Michigan Tech University

Stakeholders, Goals and Task Analysis

CS5760 Human-Computer Interactions & Usability

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Dead Bird Group

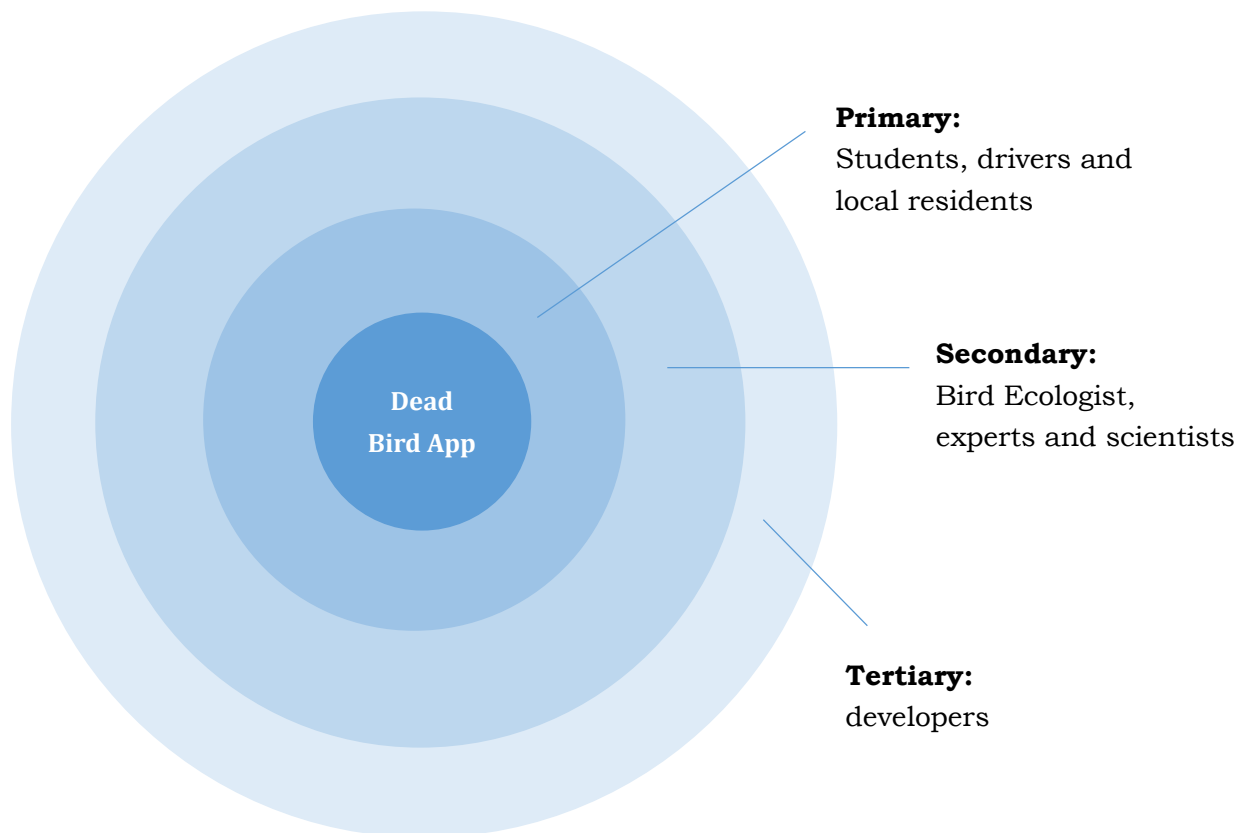Undergraduate: Eric Vasey, Rebecca Driver, Caleb Chapman, Jonathan Faron,

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1. System Description

This application would function to allow users to document and identify bird mortality events. Approximately 500 million birds are killed in the US each year from window collisions alone. A similar number are killed by outdoor cats and millions more are killed by vehicle collisions. All of these anthropocentric sources of mortality are additive beyond the threats that birds evolved with for millennia and thus are a great cause for concern and a potential cause of population declines. Among wildlife, birds are among the most recognized and easily observed and birdwatching and feeding is a pastime for tens of millions of people in the US alone. This app seeks to utilize this motivated and engaged user group to generate data on the sources, frequencies, and species-specific patterns of human-causes bird mortality. Spatially explicit locations, times and species identity can be collected by anyone with a smart phone and uploaded into a database that could be used to generate maps of mortality "hot spots", temporal patterns of mortality, and management options to reduce mortality.

2. Stakeholder Analysis

a. Onion model of stakeholder

Primary:
Students, drivers and local residents

Secondary:
Bird Ecologist, experts and scientists

Tertiary:
developers

Dead Bird App

b. Description of each stakeholder

1) <u>System</u>

Our product Dead Bird App.

2) <u>Primary stakeholders</u>

They are eventual end users of our system to collect the data, record the bird species and report to scientists. They could be students, drivers and local residents.

3) <u>Secondary stakeholders</u>

They directly support the primary users or use the results of the application. They could be Bird Ecologist, experts and scientists to make analysis about results provided by primary users.

4) <u>Tertiary stakeholders</u>

They are from the greater society and have influence on the project or are affected by the project. Developers of the projects are example of tertiary stakeholders who create the app and keep the stability, but developers have different roles.

c. Stakeholder goal influence table

Name	Goal	Contributing Influences	Constraining Influences
Students	Take a picture of the birds and the environments; Use GPS to save the location; Submit the record; Note taking	Observation; Motivation; Voluntary; Record the disturbance of bird species	Data input complexity ; Some students whose major is not related to this field may cannot identify the bird species.
Drivers	Take a picture of the birds and the environments;	Record the disturbance of bird species;	Data input complexity; They may cannot identify the bird species;

	Use GPS to save the location; Make description about the road; Submit the record	Describe the area of the road based on the drivers' past experience	Participation frequency/Occasionality; Difficulty and inconvenience in recording when driving.
Local residents	Take a picture of the birds and the environments; Use GPS to save the location; Submit the record	Record at any time; convenience	Data input complexity ; Record area is small because residents can only observe the environment in their town or city; They may cannot identify the bird species.
Bird Ecologist, Experts	View the result; Make analysis and improvement for the bird habitat; Assist with scientists	Awareness; Expertise	Limited time; Need lots of data; Data Format/Some data may be invalid
Scientists	View the result; Make analysis	Awareness; Expertise	Limited time; Need lots of data; Data Format/Some data may be invalid
Developers	Create and improve the app	App designs	Limited Time; Need to get feedback promptly.

d. Summary of the Stakeholder Goal Influence Table

For the primary users group, they are tend to collect the data so students, drivers and local residents could take pictures of the birds and the environments, use GPS to save the location, and then submit the record. Plus, some students with related major can identify the bird species and become volunteers to take notes. Drivers are familiar with the road conditions and often go to different places so they can provide accurate description. Local residents can record when they are outside so it's convenient. However, we can't guarantee all the people have the knowledge to identify the bird species. In addition, local residents may only take pictures in their live place which is not cannot cover spread area.

For the secondary users group, Bird Ecologist, experts and scientists view the result, make analysis and improvement for the app with their knowledge. But the precondition is the abundance and accuracy of the data, and time is also required.

For the tertiary users group, the develop team will create the app and test usability. In addition, they collect the feedback then improve the function. But time is limited and the feedback should be got promptly.

3. Personas for the primary stakeholder

a. Two primary users

Tom

Male

Age: 17

Occupation: student in Houghton senior high school

Interest: photograph, nature and go hiking

Description: Tom is a 17-year-old boy in Houghton senior high school. He likes to watch "Animal World" program when he was young, and always go hiking to take pictures of birds and other animals. He often use his smartphone to contact with others and download all kinds of apps .He has ever been a volunteer in an environment protection organization and thinks the dead bird app idea is beneficial to the ecology. But he thinks it's better to learn some knowledge first to identify the species.

Patty

Female

Age: 62

Occupation: Houghton resident, retire

Interest: go walking after lunch, pets

Description: Patty is a 62-year-old lady who likes to go walking after lunch. She also loves little pets and always found some birds are killed from window collisions. So she is willing to use the dead bird app to help scientists to make analysis. The only concern is that she is not used to navigate the smartphone and the app. So some training is necessary.

b. Two secondary users

Jason
Male
Age: 32
Occupation: Associate professor in Biology Department
Interest: Exercise outside
Description: Jason is an associate professor in biology department. And his research direction is related to birds. Last year he wrote a proposal about this field but needs lots of data. And he has been supported funding to do his research. So he thinks the result from the app could help him with his research and is pleased to give advises to the developers. But some data may be bad or invalid, so filter is necessary.

Emily
Female
Age: 52
Occupation: Scientist in Environment Ecology and computer science
Interest: go hiking
Description: Emily is a scientist with BS Environment Ecology and MS、Phd computer science degree. She has ever been invited to be a consultant for the app improvement. She is an environmentalist and would like to analyze data to collaborate with some experts in this field. In addition, she is familiar with Web and Mobile app developing. She plans to analyze the data with her computer science knowledge.

4. Simplified Hierarchical Task Analysis

a. Simplified HTA

The app design can be divided into two parts: 1.Phone user: report; 2. Laptop user: visualize the data.

HomePage (Phone User)

+ Report History info view

- Navigation
- Edit report history view
  - Photos
  - Location
  - Species
  - Weather
  - Other Description

+ New Camera view

- Take a picture
  - Save
  - cancel
- Upload from photos
  - Confirm
  - Cancel
- Input Info
  - Hit Button(fast record the location and timestamp)
    - Confirm
    - Cancel
  - Text View
    - Species
      - Dropdown list
      - Input
    - Weather
      - Dropdown list
    - Description the road and other details
      - Input

HomePage (Laptop User)

+ Report History info view

- Navigation
- View the detail

+ Search bird database View

- Species
  - Dropdown list
  - Input
- Location
  - Dropdown list
  - Input
- Time period
  - Form
- Other Keywords
  - Tags Selection
  - Input
- Submit
  - Confirm
  - Cancel
- Visualize the data
  - Navigation
  - Export

b. **Summary of the simplified HTA**

The app design can be divided into two parts: 1.Phone user: report; 2. Laptop user: visualize the data.

For phone users who mainly report the dead bird case to the system, everyone has one account to submit information. They can take pictures of birds and environment or upload past photos first, then use hit button, making location record by GPS and timestamp more efficient. In addition, users are required to describe details completely, like species, weather, road

and other information to store into the system database. Also, they could modify the past report if there are errors, when go through history view page.

For laptop users who want to visualize the data and make analysis, they could login to website and view the detail of the recent report in homepage. Besides, if they want to query certain bird, the search function could deal with it. Users need to submit some information including species, location, time, or other details. All the data collected will be stored into database, so users can select choice with dropdown list. If there are no results you want, input manually can be helpful, especially for keywords. After submit the form, a detailed report will be provided and people could download or print out.

5. notes from the interview with the scientist

Envision app being used for?
- Bird Ecologist – how birds interact with habitat
  - How birds lives are affected by human interactions
  - Idea centered around roads
    - App needs to run **fast** – don't want to spend much time pulled off to side of road
    - Significant evidence of car collisions affecting bird mortality
    - Generalized roadkill? – **up to us**
      - Probably not – focus seems to be on birds
- Research other apps for same purpose?
- Audience -> Biologists
- Crowdsource collection of data
  - Central Database
  - Outside of our scope?
  - Find distribution of species?
- What kind of data?
  - Camera
  - Species
    - Query eBird for species?
    - Might be too difficult to integrate
    - Dropdown for species in Area?
    - With pictures?
  - GPS
  - Timestamp
  - Size – small/med/large?

- o Species
- o No Cause of Death – roadkill
- o Weather
- o Speed Limit on Road
- o Description of Road
  - ▪ Area around road – forest, wetlands, etc.
- If user doesn't know species, experts can analyze and ID species after the fact
  - o Verification system for authorized biologists
  - o Usability test audience – local bird-watchers
- Fast tag?
  - o Hit button – reports GPS & timestamp, user fills report later
  - o Voice? (probably not feasible in web app)
- How does client want to visualize data?
  - o On a computer
  - o Show additional features for a laptop/desktop as opposed to a phone
- ebird
  - o Can submit observations to site
  - o DB available for public use
  - o Possible integration?