

Mobile Application Design Specification example

This document provides a template for the sort of information that your Mobile Application Design Specification document should include. This document gives recommended sections and suggested content, but it is not exhaustive. Some sections include examples from a Skeletal Preservation Recorder (SPR) app.

Application Concept

Introduction

This section should describe a high-level overview of your application along with the justification as to why the app is needed. You should clearly articulate the main features/capabilities of your planned app and describe how it fulfills the needs of the target audience.

- *What is the application?*
- *What does the application do?*
- *What is the purpose of the application?*
- *How does the application serve its target audience?*

Skeletal Preservation Recorder (SPR for short) is a mobile application that assists in recording skeletal reservation data. This application is designed in collaboration with a researcher at the Victorian Institute of Forensic Medicine (VIFM) to improve their current workflow.

One of the first objectives for forensic anthropologists in examining human remains, whether they be from a forensic or archaeological context, is recording how much of the skeleton is present for examination and the state of bone preservation. This is a vital step as this can dictate how much information can be retrieved from the bones regarding that individual's life and potentially the circumstances surrounding their death.

Forensic anthropologists typically report on how much of the complete skeleton is present by visual estimation. This method is not accurate or standardized and could be improved with the use of mobile technology by allowing practitioners to record information in a more streamlined and accurate fashion.

The focus of SPR is to build a mobile application which improves the recording of how much of the skeleton is present for examination through the use of a robust user interface. Practitioners will be able to create reports for specific cases, identify and select specific bones present using a skeleton visualization, record the condition or comments for any bone present and have the application calculate the percentage of total bones present using a scientific method devised via computed tomography and volume rendering software (as opposed to a visual estimation). After a case has been completed, a PDF report can be produced for printing or to be sent as an email attachment.

Target Audience

In this section you should describe your intended target audience and explain in detail how the application will meet the needs of these people. Consider the following:

- *Who is the target audience? (Age, gender, occupation, interests)*
- *What problem do they have? How do they currently solve this problem?*
- *How does the application solve this problem for the intended audience?*
 - *How is it better than existing (non-app) alternatives?*
 - *Talk about specific features that will make it useful.*

The intended target audience for the application is academics and practitioners who are involved with the recording and analysis of human skeletal remains. Professionals that can be identified within this target audience can include (but is not limited to):

- Forensic Anthropologists
- Biological Archaeologists
- Biological Anthropologists
- Osteoarchaeologists
- Osteologists

A particular focus of the application is allowing users to record bone information quickly since they can be working in a lab environment or out in field investigations where they have little spare time. As a result, SPR will be designed to expose essential functions to help users' record information quickly.

Many functions of the application require very limited technical expertise to use. As the identified professions above are particularly "tech savvy", users should be able to adapt to the user interface very quickly and learn the application functions without a detailed walkthrough.

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Application Functionality

This section should fully describe all features and functionality of the application. You should describe not just what it does, but how it does it. You should give rough wireframes and storyboards to explain the proposed navigation through the app. (These can be hand drawn.) This section will be considered when assessing the final app to ensure that the proposed functionality has been implemented. (Changes to the applications feature set can still be negotiated with your tutor during the semester.)

There are several key areas of functionality that help make the mobile application useful to the identified target audience. Below is an outline of the major functionality accessible within the application:

Reports

Users need to be able to create reports which will capture all the necessary data regarding a particular skeleton being reviewed. Each report will be accessible via a list on the home screen. The reports will contain a full breakdown of bones present in the skeleton. In addition, each report will store practitioner comments and observations on the condition and issues present with any of the bones.

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Skeleton Interactive Visualization

In an effort to significantly improve the workflow in calculating the total percentage of bones in a skeletal subject, an interactive visualization will be developed. This will enable practitioners to select individual bones or categories of bones through a 2D/3D skeleton graphic with an easy to navigate user interface.

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Skeleton Preservation Calculator

Calculations for each bone present within a report will use pre-computed values for all 206 bones in the human body and will be tallied up for each key section of the skeleton as well as an overall total for the entire skeleton. This improves on the current approach where calculations are done manually without the assistance of mobile devices.

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Detailed Bone Feedback

For any bone that has been identified as being present within a skeleton, the practitioner will be able to add comments regarding specific bone(s) if there be any issues or observations that are outside of the norm. Feedback will primarily be recorded via textual data however there will be an option of including audio recordings or photos to improve the overall level of detailed feedback.

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Report Output (via PDF)

After a report has been completed and all information recorded for a skeleton can be automatically compiled into a report in PDF format. This will collate all the information contained within the report into an A4 document which can be attached as an email attachment or printed directly to any supported printers that the mobile platform supports.

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Innovation via Mobile Technology

This section should show how the application being a mobile app and running on a smartphone will benefit the features of the app. You should describe any sensors or features of the phone that your app will utilize, including internet connectivity.

While the project itself is rather unique in contrast to many mobile applications that are available on the market, there are opportunities in improving the workflow of the identified users through the use of mobile technology. An outline of innovative functions:

- The use of touch interaction will improve the overall usability of the mobile application user interface, in particular with gestures used in conjunction with the skeletal visualisation to navigate and select specific bones.
- The ability to capture photos or capture audio voice recordings for specific bones which have interesting observations outside of the norm. This will enhance the quality of information contained within produced report. This will make use of the microphone and back-facing camera.
- Reports being able to be outputted into an A4 PDF document with the option of printing will allow users to use the device specifically to focus on recording the application and review the findings of reports in a paper format. This will be easier format to archive and present information to other academics or practitioners as opposed to only being stored within the device.
- Since the app will be running on a portable internet-connected device with the necessary sensors, the features of the app will be able to be used by practitioners on location when they are away from a desktop computer.

iOS Technology Considerations

In this section, key technologies used for each specified functionality should be described in detail. You will need to do some independent research. For this case study, you would consider discussing:

- *Database integration for saving reports and additional feedback for specific bones.*
- *Database technology / libraries that will be used.*
- *How the data will be structured for both platforms.*
- *Technologies that might be used for any custom UI elements or visualisation.*
- *How audio can be recorded (if applicable).*
- *How photos can be captured (if applicable).*
- *How media or user data will be stored (if applicable).*
- *How will media be referenced within the database?*
- *What framework components will be used for functions like sending email.*
- *The more detailed information you can discuss for your overall application, the better!*

User Interface Design and Navigation (Storyboards)

In this section, you need to showcase your interface design and screens within your application. You should provide the following in your document:

- *All screens in your application shown along with the transitions between screens.*
- *The format storyboards are presented to us is up to you as long as it is legible, e.g., storyboards can be produced using computer graphics or just sketched by hand.*
- *Details of how the user interface will be implemented, along with discussion of how this follows the Human Interface Guidelines.*
- *Discuss all potential user interactions for each screen and the result of each interaction, e.g., Swiping an item in a tableview will open a dialog asking if the user wants to delete said item.*

Based on the considerations outlined above, the SPR app would have the following screens at a minimum:

- *Report List screen (UITableView)*
- *Skeleton Visualisation screen*
 - *Bine selection*
 - *Bone calculation visible*
 - *Total bones present*
 - *Feedback (for sections of bones / individual bones)*
 - *User able to select type of feedback (text, audio recording, photo)*
- *Report screen*
 - *Report Overview*
 - *Report Details, e.g., Name of report, description, timestamp*
- *Report Export screen (send, print)*

Scope and Limitations

In this section, you should outline the minimum functionality necessary to produce a useful app (aka minimum viable product), as well as any other functionality you would like to add where time permits. You should discuss any need to learn how to develop or research any particular functionality. Keep in mind that you will be developing this app over the rest of the semester. The app shouldn't be something that could be developed in a couple of hours. If your scope is too small you will lose marks in this section.

Project Timeline

In this section, you need to state the tasks that you plan to complete for each major milestone (Prototype 1, 2 and Final Submission, see dates on Moodle). Your tasks should be as detailed as possible and not vague (e.g., "Develop function" is too vague!). This timeline can be presented in the format of a simple table with one column outlining the milestone, and the second column listing the tasks.