SHAUN KELLY|HCI CAPSTONE SPRING 2013

MILESTONE 2 – UNDERSTANDING THE PROBLEM

Yard Genius

Yard Genius is an application to help homeowners maintain their yards by keeping track of maintenance tasks and suggesting appropriate plants and vegetation based on the user's context.

Users

"I want to have a nice yard, I just don't want to spend all my time on it. It's not my first priority." - Participant 1 (Female, 31) (intro quotes paraphrased from interview notes)

"I wish it would just be inherent in my head. I wish I had been brought up by gardeners." - Participant 3 (Female, 69)

To complete the users section, I conducted interviews with three homeowners of differing experience levels. See Appendix for the interview framework questions.

The main user group for my system will be homeowners with yards and gardens to maintain. Users who will benefit most from the application are those with limited experience and knowledge about yard and garden maintenance. None of the users interviewed expressed great confidence in their skills in maintaining their yards. Two indicated that having a small yard to maintain was one of the key factors in choosing their current homes. However, all of the users were interested in having a well kept yard.

The system may also appeal to the following groups:

- Homeowners with expert gardening and yard maintenance skills
- People living in condos or apartments with space to grow small gardens, such as on a porch or patio.
- People who are renting homes and are responsible for maintenance of the yards and gardens.

While these groups may also find the application useful, homeowners with yards with limited experience are most likely to be invested in and benefit from use of all the features of the application. Therefore, they will be the focus of the application.

Additional stakeholder groups who may be indirectly affected by the application include:

- Landscape architects and yard maintenance workers who are involved in the maintenance of the homeowner's yard.

- Garden and home improvement store employees who will interact with the homeowner when buying plants, tools, etc., based on recommendations from the application.

Tasks

“I planted azaleas, but I put them in too late and they burned up in the sun.” - Participant 2 (Male, 33)

“I have rose bushes in my front yard, but it’s winter and I don’t know if I need to do anything about them.” - Participant 1 (Female, 31)

Based on user interviews, the three tasks my application will focus on are:

1. Determining suitable plants for a given location
   - Identify user location
   - Identify planting conditions (in ground, pots, shade, soil, etc.)
   - Display list of possible plants
   - Allow user to filter list
2. Determining which tasks (planting, mowing, fertilizing, pruning, etc.) are required based on what items are planted
   - Identify user context (location, time of year, weather)
   - Identify plants, grass, etc. currently planted
   - List tasks to complete for each planted item by time task should be completed
   - Allow user to mark tasks as completed
   - Notify user when additional tasks are needed
3. Design a pleasing layout for plants in the yard
   - Create layout of existing yard
   - Add plants, grass, landscaping that currently exists
   - Allow to search for items to plant
     - Allow user to filter list as in task #1
     - Prioritize plants suitable for current conditions
     - Notify if selected plants are not suitable

The environment of use for the application will include two main locations:

- At home, inside on the sofa or at a desk
- In the yard

Users indicated that they would like to do most of the research and planning for their yard inside. They also indicated that they would like to be able to use the application out in the yard, for example, walking around the yard to determine what they have planted or what areas are available for additional planting. Users indicated that they would not be likely to use the application while actually performing yard work as it would be awkward and messy to hold a device while attempting to mow the lawn or plant a bush.

Analysis

"If I see my yard starts to look bad, I make a mental note that I need to take care of it next time I have a chance." - Participant 2 (Male, 33)


peak color 3 of 4

stoplights on a highway. Three blooms huddled together look like lost children, but 50 together command attention. "If you spread them out too much, you lose the impact of the moment," explains Allen.

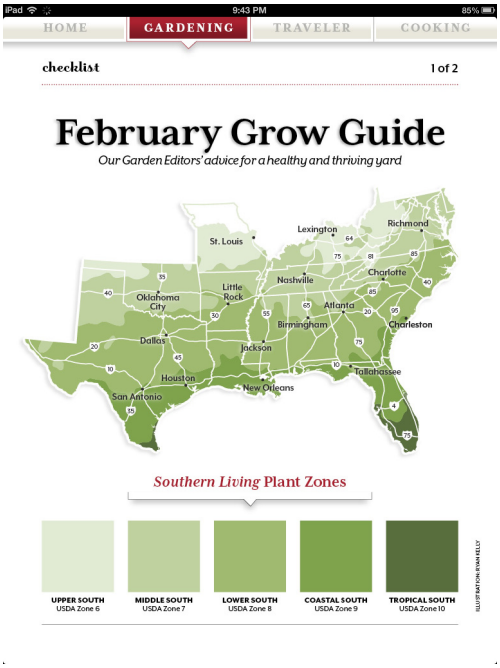
Plan for a succession of blooms.
Dozens of different kinds of daffodils represent early-, mid-, and late-blooming types. Mix selections from each class to have daffodils blooming almost the entire spring. Moss Mountain Farm's daffodils flower from January through April, starting with 'Rijnveld's Early Sensation' and 'February Gold' and concluding with the later 'Pheasant's Eye' and 'Geranium.'

Plant in curves, not straight lines.
Curves are the way nature grows, so think in sweeps and swooshes instead of rows. Make the paths that pass through the bulbs curve too. Here, paths wide enough for strolling visitors weave side to side through the flowers. In addition to keeping the blooms from being stomped underfoot, the winding paths slow you down and expand the experience. "We decided from the beginning there would be no straight lines at all on the hill," says Allen. "You enter the path and wind your way along it like a labyrinth. It feels like meditation."

CONTAIN IT
Raise daffodils to new heights by planting in pots that you can move as desired.

Use shrubs and trees as a backdrop for bulbs.
This adds vertical dimension to a display that might otherwise be flat. Allen likes combining daffodils with old-fashioned spring shrubs, such as baby's breath spiraea, pearl bush, forsythia, and

ROGER FOLEY


checklist 1 of 2

February Grow Guide

Our Garden Editors' advice for a healthy and thriving yard

St. Louis
Lexington
Richmond
Charlotte
Nashville
Oklahoma City
Little Rock
Atlanta
Birmingham
Charleston
Dallas
Jackson
Houston
San Antonio
New Orleans
Tallahassee

Southern Living Plant Zones

UPPER SOUTH USDA Zone 6
MIDDLE SOUTH USDA Zone 7
LOWER SOUTH USDA Zone 8
COASTAL SOUTH USDA Zone 9
TROPICAL SOUTH USDA Zone 10

Pages from Southern Living Magazine, which one user indicated she uses for information and inspiration.

To find the information they need to maintain their yards and gardens, users indicated that they currently use the following sources of information:

- Home improvement store employees
- Internet searches
- Magazines (*Southern Living, Martha Stewart*)
- Gardening books
- Local newspaper columns (extension service)
- Blogs

One user indicated that he learned the steps he needed to take to maintain his yard by asking an employee at Home Depot. The employee provided a good bit of information which the user has attempted to follow through with; however, since he received the information in a conversation, he was not able to retain all of the information in memory.

One user described getting information from a magazine to determine suitable planting times and pleasing layouts; however, the information was regional so she had to parse the information to determine what was relevant to her location.

None of the users interviewed described using a formal process to keep track of which tasks need to be completed. Rather, they indicated they used an *ad hoc* process, whereby when the yard starts to look like bad, they figure out what tasks they need to complete. Generic to-do lists or applications could be used to keep track of yard and garden tasks but are of no help in determining which tasks to complete.

While most of the media sources (magazines, books, internet, newspapers) users listed as current resources offer useful information from experts, they had challenges inherent with static content:

- The information was not tailored to the user's current needs. That is, a magazine article about a certain plant type is only helpful if the user is looking for information on that plant type.
- The information was not tailored to users current context (time, location, etc.).
- The user needs to know what to search for when searching for content.

Additionally, some applications are available that perform some of the key tasks described in the previous section. However, none of the I applications I have found synthesize all of the tasks described into a single application. None of the users interviewed have previously used any apps for planning their yard maintenance tasks.

In Rasumussen's (1983) Skill- Rule- Knowledge framework of decision making, the users of the application will generally be at the knowledge or rule level, meaning they need detailed instructions or reminders of rules about what tasks to complete in their yards. Because the users do not have the knowledge inherent in their heads (as one interviewee wished), the job of this application is to put knowledge in the world (Norman 2002).

The application will be a tablet-based application to meet the following user needs:

- Enough space to visualize and work with a representation of their yard and view quality images of plants
- The ability to use the application both comfortably inside at a desk or sofa and while walking around outside in the yard.

Measures

Tullis and Albert (2008) identify two main categories of user experience measures: performance and satisfaction.

For performance measures, I will measure task success and errors (quantitative) and usability issues (qualitative). I consider time and efficiency issues less important measures due to the nature of the application (consumer, recreational).

For satisfaction measures, I will use the Systems Usability Scale (SUS). Sauro and Lewis (2012) have determined that the SUS can be converted to a percentile value which can be used to compare user satisfaction across sites.

As we will not be testing with a large sample, the verbal protocol will also be important as both a performance and satisfaction measure.

Citations

Norman, Donald A. (2002) *The Design of Everyday Things*. New York: Basic Books.

Rasmussen, Jens. (1983) Skills, rules, and knowledge; signals, signs, and symbols, and other distinctions in human performance models. *IEEE Transactions on Systems, Man, and Cybernetics*, pp.257-266.

Sauro, Jeff and Lewis James R. (2012) *Quantifying the User Experience: Practical Statistics for User Research*. Burlington, MA: Morgan Kaufman.

Tullis, Tom and Albert, Bill. (2008) *Measuring the User Experience: Collecting, Analyzing, and Presenting Usability Metrics*. Burlington, MA: Morgan Kaufman.

Appendix A - Interview Framework

The following questions were used as a framework to guide the discussion in each of the interviews. Not all participants were asked all questions, though all topics were covered in the discussion.

How long have you been a homeowner?

What yard and garden maintenance tasks do you have to complete?

Do you enjoy them? Why or why not?

How confident in your yard and garden abilities? Why?

What are your greatest challenges in maintaining your yard and/or garden?

What sources do you use to get information on yard and garden maintenance?

- internet

- apps

- garden or home improvement store employees

- books

- magazines

- other

What types of information do you access from these sources?

Are there types of information you have difficulty finding or wish you could find more of? If so what?

How would you prefer to get information for yard and garden maintenance?

How do you know which garden tasks you need to complete?

How do you know which yard tasks you need to complete?

How do you keep track of the different yard and garden maintenance tasks that you have to complete?

Do you have trouble with any of the following tasks? If so, please elaborate.

- Determining what yard tasks to perform?

- Remembering when to perform tasks?

- Determining what types of plants are best for your location?

- Determining what types of maintenance are appropriate for specific types of plants?