

IFT402 Systems Analysis & Design Document

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IFT 402 Info Tech Capstone II

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1. Project Concept: Describe the business that will be using your product/technology solution.

The product is a fitness app that Fitbit users can use to receive analytics based on their Fitbit devices' biometrics, made available through the Fitbit API. This app will compete on the market with Fitbit's own proprietary app, offering competing predictive analysis of user's fitness routines and general health. This project specifically covers the back-end big data gathering and analysis necessary for such a product

2. Problem Statement: stated in one sentence that describes the problem that is being addressed.

Users desire advanced insight into their health via smart technology and wearables.

3. Technology Solution: stated in one sentence.

A Splunk app built around the user experiences to give detailed health insights at a fraction of the cost of commercial solutions.

4. Project Benefits: List in bullet format the benefits of the technology solution by describing 'what success looks like' (when your product does this then it is successful). The benefits are quantifiable. Example: Reducing turnaround of fulfilling customer requests from 48 hours to 24 hours.

The primary benefit of this product is the value that users find in the app after downloading and using it. We would like to see:

- User engagement and positive feedback as evidenced by over 50 positive reviews on app

stores in the first month.

- Over 25k downloads in the first quarter after release.
- Our brand becomes trending on various fitness communities and social media.
- Fitbit features us as a premium content partner and lists our service on the Fitbit website.
- A reduction in Fitbit premium users as we scale our product.

5. Stakeholders: List in bullet format the target audience (individual, groups, or organization) who will be affected by the technology solution and why?

- Our company is a primary stakeholder whose value in this project is financial and societal.
- Our customers will find personal and technological value in using the product.
- As developers we will find financial and technological value in producing this product.

6. Process: What system development life cycle will you use and why?

Our team will be utilizing the agile development lifecycle due to its quick and rapid response to both issues and innovations.

Requirements

7. Create Business Process Map that indicates how users will interact with the technology.

You can use any software of your choice. Just cut/paste your business process map into the Word Document.

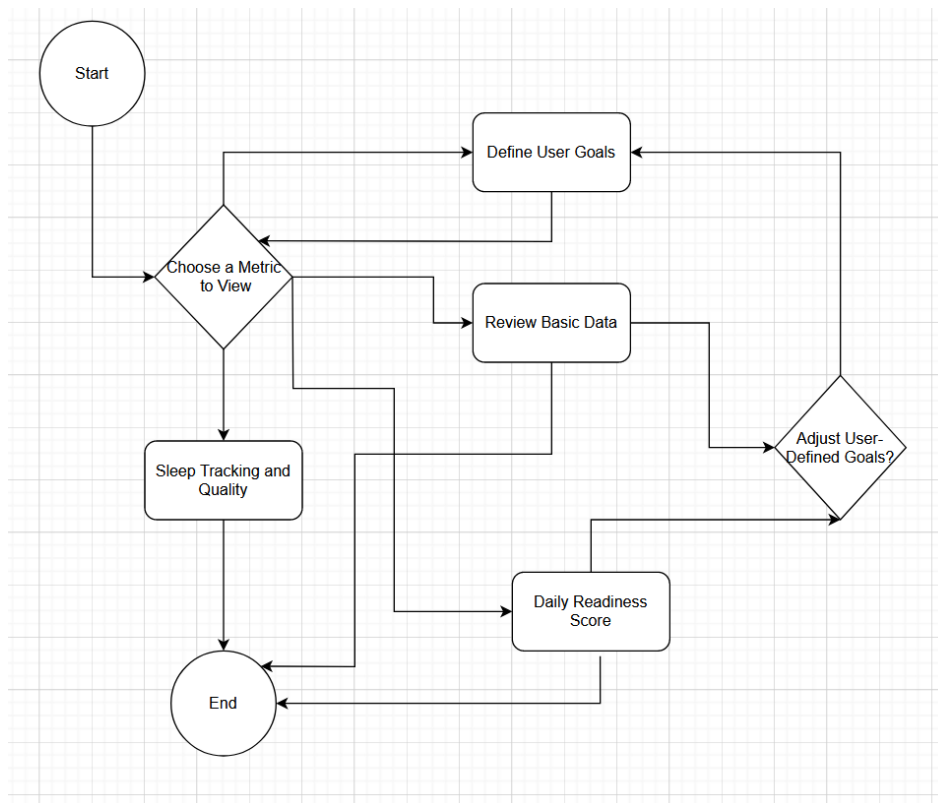


Figure 1: Business Process Map

8. Major Functions/Features Describe minimum of 4: “What” are these functions/features and “what” will it do for the user (one paragraph for each).

A. Daily Readiness Score:

Users have an overview of their readiness for fitness and activity for the day. The Daily Readiness Score will automatically adjust based on the previous day’s activity and the previous

night's sleep quality, allowing users to have an easy to review assessment of what the app has determined is their optimum fitness plan and goal for their day.

B. Sleep Quality Tracking:

A page of the app will be dedicated to allowing the user to review their sleep tracking. This will Let the user to get an idea of sleeping trends related to their health by having their data visually laid out in easy to parse graphs of data. They can see if they are getting enough sleep, and if their sleeping cycles are adequate for their goals.

C. Review of Basic Health Data:

Users can see an overview of their health tracking data points and their progress towards personal goals. This will be the data that is normally viewable in the moment directly on the Fitbit device's main screen, here laid out as graphs over time or towards goal, allowing the user to see progress as they achieve their fitness goals via our app.

D. Defining User-Determined Fitness Goals:

The user will be able to determine what their own personal goals are, which other parts of our app will use in tracking data towards these goals. On first time use of the app this section will be defined by average goals suitable for most people, which can then be re-defined by the user.

9. Specific Requirements: List in bullet format a minimum of 3 Business Requirements for each of the Major Functions.

A. Daily Readiness Score:

- A whole number presented to the user that is their Daily Readiness Score, presented as a number out of 100.
- Step goal for the user for today which will take into account the previous day's activity level and the previous night's sleep quality. The goal will use the user's personal goal as a baseline and adjust accordingly for their previous day's metrics.
- Calories burn goal which will take into account previous day's and night's activity level and sleep quality. This will take into account the weekly calorie goal set by the user and will adjust accordingly.

B. Sleep Quality Tracking:

- Time spent in each sleep cycle over the course of the night.
- Total time asleep, including time when fallen asleep and time when waking up.
- Overall sleep quality score for the night's sleep based on time spent in each cycle and movement or restlessness captured by the Fitbit tracker.

C. Review of Basic Health Data:

- Heart Rate tracking over the day.
- Current steps for the day vs. the Daily Readiness step goal for the day.
- Calorie burn for the day vs. the Daily Readiness calorie burn goal.

D. Defining User-Determined Fitness Goals:

- Provide general fitness goals which are suitable to the average user.
- Re-defining of each goal as determined by the user.
- Providing definitions for each goal so the user knows what the metric is meant to track.

Design

10. User Interface

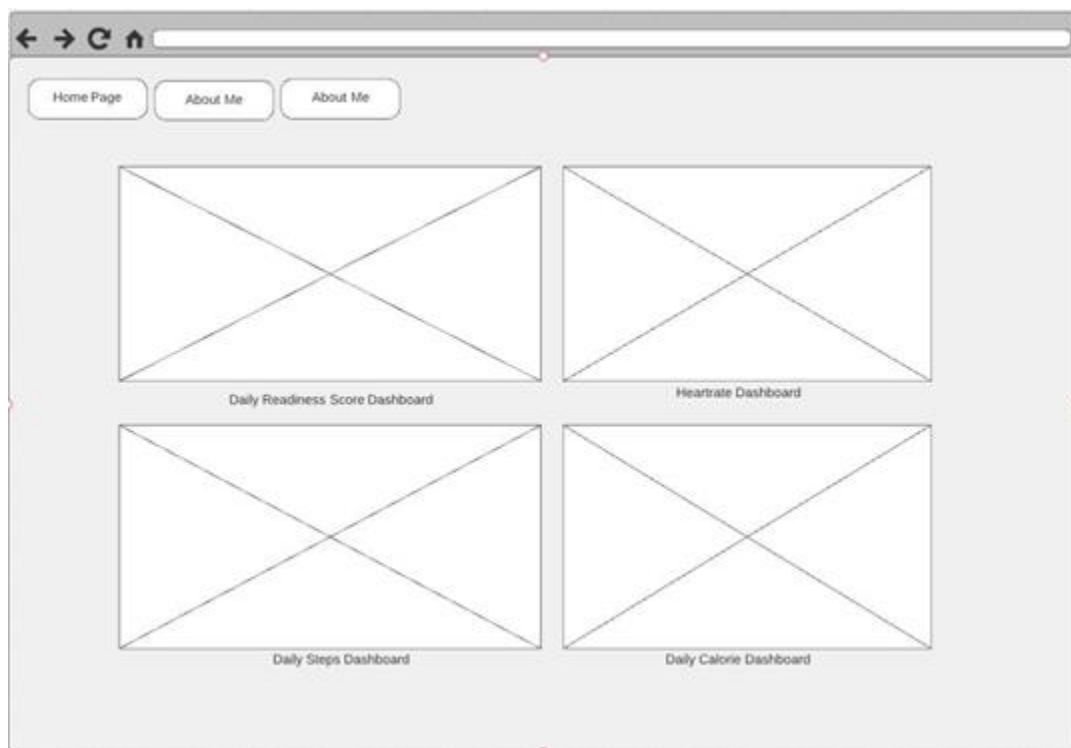


Figure 2: Landing Page

The home page of our dashboard will display the calculated daily readiness score, heart rate data for the day, daily step count, and daily calorie count.

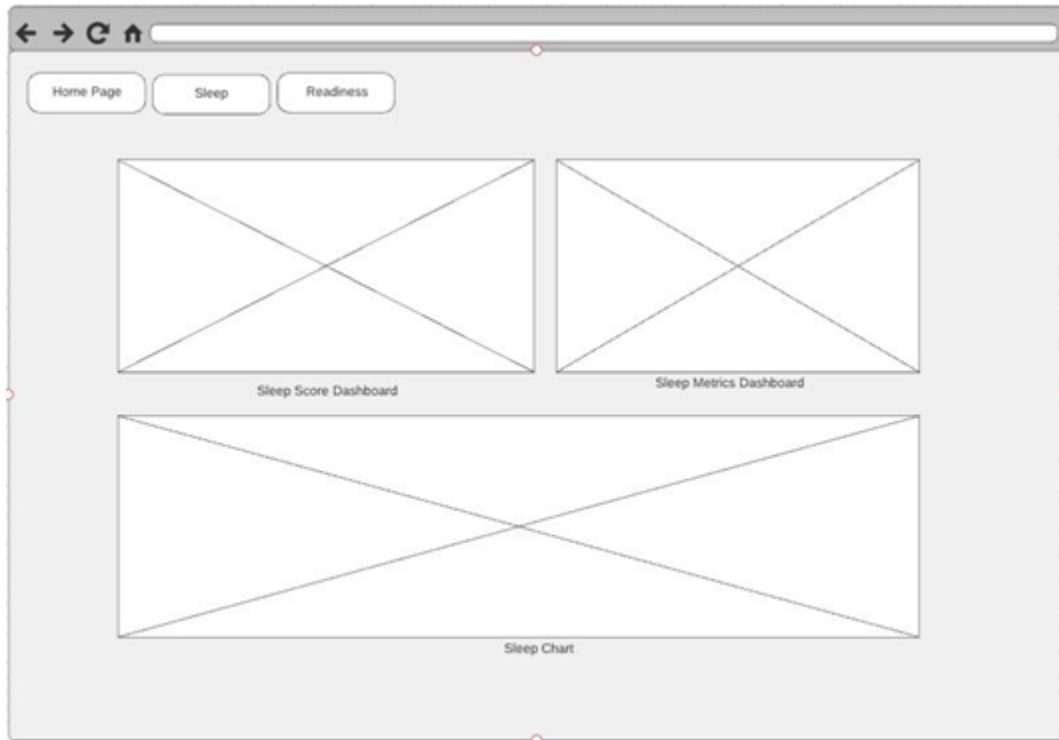


Figure 3: Sleep Dashboard

The Sleep Dashboard will contain the calculated sleep score, the times spent in various stages of sleep, ie. REM, light, and deep, as well as charting sleep from the previous sleep cycle.

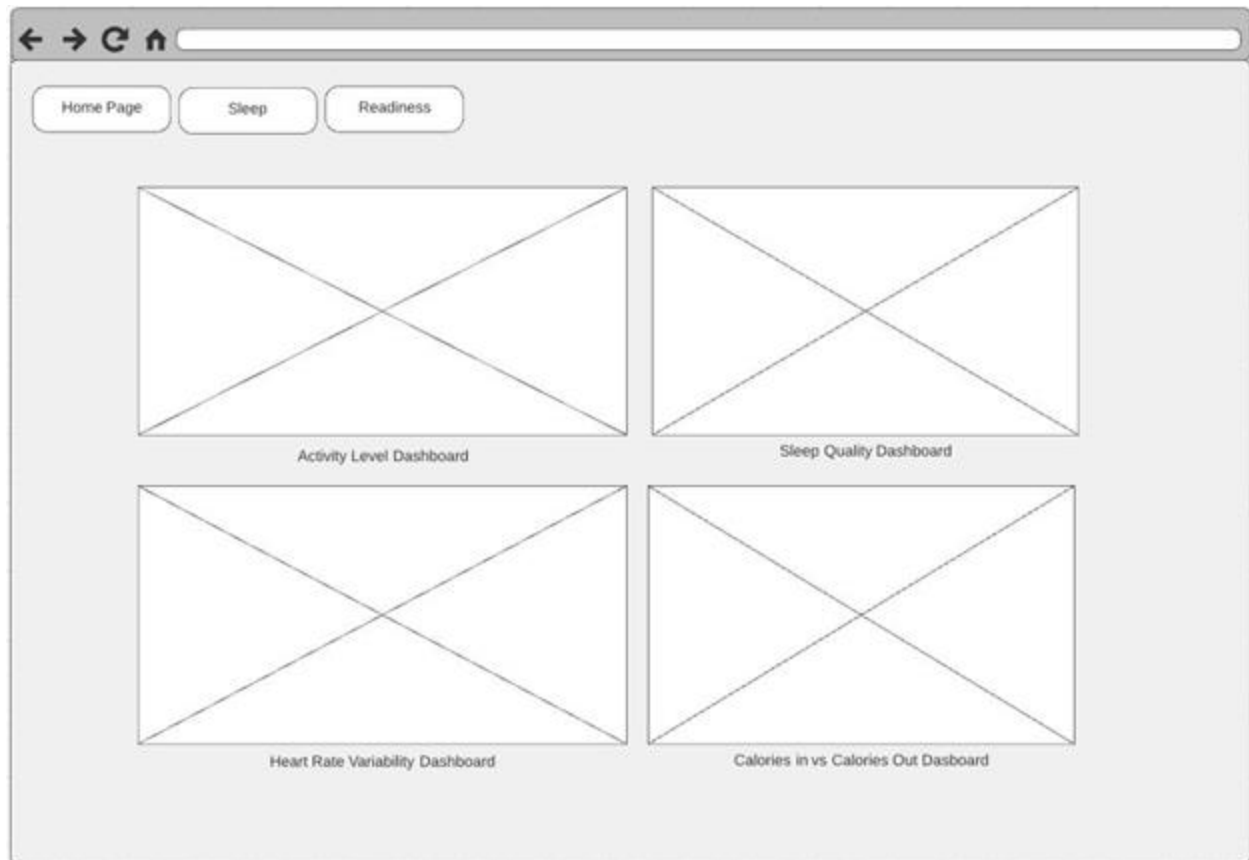


Figure 4: Readiness Dashboard

The readiness dashboard will contain scores for the current day to include activity level, sleep quality, heart rate variability, and calorie deficit/surplus.

11. Infrastructure Architecture

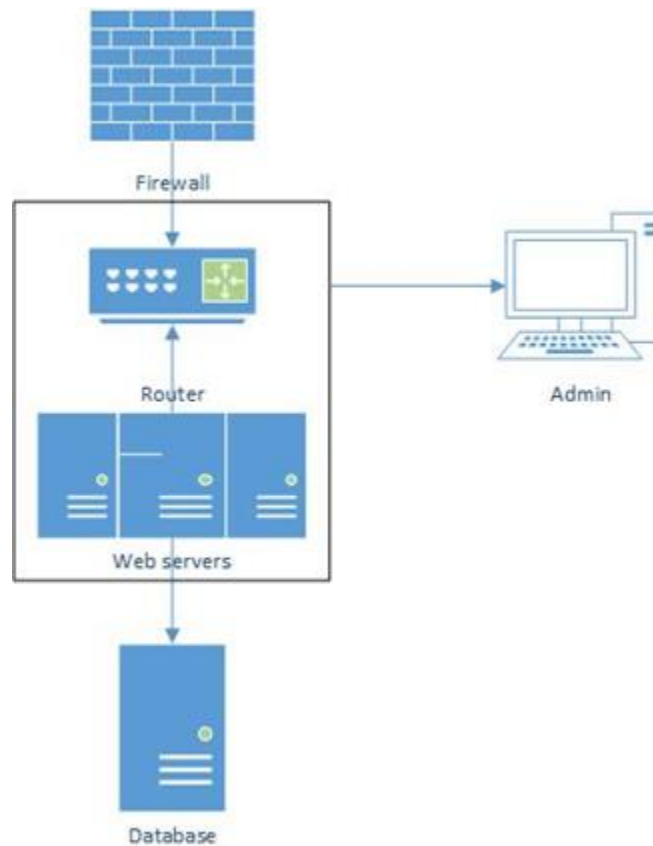


Figure 5: Infrastructure Architecture

To support the analysis of users' data, we need powerful servers to achieve that. As our app just bootstrap, we need several servers with 8CPUs and 32GiB memory, and install a load balancer to distribute the traffic. We will also need a database to store users' data for future retrieval.

We will need to install a firewall to block any malicious access to our computing resource, and we need an admin computer to access the servers and database to control our infrastructure.

12. Information Architecture

- Fitbit logged food and water intake
- Fitbit heart rate and calories expended
- Fitbit sleep data
- Fitbit activities and sleep.

13. Security and Privacy Architecture Please verify i didn't mix up these

- Authentication - The python script will connect to the fitbit API using OATH 2.0.

The script also relies on two tokens from the user account to make the connection and authenticate. The Splunk user interface has a complex password and password policy in accordance with NIST Special Publication 800-63B to authenticate the user.

- Authorization - The python script requires the user to authorize the script to pull the requested data upon execution.
- Encryption - data transmitted from the API is encrypted using SSL. Once the data enters the virtual server Splunk is running on, it is encrypted in the mongo DB.

14. Programming

- List the development tools that you will use and why?
 - Splunk - the primary development tool as our application will be built within it.
 - Fitbit API - required to connect and download user data.
- List the programming languages that you will use and why?
 - SPL - The Splunk programming language will be used to write our custom queries within Splunk and to display data.

- Python - The versatility of the language and wide range of libraries will allow us to automate our API calls.