


Delivering Actionable Information


Keith T. Weber, GISP
 ISU GIS Director
 GIS Training and Research Center

Pocatello | Idaho Falls | Meridian | Twin Falls



THE NEED FOR ACTIONABLE INFORMATION

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End-users, Customers, Stakeholders, Clients and Decision-Makers

AKA- Our Consumer

- GIS is a fantastic decision-support tool
- We support our Consumer
- Yet, our consumer is often

Drowning in Data...Thirsting for Information

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Semantics

- Consumer
- **Data and Information**
 - Is it the same thing?

The Data to Wisdom Pathway



Data Information Knowledge Wisdom

To Put it Another Way



It is vital to remember that information - in the sense of raw data - is not knowledge, that knowledge is not wisdom, and that wisdom is not foresight. But information is the first essential step to all of these.

— Arthur C. Clarke —

AZ QUOTES

What is?

• Data

01001110 01101001 01101111 01100010 01110010 01100001 01110010
01100001 00100000 01101000 01100101 01100001 01100100 01110111
01100001 01110100 01100101 01110010 01110011

171412	10060007	Brush Lake Closed Basin
45219	10110203	Middle Little Missouri
117254	10120108	Hat
22445	10180013	Pumpkin
100637	10190017	Sidney Draw
66440	10190018	Lower South Platte
241536	10250008	Stinking Water
349270	10150002	Niobrara Headwaters
940319	10180009	Middle North Platte-Scotts Bluff
1104145	11080001	Canadian Headwaters
671680	11080002	Cameron

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What is?

• Information

- Data in Context
- Data that is Meaningful to you
- Data is *transformed* into Information

ACRES	HUC_8	WBD_Name
171412	10060007	Brush Lake Closed Basin
45219	10110203	Middle Little Missouri
117254	10120108	Hat
22445	10180013	Pumpkin
100637	10190017	Sidney Draw
66440	10190018	Lower South Platte
241536	10250008	Stinking Water
349270	10150002	Niobrara Headwaters
940319	10180009	Middle North Platte-Scotts Bluff
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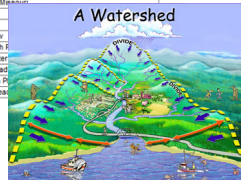


What is?

• Knowledge

- Context
- Meaningful
- Speaks to you
- Part of *your* paradigm, your skillset

ACRES	HUC_8	WBD_Name
171412	10060007	Brush Lake Closed Basin
45219	10110203	Middle Little Missouri
117254	10120108	Hat
22445	10180013	Pumpkin
100637	10190017	Sidney Draw
66440	10190018	Lower South Platte
241536	10250008	Stinking Water
349270	10150002	Niobrara Headwaters
940319	10180009	Middle North Platte-Scotts Bluff
1104145	11080001	Canadian Headwaters
671680	11080002	Cameron



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What is?

- **Wisdom**
 - Context
 - Meaningful
 - Speaks to you
 - Part of your paradigm
 - Appropriate use or application of knowledge

ACRES	HUC #	WBD_Name
171412	10000007	Brush Lake Closed Basin
48219	10110203	Middle Little Missouri
117254	10122100	Hill
22445	10100013	Pumpkin
100637	10190017	Sidney Draw
66480	10190010	Lower South
241536	10250006	Shoshone Water
348270	10150002	Hobbsburg Head
940319		
1158465		
671680		

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Are you Delivering Data or Information?

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Spatial Data Science

The Building Blocks of Spatial Data Science

- Data Engineering
- Visualization & Exploration
- Spatial Analysis, Machine Learning & AI
- Big Data Analytics
- Modeling & Scripting
- Sharing & Collaboration

Processing Data Does **Not** Create Information



- Visualization, spatial analysis, etc. creates more data
- These data tend to be more refined
- But the output is still data!

It's about **Communication**

- How do we **communicate** with geospatial data?
 - First, we need data
 - Ideally from reliable and/or *authoritative sources*
 - Visualization using standardized or accepted symbology
 - Regardless of how you feel about it cartographically
 - Consider generalization or reclassification
 - Principles of cartography
 - High, medium, or low instead of 0-10000
 - Using meaningful values and words

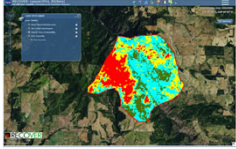
What does this mean?

It's about Communication (cont'd)

- Use meaningful units
 - Acres instead of the number of pixels
 - Miles instead of meters
 - "Sagebrush-steppe" instead of code 4622

An Example

- Q: How much of the 2015 Widget fire was considered a high severity burn?
 - A: 1,968 pixels
 - A: 1,771,200 m² (1,968 30x30 m (900 m²) pixels)
 - A: 437.673052 acres (be cognizant of significant digits)
 - A: 437 acres



Is all Information Actionable?

- What's the difference?
 - Some information may be trivial or tangential
 - You understand it, but it provides little/nothing toward helping to make a decision
 - **Actionable information** is pertinent and applicable
 - It is information that helps make a decision
 - Information that can be acted upon

How are Decision Made?

- While we (GIS'ers) are not the decision maker
- Our actionable information should support wise, well-informed decisions

OODA

Observe, Orient, Decide, and Act



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How Are *Really* Decisions Made?

- Does actionable information really drive a well-informed decision process?
- Unfortunately NO (not normally)

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The 4-Ps

- Power
 - Profit
 - Politics
 - Pride
- BUT, we still need to do our part as scientists

Actionable Information Checklist

- **Step 1:** Identify and understand the consumer.
- **Step 2:** Understand the question!
- **Step 3:** Leverage your strengths
- **Step 4:** Get to know the data
- **Step 5:** Make a great map!
- **Step 6:** Automate
- **Step 7:** Engage in a Team of Teams approach

Understand the Consumer

- In some cases, the consumer may be John Q. Public
- In other cases, the consumer is a more specific end-user
- In still other cases, the consumer is *all the above*
- **To make this easy for our learning process, we will identify a specific end-user/consumer**

Our Project Scenario


- The Widget Wildfire
 - Problem: Identify post-fire risks
 - Consumer: Land managers/emergency managers at the local, state, and federal levels

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Let's craft a meaningful question

Nobody has responded yet.


Hang tight! Responses are coming in.

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Another Step in the Checklist


- When you have finished spatial analysis and are ready to deliver results...
- Ask yourself:
 - How can I explain this, so the results can immediately support sound decisions?
 - How can I best **communicate** my results?
 - How can I help turn these data into *actionable information*?

A recent study has found that the top skills in highest demand for GIS candidates are:



1 Analysis & Modeling
2 Communication, Interpersonal skills, Self-Motivation and Independence

<https://www.directionsmag.com/article/2143>

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Applied Actionable Information

- Engage in a team of teams approach
 - This is actually quite critical

NEW YORK TIMES BESTSELLER
"The golden rule of being successful and successful fast: do the hard work and get it done."


**TEAM
— OF —
TEAMS**

NEW RULES OF ENGAGEMENT
FOR A COMPLEX WORLD

**GENERAL STANLEY
McCHRISTAL**

U.S. Army, Retired
with Tamara Gullotta, David Silverman,
and Chris Farnell


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Hands-on exercise

TRANSFORMING DATA INTO INFORMATION


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Professional Hints and Tips

- Calendars
 - Accept or decline invitations
 - This is professional etiquette and acts as an RSVP for meeting organizers (i.e., they do not need to follow up)
- Be on time for all meetings
 - Better yet, be a few minutes early

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Questions/Discussion?



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