VAKA Media Calendar

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1. Project objectives

The objective of this project is to learn user interface design principles by creating special user interface between user and Google calendar.

The purpose of this application is easy and fast event creation.The application should have minimal number of user clicks for new event capturing. This should be beneficial especially at rushed times when there is not time to open your desktop/mobilecalendar application and type all attributes of new event. In addition to this, proposed application should facilitate assets and media association with events.

Fast event capturing is achieved by providing a facility to quickly create an event through pictorial capture or audio/video recording. Moreover, the application suggests information about new event(such as date, time, title, description) by extracting it from audio recording. This should save users' time and effort on event creation.

Finally, the proposed application should provide facility to synchronize all captured events with user's Google calendar.

2. Problem statement

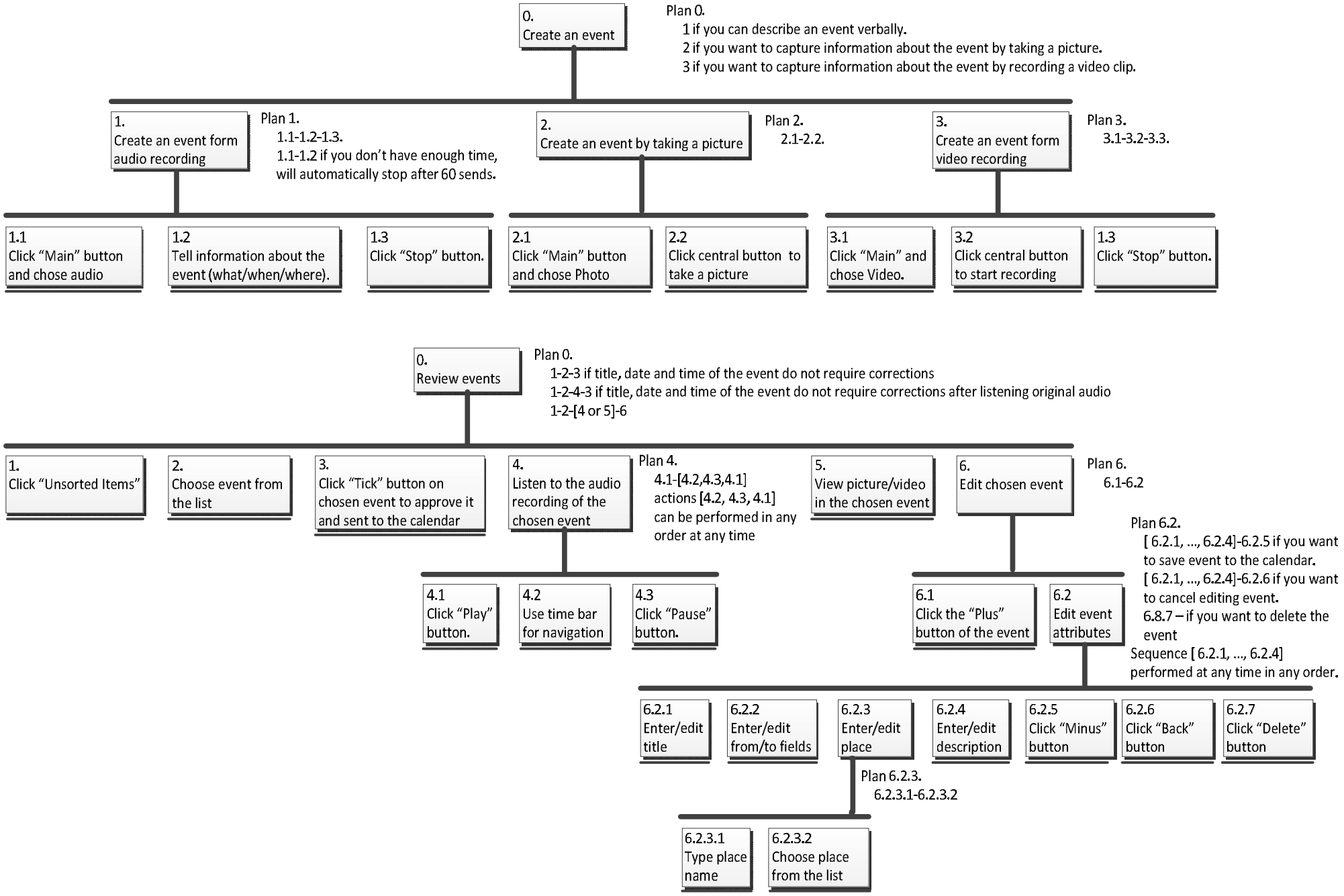
In hurried times, when information about a new event crops up, people tend to memorize its details due to lack of time for creating an event in their respective calendar application. Consequently, people end up forgetting partially or fully the precise details of the event making them miss it.

Calendar application is used by varied class of people like student, professors, business person who generally attend 5-7 events in a week. Information about new events may appear at any time in any circumstances. For example, you are driving a car and listening to a radio; at that you hear announcement about some event you are interested in, but you don't have time to open calendar application, create new event, type its entire attribute such as time, date, title. Another example is when you are walking to the meeting, you are in a hurry, and suddenly you see a poster with information about public lecture you want to attend. At that moment you simply don't have time to copy (type) all this information.

In such situations people usually try to memorize this information. This is a significant memory load, and in many cases we tend to forget about these unexpected event announcements. The proposed application is an attempt to solve this problem.

3. System design and development

Task analysis: In our project we used hierarchical task analysis technique. Final diagram is presented in the Figure below. This diagram shows two process: event creation (1st diagram) and event editing and synchronization (2nd diagram).


0.
Create an event
Plan 0.
1 if you can describe an event verbally.
2 if you want to capture information about the event by taking a picture.
3 if you want to capture information about the event by recording a video clip.
1.
Create an event form audio recording
Plan 1.
1.1-1.2-1.3.
1.1-1.2 if you don't have enough time, will automatically stop after 60 sends.
2.
Create an event by taking a picture
Plan 2.
2.1-2.2.
3.
Create an event form video recording
Plan 3.
3.1-3.2-3.3.
1.1
Click "Main" button and chose audio
1.2
Tell information about the event (what/when/where).
1.3
Click "Stop" button.
2.1
Click "Main" button and chose Photo
2.2
Click central button to take a picture
3.1
Click "Main" and chose Video.
3.2
Click central button to start recording
1.3
Click "Stop" button.
0.
Review events
Plan 0.
1-2-3 if title, date and time of the event do not require corrections
1-2-4-3 if title, date and time of the event do not require corrections after listening original audio
1-2-[4 or 5]-6
1.
Click "Unsorted Items"
2.
Choose event from the list
3.
Click "Tick" button on chosen event to approve it and sent to the calendar
4.
Listen to the audio recording of the chosen event
Plan 4.
4.1-[4.2,4.3,4.1]
actions [4.2, 4.3, 4.1] can be performed in any order at any time
5.
View picture/video in the chosen event
6.
Edit chosen event
Plan 6.
6.1-6.2
4.1
Click "Play" button.
4.2
Use time bar for navigation
4.3
Click "Pause" button.
6.1
Click the "Plus" button of the event
6.2
Edit event attributes
Plan 6.2.
[6.2.1, ..., 6.2.4]-6.2.5 if you want to save event to the calendar.
[6.2.1, ..., 6.2.4]-6.2.6 if you want to cancel editing event.
6.8.7 – if you want to delete the event
Sequence [6.2.1, ..., 6.2.4] performed at any time in any order.
6.2.1
Enter/edit title
6.2.2
Enter/edit from/to fields
6.2.3
Enter/edit place
6.2.4
Enter/edit description
6.2.5
Click "Minus" button
6.2.6
Click "Back" button
6.2.7
Click "Delete" button
Plan 6.2.3.
6.2.3.1-6.2.3.2
6.2.3.1
Type place name
6.2.3.2
Choose place from the list

Usability analysis

Efficiency: The application aims to make a calendar event entry as fast as possible with minimum number of clicks and screen redirections. It will provide a feature to make a voice entry or a pictured entry for an event which would automatically be converted to the event structured text. This reduces the typing load from the user and gives an option to make an event entry anytime anywhere.

Effective to Use: By bypassing the typing load during event creation by alternating it with voice input or a picture input the application gets very effective to use for users who are in a hurry or are not able to type at that particular time but would like to take a snapshot for the event as a memory and add details later. We followed Fitt's Law: using pie menu which provides equal accessibility to all the menu options and is placed very close to the user's thumb.

Safe to Use: The application instead of directly mapping the generated event text for the audio provides the suggestions to the user who later on either approve the suggestions or modify the suggested details. In addition to this, ability to access the audio recording for that even assures the user that the entry being made in his/her calendar is consistent with the details he/she provided.

Have a good Utility: The application will be of use for different type of users. The users who are very busy like students, professors, working professionals who mostly are in rush can make a very quick event entry plus add some snaps and video for future memory.

It would of great utility while driving because now, to make an event entry just make a single click and record your voice. Event would be automatically created and one can later on approve or modify them.

Easy to Learn: Concept of external consistency with already existing similar applications is used to make things very intuitive like when user clicks on camera button for taking a picture/ recording video it by default opens up in snapshot mode.

In addition, internal consistency is also maintained among all the pages of the application. First time user will be provided a short demo tutorial, which explains purpose of the application and how to use it.

Easy to remember how to Use: Maintaining the consistency makes the application and traversal very easy to remember.

Subjective Satisfaction: We followed **Minimalist Design** by using simple and minimal colors and using white spaces as much as possible.

Low-fidelity prototype

We started UI design from black and white low mockups:

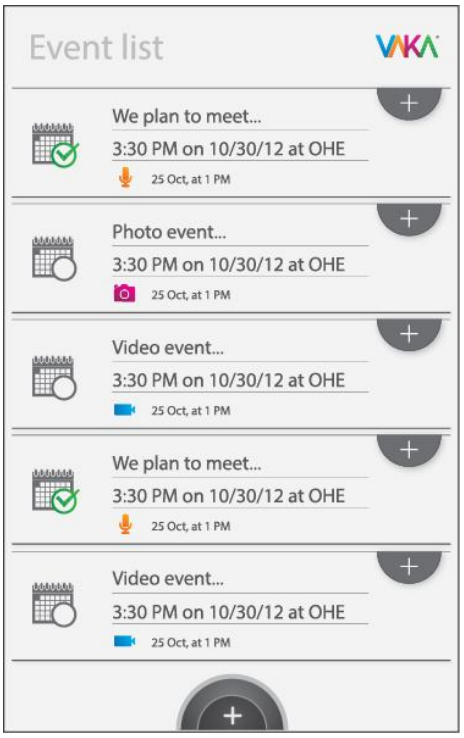
Iterative design:

1. This design initially contained several buttons, but later on after detailed analysis all these buttons were replaced with one Main button (pie menu).
2. The navigation in the design was very confusing. Lot of switching from one page to other page was involved. In order to make it simple and clear, the number of pages was reduced and all pages were given single point of access i.e the main button.
3. The navigation was further improved by in-depth analysis of task hierarchy which indicated end-product of all event creation being the event list. Hence, we further reduced the options in pie-menu from 4 to 3 making event-list a default redirection page from all activities.

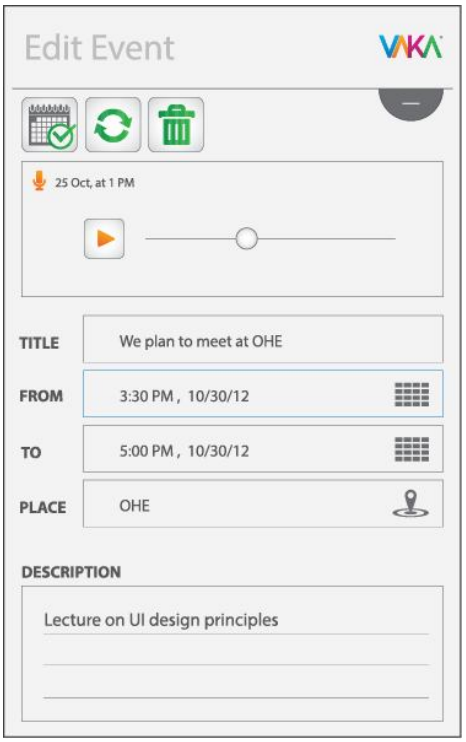
Next section contains high-fidelity prototype (screenshots) with pie menu.

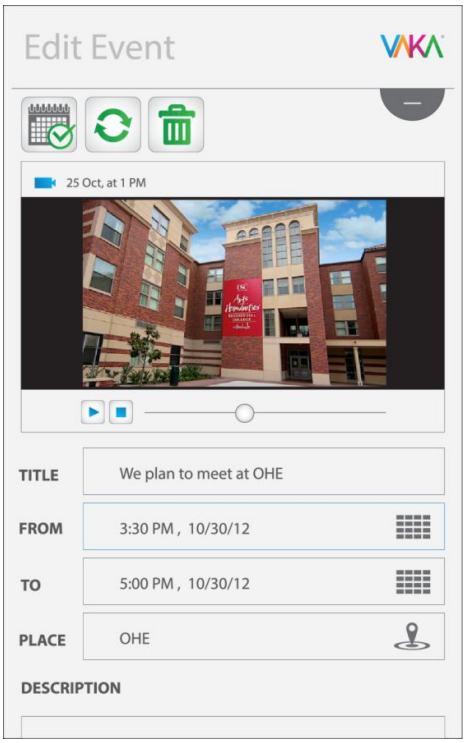
High-fidelity prototype (Screenshots)

Initial screen and event list:

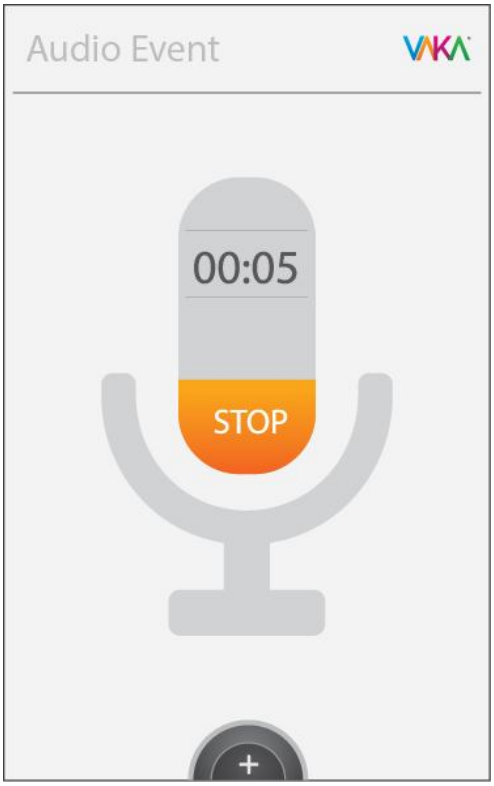


Audio, video/picture event editing/preview:





Audio event recording:



Main button design:

Usability evaluation

We used “Thinking aloud” technique for user testing of our application.

We conducted test with around 6-7 users and we figured out the difficulties mentioned in iterative design and tried our best to overcome them.

4. System functionality

Functions of the application:

1. Capturing events form audio, video, and photo sources.
2. Editing captured events.
3. Synchronization with Google calendar.

To perform audio event capturing user need to

1. Open application.
2. Press main button and select audio 
3. Say aloud information about the event (for example, “meeting tomorrow”)

To perform photo/video event capturing user need to

1. Open application.
2. Press main button and select photo  or video  .
3. Press central button to take a picture or video. In case of video press stop button to end recording.

To perform event editing user need to

1. Open application.
2. Select an event from the list of already created events and click expansion  button to open event.
3. Enter or edit (in case of audio event some attributes are already filled in) event details such as title, dates and time, description
4. Press  to add this event to your Goolge calendar.

Requirements and limitations:

We assume that user already has and uses Google calendar.

Since our application is developed for Android and uses Google voice recognition API we need Android v2.2 and above. For event synchronization with Google calendar device must be connected to the Internet.

5. Results and user evaluation

Qualitative User Evaluation

Method used: Thinking Aloud

Steps Involved

1. Preparing Test Proposal
   Test objective: a) To test Speed of creating an event.
   b) Test the Accuracy of the automated event details auto-completion.
   c) Test navigation complexity.

   Test participants: students.
   Test Measure: Time
2. Choosing Participants
   We chose students for testing as they are the representative target users who generally attend more than 5 events in a week.
3. Selecting properties to be tested
   We wanted to **test the speed** of creating an audio or picture event.
   Test the accuracy of the details of the event generated.
   Test the overall navigation of the interface.
4. Performing the test
   We gave our application to the users just 2 minutes before the lecture and gave some detail about the event and asked them to create an audio event.
   Similarly, we showed them a poster about an event in a similar scenario and asked them to create an event.
   After the lecture, we asked the same users to complete the editing of the created events. For the audio event, the users were asked to check the accuracy of the auto-completed event details and if not appropriate modify them. For the picture event, users were asked to feed in the event details from the clicked image.
5. Measuring the test Results
   a) Users were happy with the one button navigation.
   b) Users liked the auto-fill feature of the audio event.
   c) In the pictorial preview of the picture image event users wanted an option to see the image in full screen
   d) Users were not satisfied with the link to the media source in the finally mapped event with the Google Calendar. Instead they suggested those multi-media files to be shown as attachment.
   e) Novice user spent on an average one minute to figure out how this application works.

6.Conclusion

Our team has successfully been able to complete an intuitive interface for mobile calendar applications. The completed product gives flexibility to users to create events quickly with minimal clicks, as intended to be available during the hurried times. The product enables users to capture audio, video and pictorial media quickly and associate them with the created events.
Our team has successfully completed the major requirement established of easy and fast event creation. Still there are few limitations with the project which we plan to focus on as part of the future work.
An implicit extension to the project is to provide capability to synchronize the events with mobile calendar application already being used by the target audience such as Google, Apple or Windows calendar. Though this requirement is important, our team did not focus on implementing synchronization process because it is purely backend related activity and we could not have completed it within the given time fame.
Additionally, as few users were not satisfied with the pictorial preview that we were providing and expected a full screen preview of the images. This provision shall be incorporated in the future work.

7.Comments/issues/complaints/suggestions (optional)

We liked the course a lot. It was nice and exciting experience to get a thorough understanding of the UI Design cycle with implementation of the project.

But there were few issues which we observed and would like to get improved. Though we knew all the way that we had to focus on UI, we could not start with project unless we were sure that audio recording and audio to text conversion are simultaneously possible. Also, we spent significant time extracting useful information out of speech to be used for automatic data entry, another backend task.

During the process we tried numerous open source APIs and coded a lot of unnecessary lines. This happened with many teams that those APIs got deprecated during the project development cycle. It would be great if we could somehow reduce this issue in future teams by highlighting this point beforehand. Also, it would be great if it is mentioned that a ‘fake’ backend would also be fine since UI design is the focus.