

Final Report for Central Texas Gardener, KLRU

INF 385U - Creating and Using Digital Media Collections

Dr. Gary Geisler, Spring 2008

Jade Anderson
Julie Chapa
Joshua Coquat
Maggie DeBaldo
Peter Haligas
Yong Huang
Allison King

INTRODUCTION

In an effort to present a holistic plan for the direction of KLRU's *Central Texas Gardener* website, we have addressed several different aspects:

1. Defining the users of the website
2. Discussing the scope of the information available on CTG website
3. Creating a potential reorganization of the website's content and navigation
4. Exploring technologies that would improve the website's functionality and attractiveness

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USERS

Given that the time frame for this project was limited, our process for defining users was respectively scaled back. First, we spoke with individuals we knew personally, who were involved in gardening. Second, we created user personas to explore the different knowledge levels and personalities of the users.

- Amanda Greenthumb: novice gardener who has watched the show a few times and hopes to get more information from the website
- Walter Gaillard: experienced gardener and nursery owner
- Suzy Suburbs: casual gardener who has caught the show a few times, but is really only interested in the show and site when she has specific gardening questions (or catches a "gardening jones")

For more expanded definitions of the personas, please see Appendix A.

Recommendation: We would recommend a more extensive user study before the completion of a website redesign.

INFORMATION SCOPE

The scope of information available from CTG was analyzed in three different documents and we looked at terms used to describe plants on the CTG website (e.g., "foliage color" and "water needs.") First, we created a site blueprint, which shows the potential paths a user may take through the site in order to get to specific chunks of content. We then created a design for a web database, called an entity relationship diagram (ERD). Finally, we created a data dictionary, which is a document that explains the ERD. The CTG management team would be able to hand these documents to a database designer who would then have all the documentation necessary to build a complete and comprehensive database. [Technically, a logical design document would also be necessary.]

METADATA

We started our evaluation by identifying the existing metadata on CTG's Plant of the Week Index. It appears that the plant index is continually in development, as information is added when it appears on CTG's "Plant of the Week" segment. Because of this, the metadata is not consistent. Each plant's section contains a brief description of the plant, as well as any related items about the plant that has been mentioned on an episode of CTG. Some plants are listed by their common name along with their scientific name; other plants are simply indexed by their common name.

After we identified the existing metadata, we studied plant databases on the web. We were able to identify several commonalities in the databases, which guided our understanding of the types of information that are important to users. We also reviewed the three user personas to determine what types of information these three types of users would likely search for on the CTG website. One of our team members interviewed Adam Diaz, owner of PlantEscape Gardens and previous CTG guest (June

2007 most recently), to discover the types of questions his customers frequently ask. Using his feedback, we were able to develop a more robust metadata schema.

Please see Appendix B for the entire list of metadata.

DATABASE

We created an Entity Relationship Database (ERD) and Data Dictionary to support the website, and a mock up of a data entry form to ease the burden of those responsible for updating the site. In our design, the various segments link the majority of the other entities. Please see Appendices C-E for the ERD, data dictionary, and data entry form.

A note regarding the Plants entity: We do not expect CTG staff to create and fully populate a table for all of the plants discussed on the show or website. We borrowed this table and its attributes from Garden.org and then added a few attributes of our own. Our added attributes include "Comments," "Tags," and "Plant-of-the-Week Date."

We recommend that CTG contact Garden.org and discuss using the information from their database. CTG staff could then input the relevant date, and users could include comments and tags through the website forms. We also recommend that should CTG use the ERD designed for this project, that CTG considers adding an "episode" attribute to the "Plants" entity, so that users may search plants by the episode they were featured on.

INFORMATION ARCHITECTURE

SITE BLUEPRINT

In its current iteration, the CTG site is very episode-centric, meaning that it mainly serves the user who is looking up information based on what date a show previously aired. Recognizing KLRU's ultimate desire for the CTG site to be the premier Central Texas gardening site, the Information Architecture team began by examining the current navigational layout and brainstorming what additional content and browsing access points were required to serve the identified site users.

PLANT INDEX

A plant index with a database backend was a logical choice. This allows users to browse the full plant index by a variety of key access points (like plant family, bloom color, soil needs, water needs, light needs, difficulty level, etc.) or to search for a known item. The user can also perform an advanced search where it is possible to limit results by specifying multiple characteristics and receive a list of results that match all the input criteria. This list of results can be optionally clustered by various key criteria or sorted by key characteristics as well as by scientific or common name. The user may also choose to refine a search by searching within the results of a previous query. For a wireframe of the plant index search page, please see Appendix F.

This plant index represents the bulk of additional content that we recommend.

Most of the rest of the Information Architecture can be improved by rearranging existing content into the following main navigation. For a visual representation of the following recommendations, please see Appendix G.

GARDENING & LANDSCAPING

This would contain much of the information that is currently on the site that is not related to a specific episode. Based on user studies, we have also recommended the creation of some additional content. Weekly planting tips, seasonal checklists, and tips for beginners would appear in simple, bulleted form. Our studies showed that many Central Texans are interested in organic gardening and cultivating native plants. They also want specific information about soil makeup and cold hardiness when planning out their gardens. Finally, general tips and information on landscaping and xeriscaping would be very valuable to users.

TV SHOW

This is the access point for all things related to the scheduled TV show, from schedule and general show information to the ability to browse videos of selected show segments. From here, users may also create tags or comment on videos if they are registered and logged in.

EVENTS

All information regarding events goes here. See the Web 2.0 portion for more info on our recommended method of including event information.

RESOURCES & VENDORS

This pools information that is already available on other parts of the site into a single, logical place. Content on Growing Green and recommended vendors, books, and websites would be listed here.

BLOG

The blog link would simply link to the Wordpress Blog already created for Central Texas Gardener.

PHOTOS

The photos link would link to the Central Texas Gardeners Flickr page.

GLOBAL NAVIGATION

These navigational elements are present on every page.

- 1. SEARCH**

A simple keyword search box is present on each page. Any search term entered will be matched against the text and metadata of the entire site.

- 2. SITE MAP**

Textual site maps aid in site accessibility, lend themselves to better indexing by search engines, and provide a way that some users prefer to access content.

- 3. CREATE ACCOUNT/LOG IN**

Users are required to create an account in order to post comments or tags, as well as to save plants to a folder, annotate for personal use, or experiment with creating a virtual garden.

- 4. FAQ**

The FAQ can be generated from any questions received from site users and also by using your best guess as to what questions they may have.

5. KLRU HOME

This is a standard way for users to navigate to the parent site

6. CONTRIBUTE/BECOME A MEMBER

A place for users to get information or commit to membership/contribution

7. ABOUT CENTRAL TEXAS GARDENER SITE

This is information specifically about the Central Texas Gardener site, as opposed to KLRU-wide information.

8. CONTACT

HOME PAGE LAYOUT

(Main & Global navigational elements are discussed in prior section.)

ROTATING FEATURES

The redesigned home page is used to highlight many of the most interesting and useful content on the site. All six of the recommended features are generated dynamically, pulling from data in the database, so they will refresh and rotate with each new page visit. Please see Appendix H. The top three features: featured plant, featured video, and featured garden, are all image based while the bottom three features were conceived as being more textual in nature. This should create a nice visual impact for the page.

We recommend setting the features apart very clearly so that the user sees immediately that there are six disparate content types to be explored.

Utilizing white space and borders should help do this. Central Texas Gardener may also want to consider a color-coding scheme throughout the site where certain areas of the site are consistently associated with a certain background color. This can be a good way to orient users to where they are in the site. But it does have to be executed well in order to avoid looking amateurish. If, in the design-build phase, it becomes clear that six features cannot be included in an attractive, meaningful way, and without looking busy, CTG would have the option of scaling back to four features. Central Texas Gardener could choose which of the content types it most wants to promote. *Our recommendation would be to leave Featured Plant, Featured Video, Featured Event, and To Do This Week.* This maintains a nice balance between image and text and leaves the features that will either be frequently updated or able to scroll through a wide variety of featured objects before repeating.

USER-GENERATED CONTENT

The user-generated content is grouped together and may look nice set apart by a slightly different background shade. As noted before, the Blog and Photo links go to either the Wordpress blog or the Flickr page, both of which are places that a user can comment or upload additional content. The Tag Cloud is generated from the tags users give to videos on the site and it provides an additional access point to important content that may not be full-text searchable. Central Texas Gardener could also consider allowing tagging of plants in the plant index, although this may add less value because all the metadata associated with plants, from bloom color to soil needs, is already fully indexed.

OBJECT LEVEL DETAIL LAYOUT

The object level detail page consists of two parts: the plant information (Appendix I) and the search interface (Appendix F).

The plant information includes a picture of the plant, a piece of simple introduction, tags assigned to the plant if applicable, all metadata as shown in the ERD and site blueprint, and user comments. Users would be able to click any tag to retrieve all plants assigned the same tag. Metadata would also be clickable, linking to all plants sharing the same metadata. Users are able to add plants to their personal folders in order to add personal notes or build a virtual garden.

The search interface is integrated into the object level detail page so that users may begin a new query without having to exit a page with plant level detail.

PLANT SEARCH INTERFACE

SIMPLE SEARCH

Just as on Amazon.com, users can input anything to search including plant name, soil type, and color.

ADVANCED SEARCH

Based on the ERD, users can search by

- Plant type: flower, shrub, tree, grass, edible, perennial, annual, etc.
- Light: little, moderate, much.
- Water: little, moderate, much.
- Soil type: clay, stone, etc.
- Bloom season: early/mid/late spring/summer/fall/winter.
- Flower color: pink, red, orange, yellow, purple, green, purple, etc.
- Leaf color: silver, blue, green, purple, etc.
- Shape: oval, etc.
- Difficulty: very, somewhat, not at all.
- Special features: fragrant flowers, Texas native, pest tolerant.

ONLINE VIDEO

Instead of using YouTube.com to host video segments of Central Texas Gardener then embed them on the CTG website, *we recommend that video segments be hosted by KLRU or by an online video hosting and streaming service provider.*

CONTENT DELIVERY

There are two ways in which video content can be delivered over the Web: streaming and downloading.

Streaming video means that the user watches the video as it is streaming off of a server. Streaming is good because it helps to protect copyright, as the majority of users are unable to download the video to their own computers. However, streaming can cause a large amount of server strain because every time a user watches a video the content has to be re-streamed from the server, instead of being able to be played from the user's browser's cache.

When a user accesses a Downloadable video, video content is downloaded to the browser's cache. The advantage of downloadable video is that users can store the video on their own computers and then watch and re-watch them whenever they want. However, downloading video does not provide any copyright protections, making it easier for users to re-distribute the video and even re-mix it.

Either is a viable option for KLRU. *We recommend using streaming video if having control of the copyright and distribution of the video segments is important.*

VIDEO HOSTING OPTIONS

There are a number of companies on the Internet that do video hosting. As far as we could tell, most of these companies provide options for both streaming and for downloading video in a variety of common online video formats. We believe that if KLRU is not able to host the video segments for the CTG website on their own servers, they could approach one of these companies to see if the company will donate space or be willing to work out a trade.

Here are a few video hosting companies that we believe would be good candidates

- Mirror Image – <http://www.mirror-image.com/>
- Panther Express – <http://www.pantherexpress.net/>
- Limelight Networks – <http://www.limelightnetworks.com/>
- Buckalew Media (local to the Austin area) – <http://www.buckalewmedia.com/>

WEB 2.0

As touched upon earlier, we came up with a number of ideas to add interactivity, functionality, and portability to the CTG website and CTG content. These ideas include the ability for users to add tags and comments, the ability for users to store clips and tips, a virtual garden, an Events calendar with RSS feeds, a Blog with RSS feeds, and Podcasts.

We recommend that KLRU build in functionality for users to be able to create a personal account on the CTG website. By registering, users will gain access to many of the interactive ideas discussed below. Furthermore, KLRU will be able to run diagnostics on the size of the community and how frequently users are contributing, which can help determine popular features of CTG and advance cases for funding based on popularity.

TAGGING

The obvious items for users to tag are the videos and regular features: plant-of-the-week, featured gardens, Skip's Tips, etc. The types of tags can vary from plant type(s) to seasonal indicators and would be used to group similarly tagged items in user searches of the site. We propose having some "preset" tags linked to indicators from the database as there are a lot of repeating entity attributes there that would make good tags, and this might be a way to merge controlled vocabulary and taxonomy.

WHO CAN TAG?

We came up with three potential levels of users who can add tags to the appropriate pages of the CTG site.

ANYONE AND EVERYONE – anyone who visits the site can create tags without the need to be logged in.

Pros:

- Not everyone likes or wants to register on a site in order to interact with it
- Possibly a broader group of people creating tags than those who would want to create an account

Cons:

- High possibility of spam tags that have nothing to do with what is being tagged and are entered maliciously.
- High possibility of inaccurate tags – tags that do not have to do with what is being tagged or are spelled wrong.

REGISTERED USERS – only users who are logged into the site via a personal profile can add tags.

Pros:

- Variety of tags are more likely to be accurate
- Involves users who want to be part of a community
- Good chance these users are very knowledgeable and able to come up with tags that were not thought of by administrators.
- Less chance of inaccurate tags
- Ability to monitor users (and possibly delete troublemakers)

Cons:

- Not everyone wants to register for a site, even if registration is free
- Possibility of a few highly opinionated people taking over

SITE ADMINISTRATORS – only CTG staff are able to create, edit, and delete tags.

Pros:

- Ability to have a controlled vocabulary of tags
- Assurance that the same tags will be used across entire site

Cons:

- More work for the admins
- Defeats the purpose of user interaction
- Controlled vocabulary may not include everything a user would search for/want to use

Recommendation: We recommend that registered users should be able to create tags and edit the ones that they create. However, we also recommend that site admins add a few tags to each item when it is going up so that users have an idea of the content of the piece. Furthermore, admins should be able to delete tags if they deem something inappropriate.

COMMENTS AND RATING

Going along with the tagging idea, is the idea of comments. Registered users could leave comments and ratings on videos, tips, recipes, etc. This would allow the users to provide feedback to the CTG staff about how much they like or dislike a particular piece of the site and also inform the show hosts how well received their tip or recipe is.

Furthermore, as we recommend allowing registered users to save pieces of the site to a personal folder, there should be a way that they can then make notes about why they saved it or what value it has for them.

COMMENTS

PUBLIC COMMENTS

Public Comments are defined as comments that registered users can leave about segments of the site, such as the tips, recipes, and videos, which would be viewable to everyone. The idea about this feature is that users can respond to a tip or video to say if they liked it, if it worked for them, etc.

Comments could be replied to by other users. Hopefully there won't be a rash of "Me too" style replies.

We recommend having some way for site administrators to be notified when a new comment is made so that comments can be policed to help detract from malicious commenters.

NOTES/ANNOTATIONS OR PRIVATE COMMENTS

Going along with our proposal to be able to store features of the site into a folder, is the idea of being able to add notes/annotations to these stored features. This would allow users to make notes about what they like or may want to go back to without having these comments become public.

RATINGS

Rating could be done by either everyone or only by registered users. There is less of a chance of ratings being spammed, but it still might be better to have the control and tracking mechanisms that would be in place by restricting rating to registered users.

RATING OF SITE ELEMENTS

Just like comments, ratings could be appended to Skips Tips, Video clips, and other website features. The idea is that there would be a question at the end of each feature that asks the user "Did this work for you?" and gives them the option of clicking "Yes" or "No". The advantages to this rating system is that it is simple since it just aggregates the users' responses, which could then be used to create and display a list of the top tips/clips/etc. However, we do worry that it might be too simple and may not be as informative as a 1-5 Likert scale.

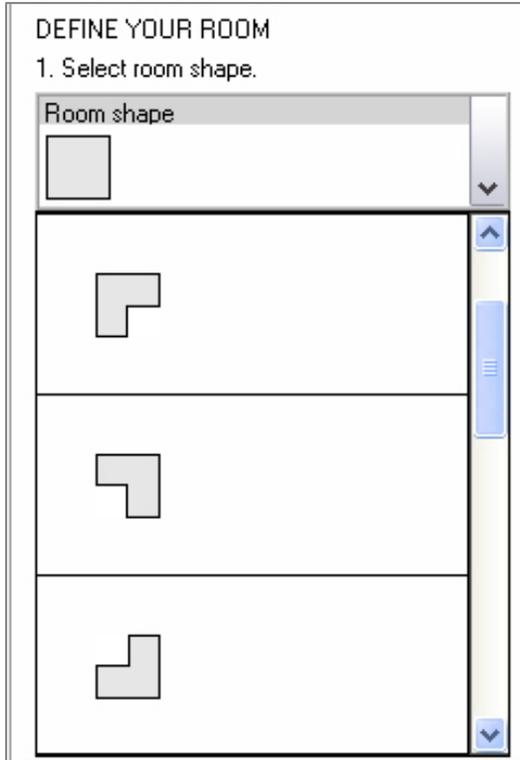
RATING OF COMMENTS

Although there are some sites where users can rate other users' comments, for CTG we decided that it wasn't needed. We figured that if people agreed or disagreed with a comment, their reply to the comment would clearly indicate this.

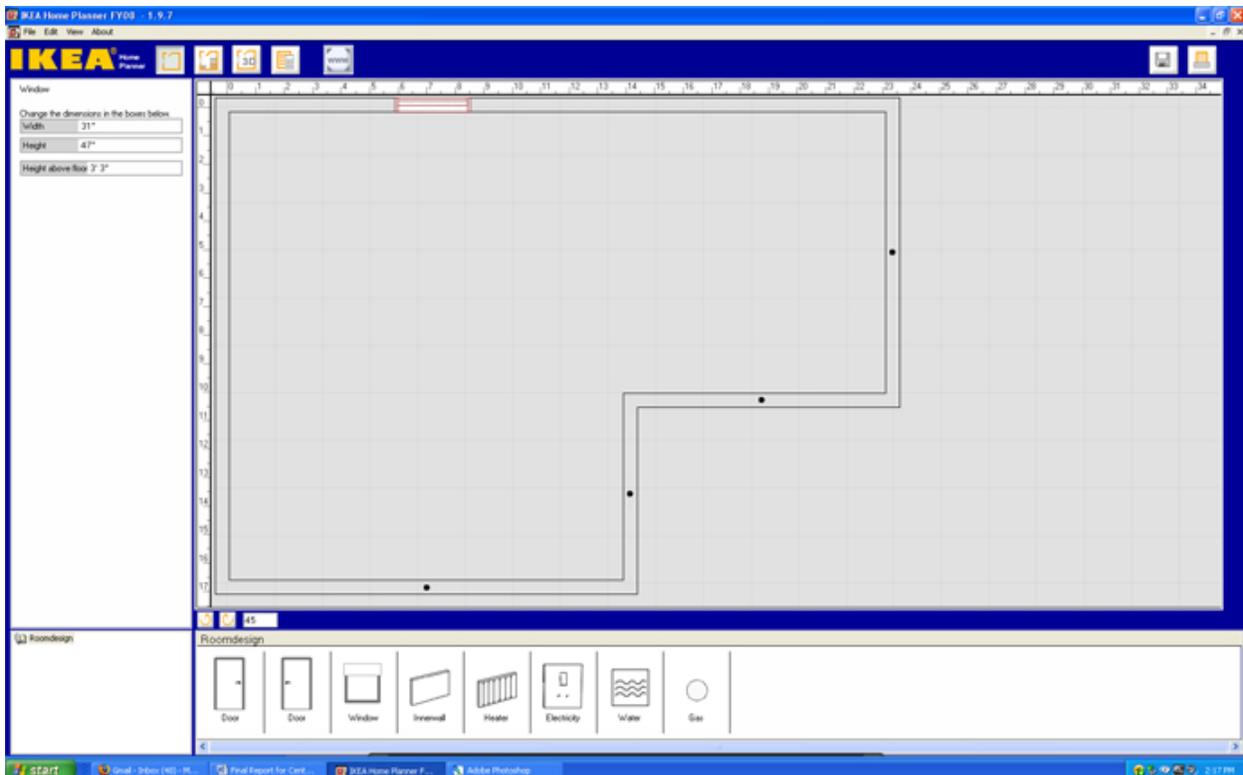
VIRTUAL GARDEN

Since many people turn to CTG's site for advice on gardening, we would like to recommend a Virtual Garden tool that would enable users to visualize their gardening options. We are using IKEA's Home Planner software (http://www.ikea.com/ms/en_US/rooms_ideas/splashplanners.html) as a model for this tool.

IKEA's software allows you to input the dimensions of your kitchen, bedroom, or whatever room you are interested in decorating. It also allows you to select the general shape of your room (square, corner room, etc.).



Once you have recreated a model of the room you would like to decorate, you can add furniture and cabinetry available from IKEA's current catalog. Since the program knows your room's dimensions, it allows you to see what size of furniture will fit best in your room.



Using this concept, we propose that CTG management develop a similar tool for gardens. With this tool, people can input the size and dimensions of their garden (or specific area of their garden), and then using information from the plant database, can bring in different levels of plants to see what combinations will look good and will work together. For example, users could select a type of ground cover (which would be represented by an illustration that resembles the color/shape of the ground cover plant), flowers and hedges that they might like to see together. Using the metadata from the plant database, users could determine which combinations work best together (ground cover, flowers and hedges that need similar soil types and sun exposure, for example).

IKEA's software is proprietary, but a similar software program could be developed using C++.

EVENTS CALENDAR

An events calendar would allow for updates of CTG and other Central Texas gardening events which then could be fed into the web site. Furthermore, a good events calendar should allow users to subscribe to an RSS feed for events of interest to them.

GOOGLE CALENDAR

CTG is already testing out using Google Calendar, but there are several problems with this tool. The most obvious issue is that the calendar does not offer full display of events. Because Google Calendar cannot be resized to fit CTG's site, the text in the calendar looks awkward and users cannot get a clear view of upcoming events. In addition, you cannot currently add or delete calendars through the API.

On the positive side, Google Calendar does allow feeds of events to be retrieved in either Atom or RSS formats. Separate event comment feeds are available. Users also now have more options for syncing their online calendars and iPhones with Google Calendar. There are also several options available for adding Google Calendar to CTG's web site (by embedding using some simple HTML, using JSON output from the API to display events using client-side JavaScript, or using your favorite programming language to call the API directly from your server-side code). Google has also introduced more options for printing Google Calendar. While Google Calendar does have some obvious shortfalls, Google is constantly working to improve this tool.

KRONOLITH

Kronolith is a calendar program produced as part of the Horde application suite. (Horde is an open source software developer.) Kronolith is currently being used by the iSchool to manage its events on the web (<http://www.ischool.utexas.edu/events/month.php>).

The API can work with any backend, but they currently provide SQL (abstracted to support most databases, including MySQL, PostgreSQL, Oracle, and MSSQL via PEAR DB), and Kolab backend libraries.

Kronolith is much more visually appealing than Google Calendar. The tool provides an option for feeding events into a page or seeing a monthly calendar with events on a full page. You can also organize your monthly events in different formats, such as lists, which would provide a useful tool for items such as "To Do This Month."

More information on Horde's Kronolith calendar application can be found at <http://www.horde.org/kronolith/>.

BLOG

KLRU is already testing out the idea of using a blog to disseminate information and network with the CTG community. We propose the following possible topics for future blogs as well as a number of suggested RSS feeds that can be created from the blogs posted.

Potential blog topics:

- Experiences at gardening events mentioned on the show/site
- Results from attempting to utilize content from the show/site
- Interactions with other Central Texas garden bloggers (there are many, i.e. <http://www.penick.net/digging>, <http://www.rockrose.blogspot.com>, <http://gardeninginaustin.blogspot.com>)

RSS feeds:

- whole blog
- blog by category (event, attempted content use, interactions)
- blog comments
- announcements/news
- events (calendar tie-in?)

PODCASTS

To work, a podcast needs three things: Content, RSS Feed, and Distribution. A podcast can be either audio only or video with audio. Audio only is great for commuters who drive to work. Video with audio might be more appealing to users who take the bus and/or want to watch the show instead. As with all online content, podcasts will have to be stored on a server, so KLRU will have to take this into consideration.

The content should come from different sections of the show. We propose that the following sections would make good podcasts:

- Question of the week
- Skip's tips
- Trisha's Recipes
- John's Formulas
- Interview
- Garden of the week

We believe that all of the sections would work well as being both audio only and video with audio podcasts, with the exception of the Garden of the Week segment which would only work as a video with audio podcast due to its visual nature.

RSS feeds should be easy to set up as there are many online tutorials to help someone do this. There should be RSS feeds for the audio only versions and the video with audio versions. It is our recommendation to only have the two RSS feeds, so that the consumer will be downloading all of the segments and then if s/he does not want to listen/watch one of the segments s/he can simply delete it. However, CTG staff should be willing to add more RSS feeds if they find out that a large majority of users only want to watch specific segments and do not wish to download other ones.

The podcasts should be listed on major podcast places, but there should also be a way to subscribe to the podcasts from the CTG page.

Note: Podcasts are downloaded content, which means that they are stored on the user's computer. If copyright of the show is a major issue, KLRU might want to weigh the options of only providing audio podcasts.

WORKFLOW

The following is our proposed idea for a workflow:

1. The segment is recorded
2. The segment is digitized (if not already)
3. The audio is pulled out of video for audio podcasts
 - a. use iMovie to "extract audio"
 - b. open Garage Band
 - c. create a "no effects" track in Garage Band
 - d. drag audio track from iMovie to "no effects" track in Garage Band
 - e. add whatever is needed for podcast identification
4. The files are placed online somewhere
5. The RSS feed is updated

APPENDIX A: USER PERSONAS

<p>Amanda Greenthumb <i>Grew up in San Deigo, CA.</i> <i>BS in Computer Science, with a minors in Art History from UCLA.</i> <i>Works for a local computer development company.</i></p>	 <p>http://www.flickr.com/photos/novembermoon/1146765193/</p>	<ul style="list-style-type: none"> • <i>Java programmer for a computer software company.</i> • <i>Hobbies: Going to museums, playing with her dogs, hiking, watching Grey's Anatomy.</i> • <i>Age 32, Female, in a committed relationship</i> • <i>Two dogs.</i> • <i>Lives in Austin, TX</i>
<p>Background</p> <p>After years of living in apartments, Amanda and her partner, Margaret, just bought their first house. Amanda is very excited to have a lawn and a place where she can grow a garden. However, she is nervous because she didn't do much gardening as a child, she's had a few houseplants before, but none recently and has never even tried to garden in Texas before. She was watching TV a few months ago and caught a bit of Central Texas Gardener. Since then she has visited the web site once or twice and watched a few more episodes of the show.</p> <p>Goals</p> <p>Amanda and Margaret really love their new house and hope to have a lovely garden to match it. Amanda would like to learn what she can do for her garden to help it flourish in Texas as well as to find ways to keep their two dogs from causing too much damage. One day she hopes to be able to host a dinner party in her back yard and have everyone exclaim how beautiful her garden is.</p>		<p>"I would love to have a beautiful garden someday. I'm worried that I don't have the time or experience to make this dream come true."</p> <p>- Amanda Greenthumb</p>
<p>Scenario 1</p> <p>Amanda saw an episode of CTG on TV the other day. She remembers a little bit about the featured garden of the week, but was more interested in Skip's Tips for that week. She would like to be able to go online and find out about the episode. She wants to watch the Skip's Tips segment again because it is easier for her to remember what to do when she watches video. She would like to be able to browse through a few of the recent Skip's Tips to get an idea for what she should be doing for her garden at this time of year.</p>	<p>Scenario 2</p> <p>Amanda has started to plant her garden and is looking to add a variety of color. She doesn't know much about plant names, but would like to be able to go online, browse by color, and find out which plants of different colors would be good for her garden.</p>	

<p>Walter Gailard <i>Grew up in Dallas, TX.</i></p> <p><i>Double majored in Floriculture and Plant and Environmental Science in Texas A&M.</i></p>	 <p>Image from http://www.flickr.com/photos/greenergrass/248015840/</p>	<ul style="list-style-type: none"> • <i>Owner of the Red Sun</i> • • <i>Hobbies: fishing and jogging.</i> <ul style="list-style-type: none"> • <i>Age 55, Male, married</i> • <i>Two daughters and 3 grandchildren</i> • <i>Live in Round Rock Texas</i>
<p>Background</p> <p>Walter showed his strong interest in growing plants in his backyard from a very young age. His mom then took him regularly to the community garden by their house and let him play and grow plants there with other kids. Later he took classes such as plant biology and environmental science in high school and enjoyed learning how nature factors, for example, light and humidity, affect plants. After getting his Bachelor degree in floriculture and Plant and Environmental Science in Texas A&M, he decided to open a nursery named Red Sun, taking care of plants, selling them, and helping people with gardening. Nowadays the Red Sun has become the most popular nursery in the Austin Round Rock area. At the same time Walter has never stopped taking good care of his own private garden at home no matter how busy he is with work.</p> <p>Goals</p> <p>Even though he is already an expert, Walter sometimes gets questions from various clients to which he has no answer. He wants to find the answers to those questions in the CTG website as quickly as possible. In addition, he sometimes collects gardening tips on a specific topic such as soil and he needs to find as much as information concerning that topic through the website.</p>		<p>“I just want to find information about my specific questions as quickly as possible.”</p> <p>- Walter Gailard</p>
	<p>Scenario 1</p> <p>Debbie is looking for one specific flower she saw in her friend’s yard. It is light purple with great smell. She cannot remember the exact name of the flower but she thinks she could easily identify it if she sees it. She then stopped by the Red Sun and asked Walter about it. Walter then showed her all the plants he had in the nursery with purple flower and good smell. Unfortunately it was not in them and Walter had no idea what the flower was. They then went back to the office and Walter is going to find it on the CTG website and let Debbie know what it is called and how to take care of it. He also wants to find featured gardens with this flower just to see how it matches with other plants.</p>	<p>Scenario 2</p> <p>Walter was invited to be a guest speaker by the local radio station on its Sunday Gardeners program and he would like to talk about how to control the pest since it is the time when pests are coming out. He has pretty much content to talk about from his past experience with pest control. But he still want to do a little bit research online to get more information on it so that he would deliver a speak covering almost every possible question the audience might have about pest control.</p>

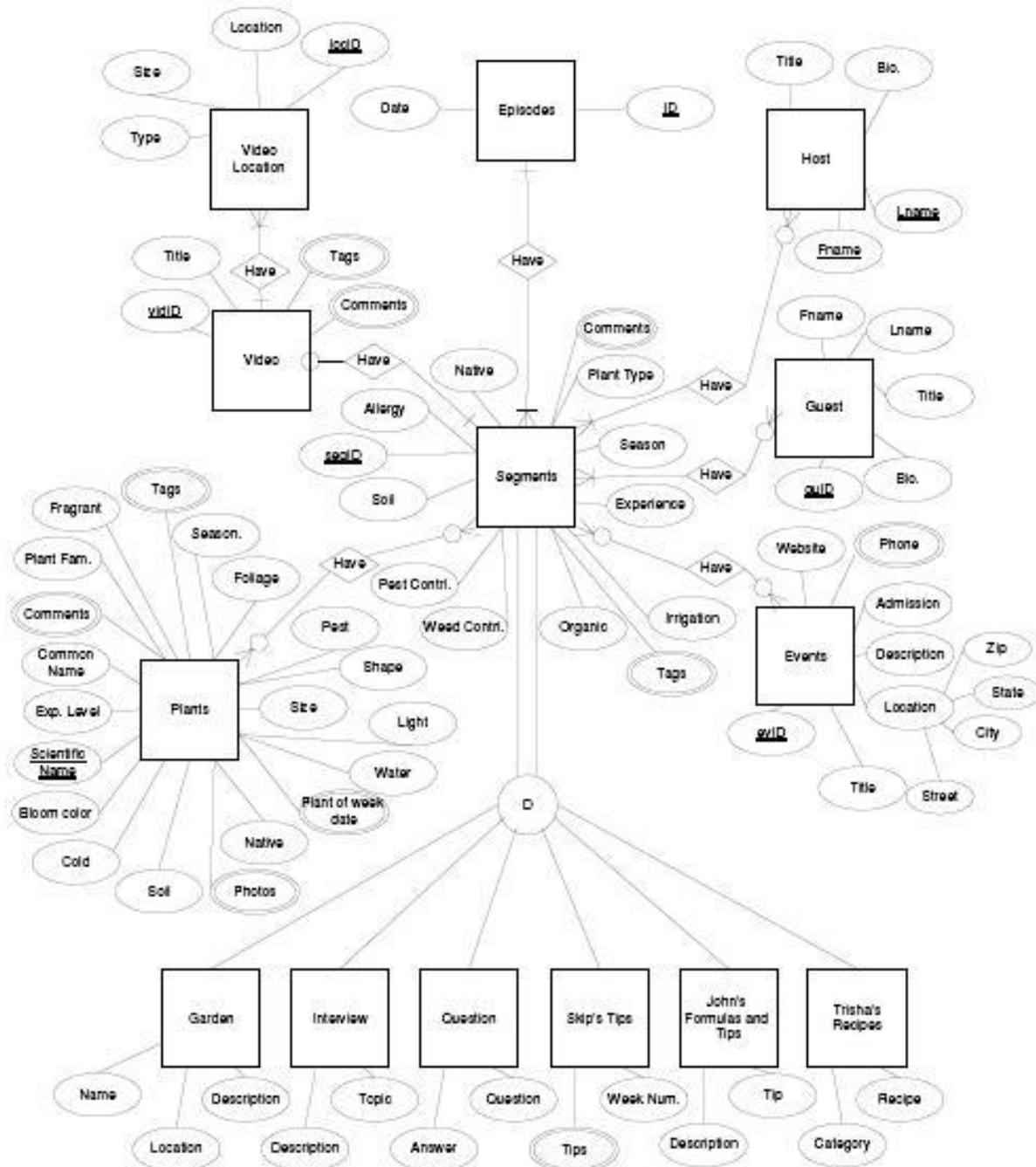
<p>Suzy Suburbs <i>Grew up in Austin, TX.</i> <i>Majored in Journalism at the University of Texas at Austin.</i></p>		<ul style="list-style-type: none"> • <i>Marketing professional</i> • <i>Hobbies: reading and knitting.</i> • <i>Age 34, Female, married</i> • <i>Two daughters</i> • <i>Lives in Pflugerville, Texas</i>
<p>Background</p> <p>Suzy’s first exposure to gardening was at a young age when she was forced to help her mom do yard work. She hated it at the time, but now that she has a yard of her own, she can appreciate the beauty of freshly-mowed green grass and neatly-trimmed hedges. She wishes she had learned more from her mother, whose “green thumb” led her to several “Best Yard” awards from her neighborhood society. Suzy always attempts to jump-start her yard, but because she’s not that knowledgeable and too lazy to put a lot of effort into something she’s not sure will actually work, she ends up quitting out of frustration. Suzy is not a novice; she has successfully maintained some flowering beds in the past. She just isn’t that confident in her gardening abilities.</p> <p>Goals</p> <p>Suzy’s goal is to get her yard in great shape, and eventually start a wildflower area in her backyard. She definitely would like to learn how to efficiently work on her yard instead of wasting time and energy on unproven efforts.</p>		<p>“Seriously. I do not have a lot of time or energy to waste fooling around in my yard.” - Suzy Suburbs</p>
	<p>Scenario 1</p> <p>Suzy’s grass is brown. She wants to buy some grass seed that her friend in Seattle told her about, but she’s not sure if the same type of grass would do well with Central Texas’ weather and soil. She saw an episode of CTG where Skip mentioned some grass that’s hearty and grows well in Central Texas, but she can’t remember which episode it appeared in (or even the month the show aired). She would like to be able to either find the episode she’s looking for by browsing through an episode guide which contains a synopsis of each show; browsing through Skip’s Tips segments (also with synopses); or perhaps searching through an index of grasses that are native to the Central Texas area.</p>	<p>Scenario 2</p> <p>Suzy has been thinking a lot about creating a wildflower area in her large back yard. She knows wildflowers are seasonal, but that’s about it. She thinks she remembers an episode of CTG that was about wildflowers, but she can’t remember which episode or which segment. She would like to be able to do a search on the CTG web site for “wildflowers” which will lead her to the episode. It might be nice to also have audio snippets of the show available for download so that she can learn more about wildflowers and gardens on her long commute from Pflugerville to the downtown area.</p>

APPENDIX B: METADATA

Based on our personas and research, we propose the following metadata for the plant index:

Scientific name	Cold hardiness
Common name	Light needs
Plant family	Water needs
Bloom color(s)	Tolerant of pests?
Bloom season	Fragrant?
Preferred soil type(s)	Gardener experience level
Foliage characteristics	Plant of the week date(s)
Size of plant	Photographs of plant
Shape of plant	User generated comments
Texas Native?	User generated tags

APPENDIX C: ENTITY RELATIONSHIP DIAGRAM



APPENDIX D: DATA DICTIONARY

ENTITIES

Entity Name	Description	Aliases	Occurrence
Episodes	Term used to refer to an episode of Central Texas Gardener (CTG).		An episode has one or more segments.
Segments	Term used to refer to parts of an episode of CTG.		A segment has an associated episode, a subtype (Garden, Interview, Question, Tips, Formulas, or recipes) and one or more hosts. A segment may have an associated video clip and one or more plants, guests and events.
Garden	Term used to describe the subclass of Segments, which refers to a featured garden.		A garden segment has an associated episode and is presented by one or more hosts. A garden segment may refer to one or more plants, events or guests, and may have an associated video clip.
Interview	Term used to describe the subclass of Segments, which refers to an interview.		An interview segment has an associated episode and is performed by one or more hosts. A tips segment may refer to one or more plants, events or guests, and may have an associated video clip.
Question	Term used to describe the subclass of Segments, which refers to the question of the week.		A question segment has an associated episode and is presented by one or more hosts. A question segment may refer to one or more plants, events or guests, and may have an associated video clip.
Tips	Term used to describe the subclass of Segments, which refers to "Skip's Tips"		A tips segment has an associated episode and is discussed by one or more hosts (typically one: Skip). A tips segment may refer to one or more plants, events or guests, and may have an associated video clip.
Formulas	Term used to describe the subclass of Segments, which refers to "John's Formulas & Tips"		A formulas segment has an associated episode and is discussed by one or more hosts (typically one: John). A formulas segment may refer to one or more plants, events or guests, and may have an associated video clip.

Entity Name	Description	Aliases	Occurrence
Recipes	Term used to describe the subclass of Segments, which refers to “Trisha’s Recipes”		A recipes segment has an associated episode and is discussed by one or more hosts (typically one: Trisha). A recipes segment may refer to one or more plants, events or guests, and may have an associated video clip.
Plants	Term used to describe plants featured in a segment.		A plant appears in one or more segments.
Video	Term used to refer to a video clip of a segment.		Video clips have an associated segment.
VLocate	Term used to refer to the location of a video clip.		Video locations have
Host	Term used to describe individuals presenting a segment.		One or more hosts present one or more segments.
Guest	Term used to describe guests appearing in a segment.		One or more guests may appear in one or more segments.
Events	Term used to refer to “Upcoming Events.”		One or more events may be mentioned in one or more episodes.

RELATIONSHIPS

<i>Entity Name</i>	<i>Relationship</i>	<i>Entity Name</i>	<i>Cardinality</i>	<i>Participation</i>
Episodes	Have	Segments	1:M	Mandatory/Mandatory
Segments	Have	Plants	1:M	Optional/Optional
Segments	Have	Video	1:1	Optional/Mandatory
Segments	Have	Host	M:N	Mandatory/Optional
Segments	Have	Guest	M:N	Optional/Mandatory
Segments	Have	Events	M:N	Optional/Optional
Video	Has	VLocate	1:M	Mandatory/Mandatory

ATTRIBUTES

Entity	Attributes	Description	Notes	Nulls	Multi	Data Type and Length
Episode	EpID Date	Episode ID Air date	PK	No No	No No	Autonumber: Long Integer Time/Date: Short Date
Segment	SegID Experience Allergy Irrigation Organic Pest control Soil Weed control Native Plant Type Season Comments Tags	Segment ID Gardener experience level Re: Allergy? Re: Irrigation? Re: Organic? Re: Pest control? Re: Soil? Re: Weed control? "Nativity" Type of plant Relevant season(s) User generated comments User generated tags	PK (beginner, intermediate, advanced) Does this segment have to do with pest control? Does this segment have to do with weed control? (native or non-native) (tree, shrub, lawn, bulb, perennial, flowering, vegetable, fruit, herb, etc...) (winter, spring, summer, fall)	No Yes No No No No No No Yes No Yes Yes Yes	No No No No No No No No No No No Yes Yes Yes	Autonumber: Long Integer Text: 20 variable characters Yes/No Yes/No Yes/No Yes/No Yes/No Yes/No Yes/No Text: 20 variable characters Text: 255 variable characters Text: 255 variable characters
Question (subclass)	Question Answer	Text of question Text of answer		No No	No No	Text: 255 variable characters Text: 255 variable characters
Tips (subclass)	Tips Number	Text of tip Week number		No No	Yes No	Text: 255 variable characters Text: 20 variable characters
Garden (subclass)	Name Description Location	Name of garden Brief description Location of garden		No No No	No No No	Text: 50 variable character Text: 255 variable characters Text: 50 variable characters
Formulas (subclass)	Tip Description	Text of formula/tip Brief description		No No	No No	Text: 255 variable characters Text: 255 variable characters
Interview (subclass)	Topic Description	Topic of interview Brief description		No No	No No	Text: 50 variable characters Text: 255 variable characters

Entity	Attributes	Description	Notes	Nulls	Multi	Data Type and Length
Recipes (subclass)	Recipe Category	Text of recipe Recipe Category	(garden cuisines, herbal drinks, herbal body treatments, herbal household helpers, plants, books, crafts, insect control)	No No	No No	Text: 255 variable characters Text: 30 variable characters
Host	Fname Lname Title Biography	Host's first name Host's last name Host's title Host's biography	PK PK	No No Yes Yes	No No No No	Text: 30 variable characters Text: 30 variable characters Text: 30 variable characters Text: 255 variable characters
Guest	GuiD Fname Lname Title Biography	Guest ID Guest's first name Guests's last name Guest's title Guest's biography	PK	No No No Yes Yes	No No No No No	Autonumber: Long Integer Text: 30 variable characters Text: 30 variable characters Text: 30 variable characters Text: 255 variable characters
Video	VidID Title Comments Tags	Video ID Title of video User generated comments User generated tags	PK	No No Yes Yes	No No Yes Yes	Autonumber: Long Integer Text: 30 variable characters Text: 255 variable characters Text: 255 variable characters
VLocate	LocID Location Type Size	Video location ID Where video file is located Video format Video size	PK	No No No No	No No No No	Autonumber: Long Integer Text: 30 variable characters Text: 30 variable characters Text: 30 variable characters

Entity	Attributes	Description	Notes	Nulls	Multi	Data Type and Length
Events	EvID Title Location Street City State Zip Admission Phone Website Description	Event ID Event title Where the event is Street Address Admission information Contact phone number URL with more info Brief event description	PK	No No Yes Yes Yes Yes No No Yes No	No No No No No No No No Yes No No	Autonumber: Long Integer Text: 30 variable characters Text: 50 variable characters Text: 30 variable characters Text: 30 variable characters Text: 30 variable characters Text: 10 variable characters Text: 50 variable characters Text: 15 variable characters Text: 50 variable character Text: 255 variable characters
Plant	SciName ComName Family Season Color Soil Foliage Size Shape Native Cold Light Water Pest Fragrant Experience Date Photo Comments Tags	Scientific name Common name Plant family Bloom season Bloom color Preferred soil type Foliage characteristic Size of plant Shape of plant Texas Native? Cold hardiness Light needs Water needs Tolerant of pests? Fragrant? Gardener experience level Plant of the week date(s) Photographs of plant User generated comments User generated tags	PK From list From list From list From list From list From list From list From list Yes/No From scale From scale From scale Yes/No Yes/No (beginner, intermediate, advanced)	No No No No Yes Yes Yes No No Yes Yes Yes Yes No Yes Yes Yes Yes	No No No No No No No No No No No No No No No No Yes Yes Yes Yes	Text: 30 variable characters Text: 30 variable characters Yes/No Text: 30 variable characters Text: 30 variable characters Text: 30 variable characters Yes/No Yes/No Text: 15 variable characters Time/Date: Short Date Text: 15 variable characters Text: 255 variable characters Text: 255 variable characters

APPENDIX E: DATABASE INTERFACE MOCKUP

Question of the Week Data Entry Page

Please type the question of the week here

Please type the answer here

Does this segment contain information in any of the following categories? (please check those which apply):

- | | | | |
|--------------------------|---------------|--------------------------|-------------------|
| <input type="checkbox"/> | Allergies | <input type="checkbox"/> | Weed Control |
| <input type="checkbox"/> | Native Plants | <input type="checkbox"/> | Organic Gardening |
| <input type="checkbox"/> | Pest Control | <input type="checkbox"/> | Irrigation |

Please use the drop down menus to select answers to the following questions (optional):

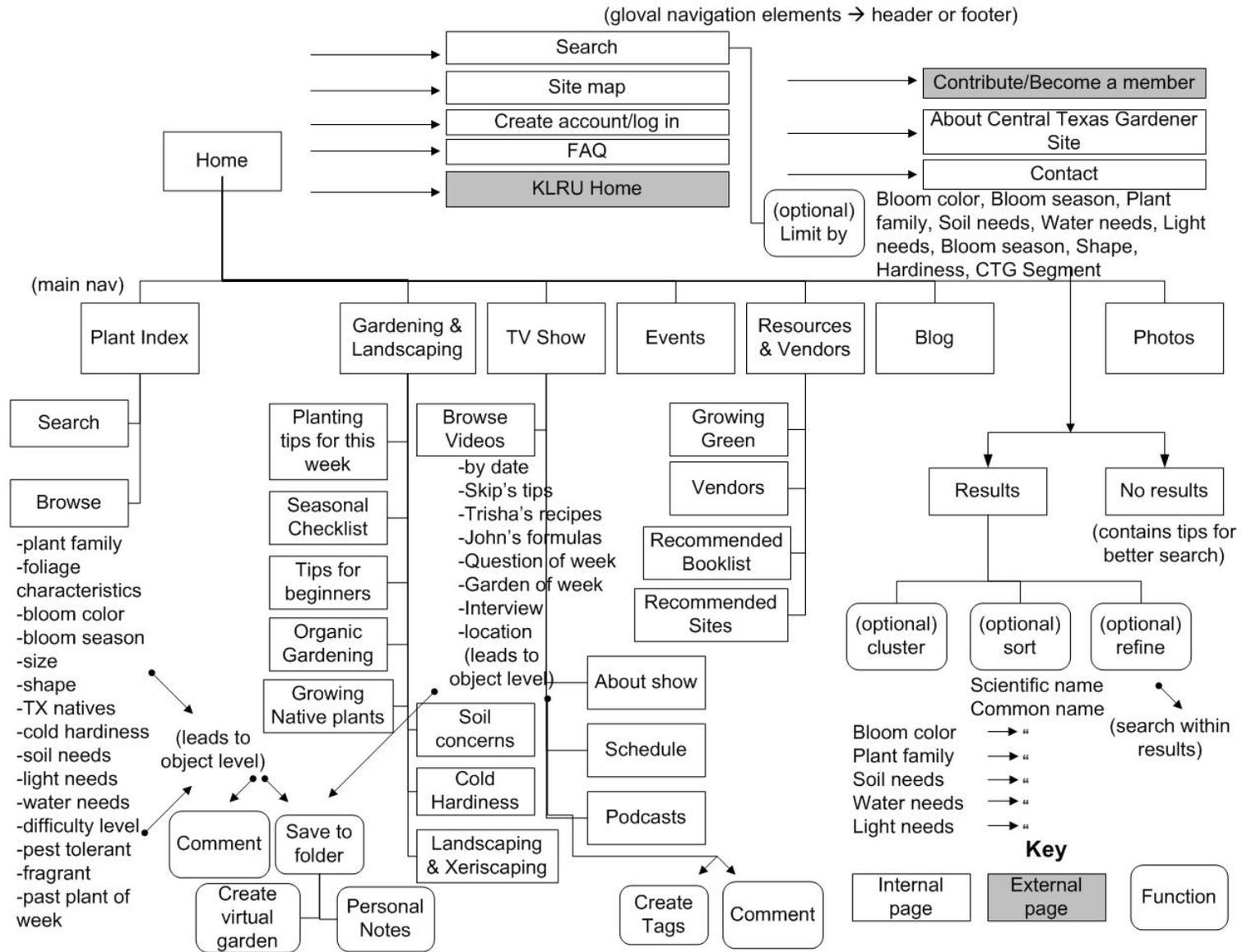
<input type="text" value="Soil Type?"/>	<input type="text" value="Gardener Experience Level?"/>
<input type="text" value="Bloom Season?"/>	<input type="text" value="Plant Type?"/>

APPENDIX F: SEARCH WIREFRAME**Simple Search**[Browse entire plant list](#)**Advanced Search**

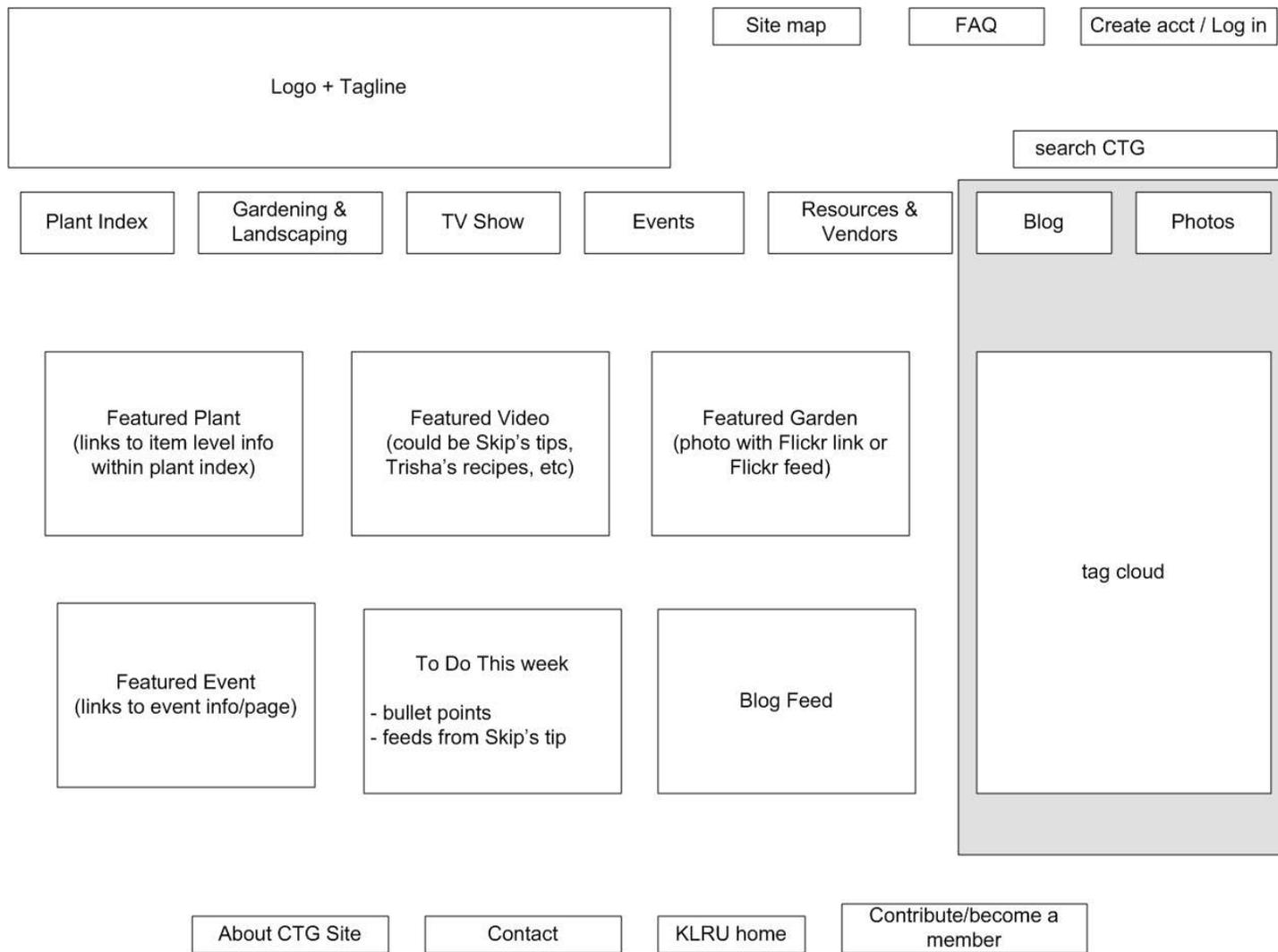
* Check all that apply

 Plant Family {check box} Water {check box} Light {check box} Soil Type {check box} Experience Level {check box} USDA Hardiness Zone {check box} Size {check box} Shape {check box} Bloom Season {check box} Flower Color {check box with visual displayed color} Foliage Color {check box with visual displayed color} Special Features
{check box; value = Fragrant flowers, Texas native, Pest tolerant} I saw the plant in {check box; value = episode name/episode NO.}

APPENDIX G: SITE ARCHITECTURE



APPENDIX H: HOME PAGE MOCKUP



APPENDIX I: OBJECT LEVEL PAGE

Icon & Tagline	Search & Utilities
Global Navigation	
Browallia speciosa 'Blue Troll'	
	Simple text description of the plant
Tag Cloud	
Metadata	
User Comments More... Add My Comment	
Save to Folder	
Footer	

Plant Search Interface