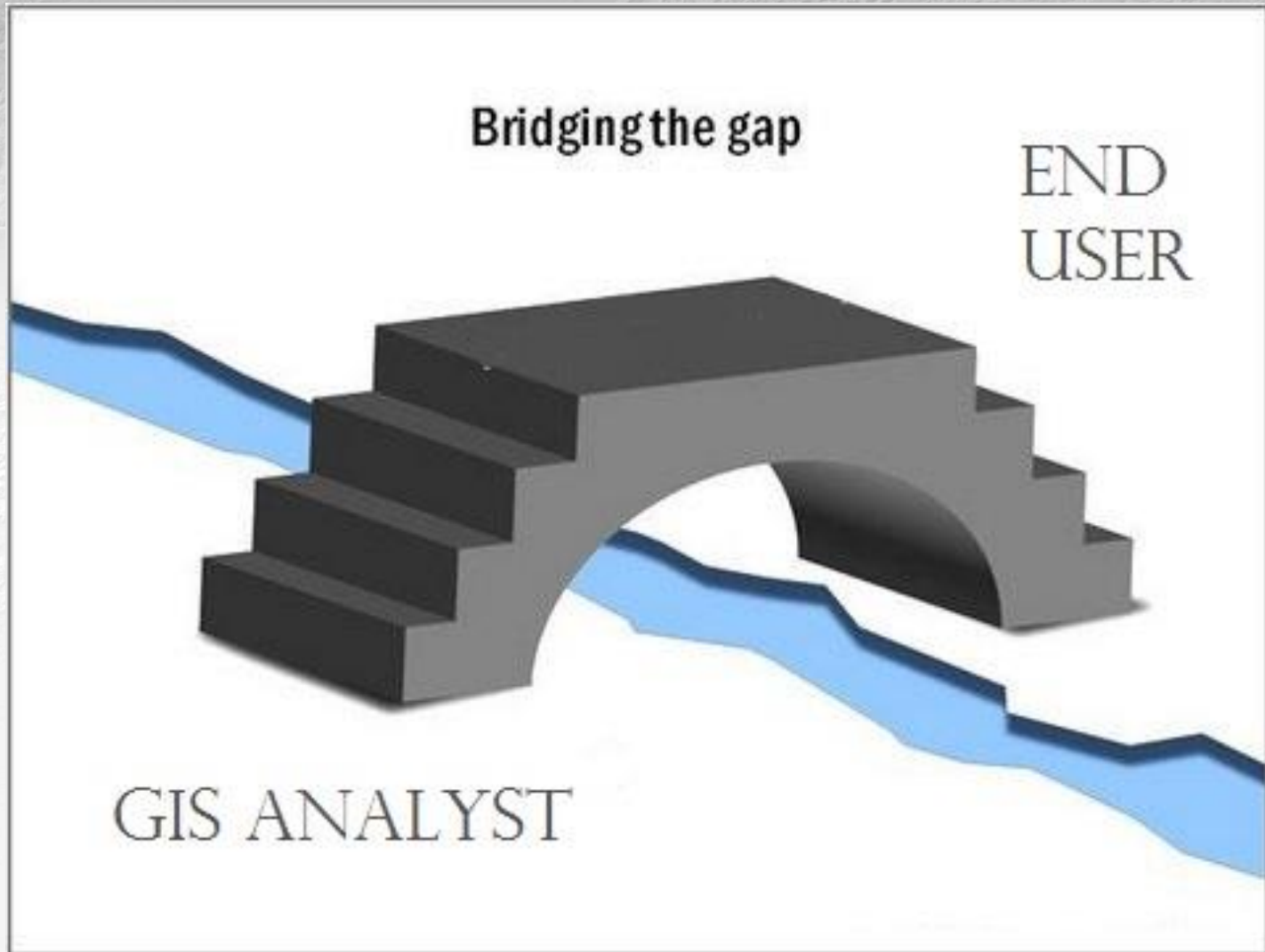
timdewland@gmail.com





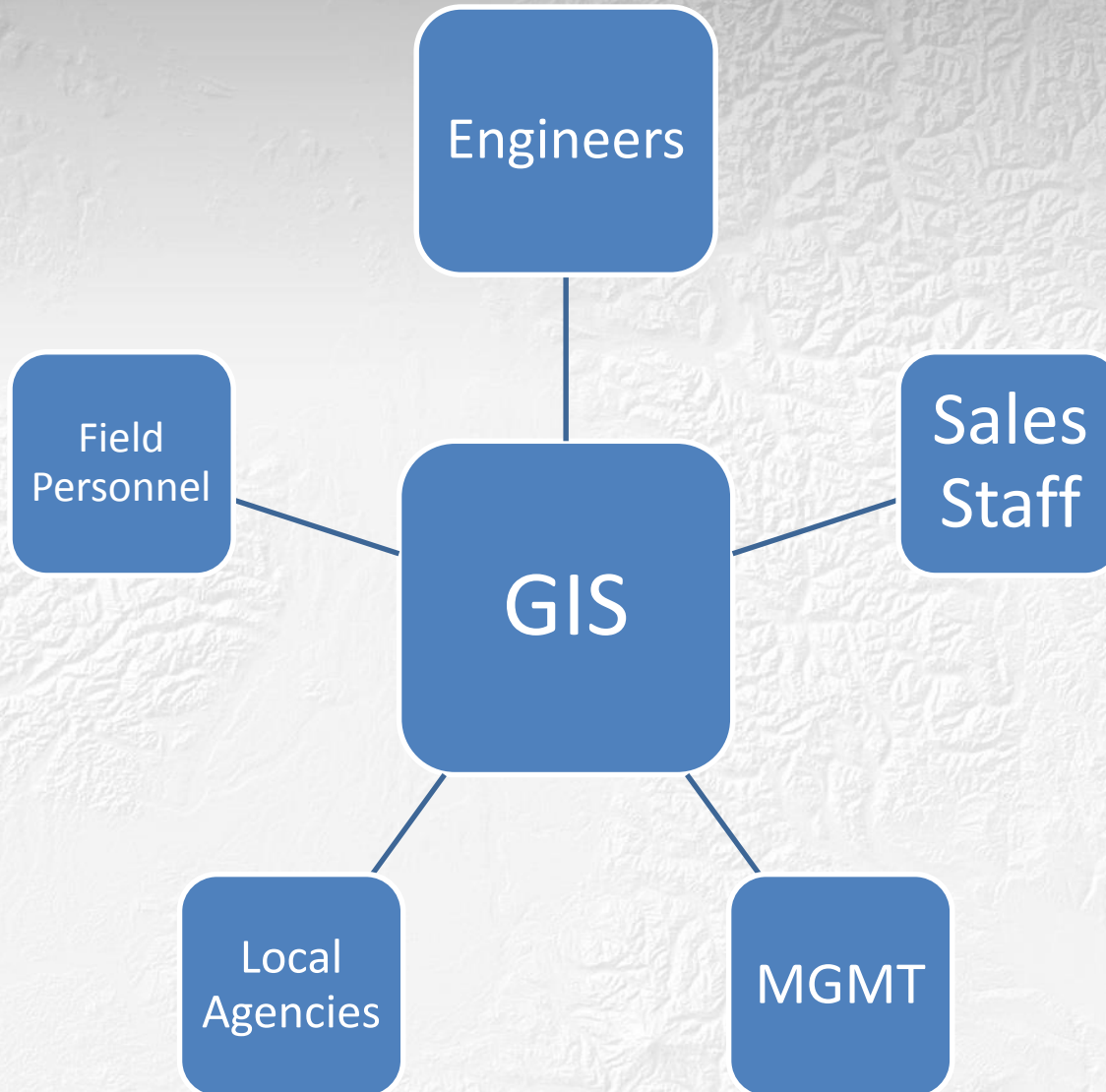
Soft Skills of the GIS Analyst: Identifying the End User's Needs and Explaining Yours

Tim Dewland
GIS Analyst





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- Enterprise applications = wide variety of end users
 - Be aware of various end users and their specific needs
 - Think of potential groups which could benefit from utilizing GIS
- Identify what information / products are needed from GIS
 - Talk with them, understand how they will utilize these products
 - Address / acknowledge their concerns
 - Remove roadblocks
- Many groups, many approaches
 - What works for one may not necessarily work for others

- Encountering Resistance
 - Field personnel were hesitant
 - Old way works well, why change?
 - Main data source
- Trust factors
 - Distance, physically separated
 - Initial product was of poor quality
 - Many crews familiar with service territory, did not feel they needed GIS
- Valid Concerns
 - Many close to retirement, why learn a new technology?
 - Why put trust in a new, unproven technology?



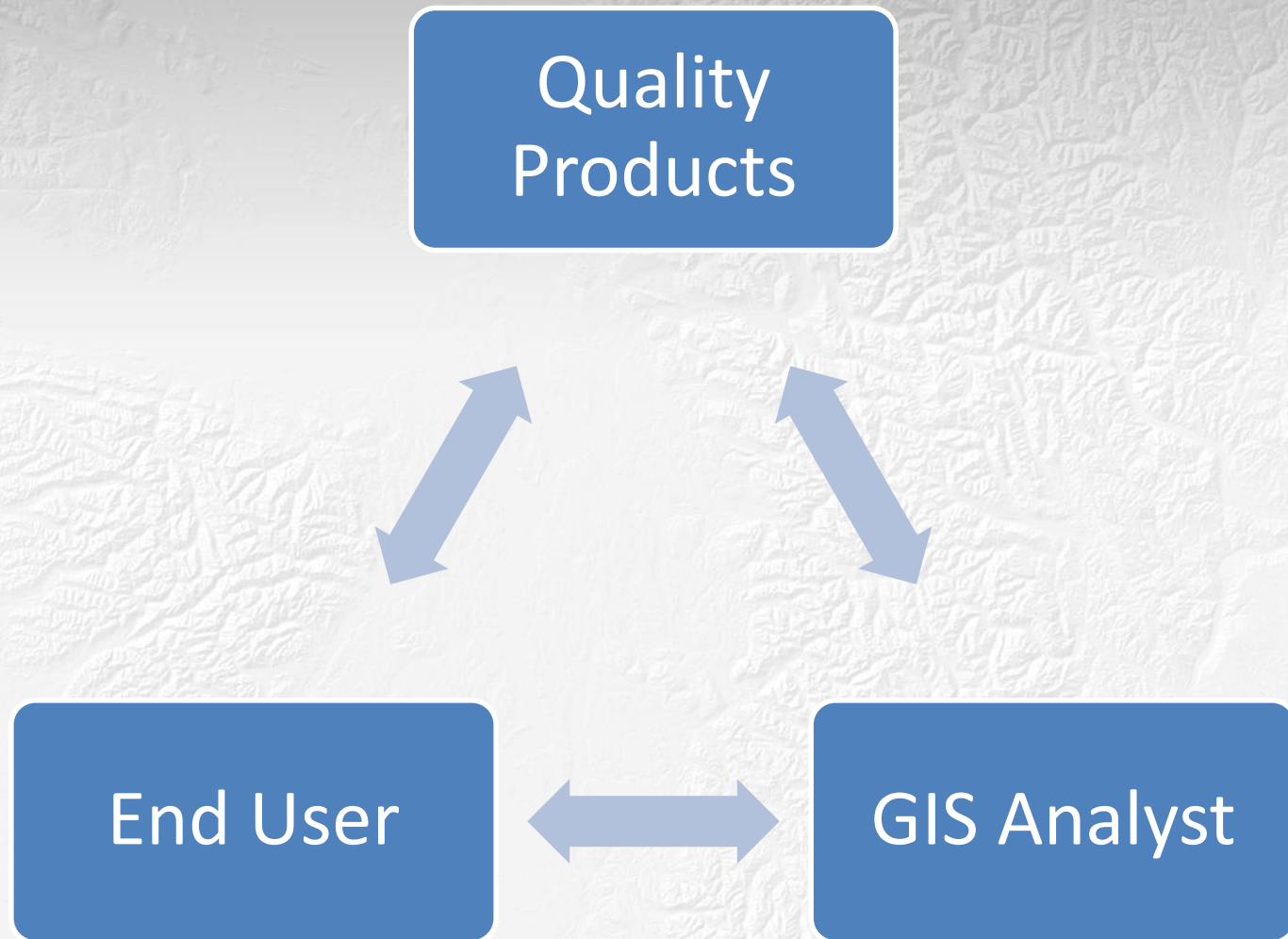
April 25, 2014, North Bend natural gas explosion



- Safety
 - Future generations of field workers
 - Outside contractors which may use our data to perform excavation
- Proactive infrastructure repairs
 - Aggregate leak info
 - Replace at risk materials which have failed in other instances
- Invaluable data
 - Local knowledge, leaves when crew members leave the job
 - Vital to let personnel understand importance of their experience and familiarity with area
 - Collaborate to get this information into the systems



- Build rapport
 - Create clear channels of communication
 - Be accessible
 - Congenial
 - Quick response, especially with ad hoc requests
 - Be proactive
 - Supply personnel with all available information for upcoming work
 - Make sure GIS is correct and easy to interpret
 - Help crews, use proactive planning
 - Teach
 - Often real world examples and walk-throughs are much more valuable than training classes
 - Tips, tricks, techniques for effective and efficient usage
- Get on site if possible
 - Visit local offices on occasion
 - Get out in the field





- Convey your needs
 - What data do you need in order to deliver quality products
 - Be clear, give specific examples
 - Steer clear of esoteric GIS jargon
- Be considerate of other's responsibilities
 - Spread out the requests for fixes if possible
 - Be aware of all available resources
 - Attempt to fit field verifies into an established schedule

- Become a GIS Evangelist!
 - Make others feel involved, every user has the ability to help improve
 - Think outside the box, new applications
 - Aggregate data, streamline processes
 - Specific examples
 - Especially if you can show how system improvements may ultimately lead to savings
- Ultimately GIS is a tool for decision makers
 - Show others how to reap its benefits



Final comments from our panelists:

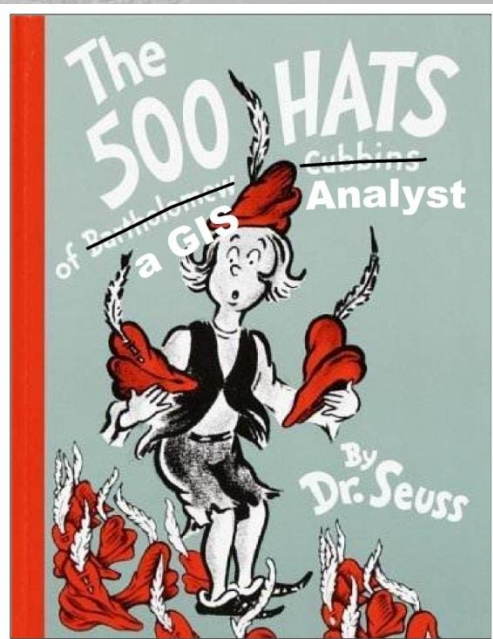


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Mark Joselyn



Mark Joselyn



Thank you

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Grete Roeckers



THE GIS ANALYST AS AN INSTITUTIONAL RESOURCE

Cathy Walker



Tim Dewland

Strive to...

- Get to know your end users and their needs, address concerns
- Identify relevant information for various users
- Remove any road blocks
- Be accessible



Tim Dewland

- No GIS Analyst is an island! Be the bridge between data and information
- Help others make informed decisions
- Spread the word!



THANKS!

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