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Evaluation Assignment #1: Website and Stakeholders,
Goals and Task Analysis

Team 4: Calm B4 The Storm
App: Wet/Dry Mapping

Wet Dry Mapping Application Overview

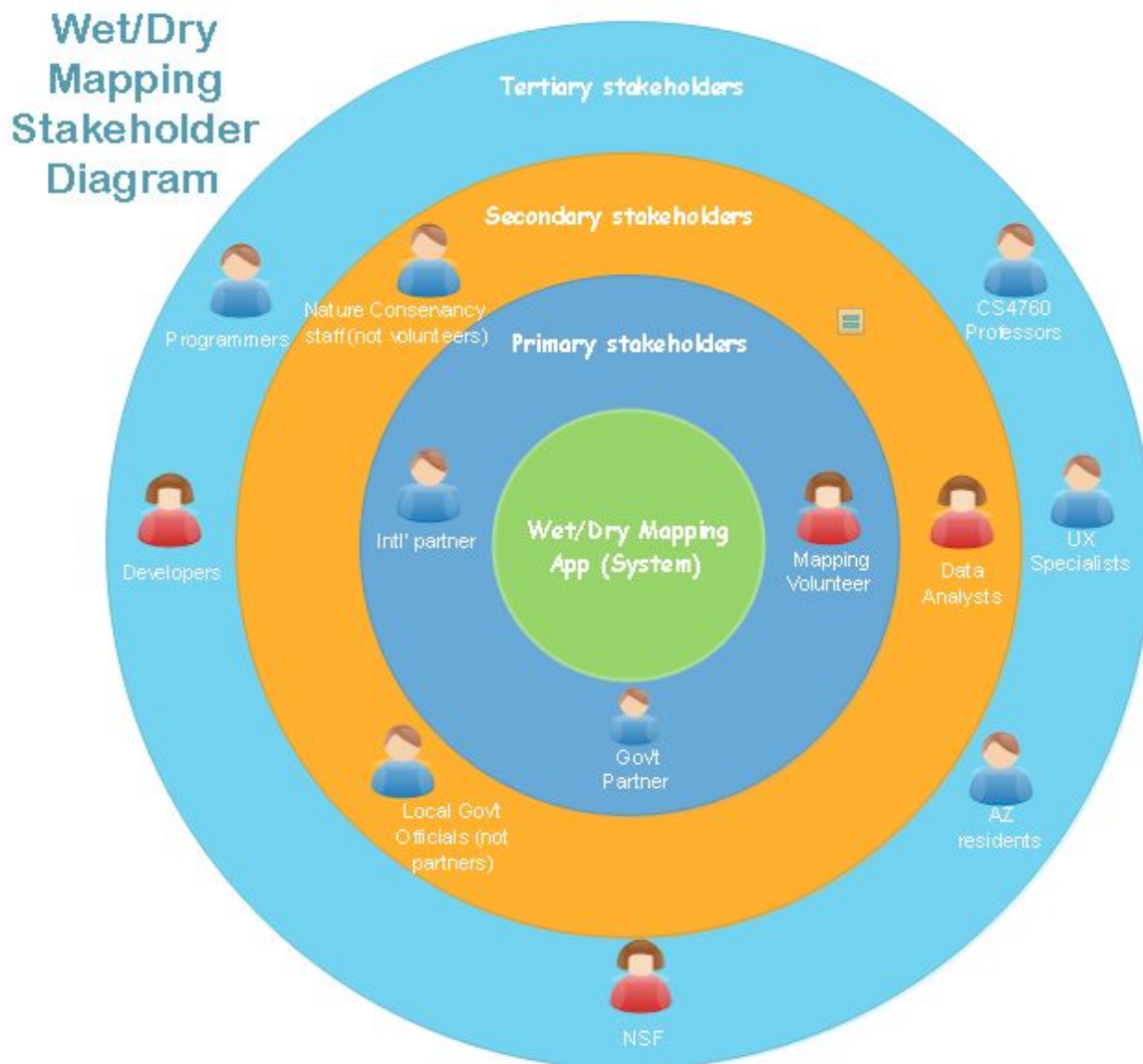
This application is intended to help volunteers (and the scientists) map and analyze the flow, locations, and length of rivers and wet spots in southeastern Arizona. The digitization of their process (which is currently being done with paper sheets) would make both data collection, quality control, and analysis more efficient. Some of the data collectors are volunteers and some are partners (i.e. government agencies) with different levels of physical and technological abilities. Thus, the intent is to create an intuitive and easy to use app that the users are able to easily navigate and complete their work efficiently and effectively, while potentially decreasing errors. The development team is interdisciplinary. It is made up of programmers, communication experts, and usability experts.

Stakeholder Analysis

This stakeholder analysis is made up of three parts:

1. Stakeholder Onion diagram
2. Stakeholder descriptions
3. Stakeholder Goal Influence Table

Stakeholder Onion Diagram



Stakeholder Descriptions

Primary stakeholders

- Mapping volunteer-Mostly adults, with different levels of physical and technological abilities who volunteer to map the rivers in AZ (and are not partners).
- Government Partner (volunteer)- State or federal agency partners who volunteer to map the rivers in AZ.
- International Partner (volunteer)- Spanish speaking partners from Mexico who volunteer to map the rivers in AZ.

Secondary stakeholders

- Data Analysts- Analysts either at the Nature Conservancy or other agencies interested in the data that results from the mapping.
- Nature Conservancy Staff- Staff members that quality control check the data and compile it into large spreadsheets.
- Local Government Officials- Officials that are not volunteers, but are involved in the results of the data and would potentially implement policies or updates to the public.

Tertiary stakeholders

- Developers- The planners and executors of the creation and implementation of the app.
- Programmers- Members of the development team tasked with the technical programming and integration side of the app.
- UX Specialists- Members of the development team tasked with analyzing the application and its UI.
- NSF- Funders of the class “citizen science” project efforts.
- AZ Residents- Members of the public who are affected by the project and its outcome but not necessarily involved in the process.
- CS4760/HU/5760 Professors- Professors at MTU who set restrictions and guidelines for teams’ projects and have influence over the projects.

Stakeholder goal influence table:


Stakeholder	Goals	Influences
Mapping Volunteer	<ul style="list-style-type: none"> Accurately and efficiently map the river's flow, location, length, and wet spots 	<ul style="list-style-type: none"> Data input Application use (implementation) and feedback May be novice or expert
Government Partner	<ul style="list-style-type: none"> Accurately and efficiently map the river's flow, location, length, and wet spots 	<ul style="list-style-type: none"> Data input Application use (implementation) and feedback May be novice or expert
International Partner	<ul style="list-style-type: none"> Accurately and efficiently map the river's flow, location, length, and wet spots 	<ul style="list-style-type: none"> Data input Application use (implementation) and feedback May be novice or expert May not speak English
Data Analysts	<ul style="list-style-type: none"> Understand and make accurate predictions about upcoming year's rivers 	<ul style="list-style-type: none"> Impact how the data is articulated Data output may have to be reformatted for analysis
Nature Conservancy Staff	<ul style="list-style-type: none"> Ensure the data is of high quality Effectively compile the data into an easy to read/use format 	<ul style="list-style-type: none"> Provides the development team with needs and wants for the app design May provide suggestions that are difficult to implement
Local Government Officials	<ul style="list-style-type: none"> Understand the status of the rivers in southeastern AZ and implement policies or warnings if necessary 	<ul style="list-style-type: none"> May implement policies for the locals May need to articulate the results of the mapping to the public
Developers	<ul style="list-style-type: none"> To create a usable application that addresses as many of the users 	<ul style="list-style-type: none"> Have a general time constraint (end of


	<p>needs and concerns as possible and helps the users make their jobs easier and more effective</p>	<p>semester)</p> <ul style="list-style-type: none"> Members have to work together as an interdisciplinary team and each have different influences on design
Programmers	<ul style="list-style-type: none"> To ensure that the application is programmed in an effective manner and can be built upon in future iterations. To create detailed documentation to ensure clarity on future revisits to the project 	<ul style="list-style-type: none"> Impact the programming of the application May not be able to implement a UX specialists' suggestion due to difficulty or integration issues
UX Specialists	<ul style="list-style-type: none"> To ensure that the application is user friendly, effective, efficient, safe, useful, and intuitive for the users To create quality assessments of the application design and inform the designers of issues or suggestions to make the app better 	<ul style="list-style-type: none"> May not fully understand the technical constraints of the application (i.e. implementation issues, coding) Impact the overall design feel and frequently assess its usability
NSF	<ul style="list-style-type: none"> Provide students an opportunity to create meaningful apps provide citizen scientists an opportunity to collaborate and see their vision to life 	<ul style="list-style-type: none"> Funding source; project longevity (can determine when/if to terminate)
AZ Residents	<ul style="list-style-type: none"> To live a safe and happy life in AZ 	<ul style="list-style-type: none"> May influence the river status through their personal land management strategies
CS/HU4760/5760 Professors	<ul style="list-style-type: none"> To ensure the positive collaboration between student teams and the scientists To guide the student teams' design process and ensure they are learning along the way 	<ul style="list-style-type: none"> Determine students' grades Are able to provide additional suggestions or restrictions to the student teams regarding their design

Personas


Here are four personas (two primary and two secondary users) to represent hypothetical users of the system. These will help the team understand on a deeper level the users of the system. Personas will provide a new perspective and help predict user errors as well as assess elements of the current design that may be useful or problematic.


Primary Users

	<p>Name: Steph H. Rue</p> <p>Demographics:</p> <ul style="list-style-type: none"> • 21 Years Old • Lives in New York City • Single (but that will last a week) • MPH in Health Communication from Columbia University (dropped out after 2 years) <p>Job Title: Secretary at Luscious Locks Salon</p> <p>Volunteering Experience: Her parents began a family tradition and took her and her sister to Arizona to volunteer at the Nature Conservancy. They have had this tradition for 2 years. She was "voluntold" to come or her parents would cut off her funds. She is very indifferent about this experience.</p> <p>Skills: Texting, Instagram, Twitter, Candy Crush, Nutrition, Architecture Drawings, Scheduling and managing calendars</p>
<p>Goals and Behaviors: Steph was rejected from the top 5 architecture schools that she applied for, but is extremely passionate about drawing and interior design. She is very detail oriented and has steady fingers while drawing. She troubleshoots her parents electronics (i.e. phone, computer) frequently. Steph gets to work right at 9am when her shift starts, and sometimes falls asleep in the staff room. She works out heavily 2 hours a day, doing light cardio and hot yoga. She is in great shape, and enjoys doing the color run every year. When she gets bored, she downloads random apps and tries to find bugs, just to have something to complain about. She doesn't like big phones because they can't fit in her pants pocket and prefers the smaller screens. She has color vision deficiency (achromatopsia) and is in the process of testing new technologies to restore her color vision. Sometimes she sees flashes of color and it gives her migraines.</p>	
<p>Personality and Relationships:</p> <p>Steph gets bored very easily, whether it is with people or with technologies. She has a soft spot for her family, especially her younger sister, who she saved from getting assaulted by one of her guy friends. She tends to get lost in drawing and doesn't seem to be upset by her color deficiency.</p> <p>Steph has a new boyfriend (or prospect) every week and sometimes this can distract her from her work. She has a few best friends from high school, but people come and go in her life. She dreams that one day she will be accepted to architecture school and she can be an interior designer.</p>	
<p>Quote: "Is it 6pm yet? I'm so over work right now..."</p>	

	<p>Name: Dan F. Swaz</p> <p>Demographics:</p> <ul style="list-style-type: none"> • 55 Years Old • Lives in Wisconsin • Married • Has 6 children • Has 4 grandchildren • B.S. in Forestry from MSU • PhD in Forestry and Environmental Studies from Yale <p>Job Title: Founder and Manager of Swaz Farms in Wisconsin</p> <p>Volunteering Experience: Has been volunteering for the Nature Conservancy for 30 years (18 of Wet/Dry mapping, the rest for fundraising and informational events). He travels yearly with his wife for the wet/dry mapping.</p> <p>Skills: Organizational and Management skills, Quality control, Equipment diagnostics and management, Landscape management, Product safety, Plant pathology and physiology</p>
<p>Goals and Behaviors: Dan is known as one of the most charismatic and hardest working farm managers in Wisconsin. He strives for the highest quality products, and refuses to market anything below standard (even if it costs him money). His farm dedicates 1/10th of its production to feeding a country in need and works with local charities weekly. Most of his work involves supervising the farm workers, ensuring proper protocol is followed, quality control duties, preparing budgets and monthly reports, and interfacing with customers. His farm functions on analog technology and has had no desire to move towards digital technologies. He is confident in his current "pen and paper" procedure and does not feel that upgrading technology would make a difference. He has limited familiarity with new technologies, and only has interacted with them when interfacing with customers (across the U.S.). He has a flip phone for business use.</p>	
<p>Personality and Relationships: Dan sets aside time everyday for his family, regardless of his work situation, and encourages his workers to do the same. He does not tolerate dishonesty and if he feels that someone is trying to scam him he is quick to get upset. His children all work on the farm and he often spends time with them building facilities for the farm or houses for the homeless. He knows all of his workers by name and is very understanding (almost to a fault). He is very detail oriented and sometimes misses the big picture. He is very keen on sticking to the "protocol or rules."</p>	
<p>Quote: "Please make sure you are following the protocol..."</p>	

Secondary Users

	Name: Peter S. Flash
	Demographics: <ul style="list-style-type: none"> • 67 Years Old • Lives in Arizona • Married (Divorced once); Has 1 son • B.S. in Political Science from Arizona State University • M.A. in Political Science from Arizona State University
	Job Title: Arizona Government Official- Environmental Specialist
	Volunteering Experience: Corresponds yearly with the Arizona Nature Conservancy and visits the "base" for the mapping once every 3 years
	Skills: Public speaking, People management, organizational management, delegation, negotiation, policy making, budget assessment
<p>Goals and Behaviors: He enjoys having a lot of responsibilities (so he can have a lot of recognition for them) so he tends to be extremely busy. His favorite projects include: land management, natural resources, food and drug policies, and youth programs. Good luck getting a meeting with him because he never has any time. He is in the office early and leaves late. He is bombarded constantly by the press with questions and praise but is never really criticized. He does not take errors or mistakes very well and tends to take extreme measures to remedy them. When he is not at work, he enjoys going golfing or taking overseas trips with his wife and son. He loves watching football and goes to all of ASU's games. He goes to his grandkids sports games and is the loudest one in the stands.</p>	
<p>Personality and Relationships: After a rough divorce, Peter settled down with Amy and they had their son. Peter is a workaholic and thoroughly enjoys talking to the press and being the center of attention. He is very tough on his son and sets very high expectations for him. He is known as a "hardass" when you speak to him one on one, but is very charismatic in a crowd.</p> <p>He is quick to anger and tends to get upset easily by mistakes. He tends to get frazzled with new technology and often requires reminders or on the spot help. He sometimes experiences dyslexia in his old age, but this comes up randomly.</p>	
<p>Quote: "What policy can we implement to help improve the environment and land management of our state?"</p>	

	Name: Alex D. Good
	Demographics: <ul style="list-style-type: none"> • 28 Years Old • Lives in Pennsylvania • In a relationship with a Navy Seal • B.S. in Statistics from Penn State • M.S. in Data Science from Penn State <ul style="list-style-type: none"> ○ Wants to be an Army Intelligence Analyst
	Job Title: Data Scientist for the Nature Conservancy (works remotely)
	Volunteering Experience: Volunteers as an EMT for her town; Every other year, attends the wet dry mapping in AZ (as a supervisor, not a volunteer) and has been doing this for 3 years
	Skills: Medical Examinations, CPR, medical procedures, Data analysis, Data visualization, Prediction models, R Studio, SPSS, Weapon training
<p>Goals and Behaviors: Alex is very logical and fact oriented. She enjoys making predictions based on big data that she analyzes. "Data doesn't lie" is something that she holds to heart. She is a very "down to business" and efficient person and doesn't like to waste time. She enjoys many types of data, not just the data that she analyzes at work. She reaches out to large entities like Twitter, Facebook, and the U.S. Army and inquires about big data that they possess to analyze and predict. She is able to see small anomalies in the data that can be predictive, and is able to capture these. She is very passionate about safety and intelligence of her country. Her goal is to successfully create models to predict enemy locations, enemy attacks, ambushes, etc. in order to keep the soldiers safe. Her younger brother was killed in an ambush in Iraq.</p>	
<p>Personality and Relationships: She can sometimes be harsh and frank, but tends to get slightly emotional when anything family related gets mentioned. Her father is extremely protective of her, whereas, her mother is supportive of her intended Army career.</p> <p>She may be tough, but she can get easily discouraged despite her ROTC and Army experiences. She tends to be very decisive, but can have her mind easily changed. She relies heavily on her parents and her boyfriend for feedback. She is very familiar with many types of technology and is semi-familiar with programming. Sometimes she hacks her family's computers just for fun.</p>	
<p>Quote: "Why do our enemies always know our next move before we do?"</p>	

Hierarchical Task Analysis

A Hierarchical Task Analysis involves dividing the major tasks into subtasks and articulating them typically through a hierarchy with indentation and bullets. It articulates each “view” or page of the app and what actions could be taken.

Identification View

- Individual ID
- Team Number
- Team full names
- Start Location

Data View

- Direction
 - Downstream
 - Upstream
- Segment of River
- GPS Reading

Data Collection

- Water
 - Start
 - Stop
- GPS Location Reading
 - Accuracy
- Data Edit (If needed)
- End location
- Complete mapping (confirmation)

Quality Control

- Data Review
 - Manager Edit
- Upload Data
 - Confirm
 - Cancel

Help/Feedback

- View Mapping Instructions
- Contact Information
 - Emergencies
 - General
- Mapping Feedback
 - Questions
 - Concerns

Hierarchical Task Analysis

The Hierarchical task analysis above articulates the major tasks and functions of the intended app. The early tasks involve basic identifying information that is useful for the data analysts to contact people later regarding their data, or perhaps to track anomalies across groups. The Identification View represents this part of the data collection. Other information, such as team member names and intended start location vary by team. The Data View included higher level information about the main data collection (i.e. stream direction, segment of river, and GPS reading). The main data comes from the data collection page, which contains places to articulate start and stop of water, the GPS location reading (and accuracy), and the opportunity to edit the data that has been inputted. Another feature could include an indication of which end location or “base” that people check out at. The Quality Control page is mostly meant for the analysts that are involved in quality control and the data final checks. Here, people have the opportunity to edit it or upload it. The final section, Help/Feedback, contains useful information for the users in case protocols get forgotten or need to be referenced. Contact names and numbers may also be incorporated in case people have a general question or an emergency. Also in this section includes the opportunity for the users to provide feedback on their training, mapping experience, or app experience.

Appendix A Notes from Scientist Interview (1/26)

Lisa (Spatial Analyst)- works on processing of data and the tech aspect of getting data in a systematic manner

Brooke (Water Project Coordinator)- Interacts with partners, makes sure teams are set and trained, and ensures that data is being collected

Overview of Wet/Dry Mapping

- Hundreds of people
 - Some are partners (other state or federal agencies, some are from Mexico→ *speak spanish*)
 - Some are volunteers (mostly adults
 - Different levels of physical and technological abilities
- 18 years and running
- One of the strongest and longest data sets

Process:

- In June
- Night before the mapping
 - Organized training
- Each team is 2-4 people; 50% returning volunteers and 50% new people
- Break up river into reaches
- Take a clipboard with data sheet
 - Record time and walk along river
- Walk until you see a wet spot
- Take GPS coordinates of start and end
- Make notes of areas of interest

Goal: Evaluate and test a new tool and decide whether or not we want to use it

Information

- Set it up so they can start to phase out paper data sheets
- Errors→ 1 per team (so 30-40) i.e. hit the waypoint accidentally
 - Have quality control protocols to try to remedy this
 - All the teams go out and meet at one central point where staff are there and download GPS data into the map and look at it
 - Errors and issues are stored in notebooks

- Make a form that can be filled in with all the data sheets
- Scan in paper data sheets
- Would LOVE an app to do GPS Coordinates
 - Difficult with cell service
 - Cannot be public (must be private)
- Groups tend to have a hard time finding where to start
 - **Question: Would it be possible to interview a couple users for some feedback?**
 - **Yes... we can send them a google form**
 - **Both scientists have done it + can ask people around the office**
- Assume there's no cell service
- Dynamic map isn't good
 - They provide team on clipboard of an aerial photograph with coordinate info
- People use their personal phones or tablets

Action items:

- Create google doc "interview" for scientists feedback (CTA style)
- Look at the data sheet that they send us