

## C.S. CAPSTONE

# Advanced Software Engineering

### Summary

SomnoHealth Incorporated, a Golden-based consumer health startup, wants *your* help with an interesting "big data" project!

Start here:

[www.GetEverSleep.com](http://www.GetEverSleep.com)

EverSleep brings in-hospital laboratory grade sleep technologies directly to the consumer - to monitor and improve sleep.

Sleep measurement happens in our new sleep wearable device, and that data is BTLE transmitted to our mobile phone app. Inside the app we perform complicated analyses and deliver clinically based sleep improvement coaching directly to the user.

Our server collects anonymized data every morning from our users and beta testers - 15,000 lines of data per user, per night. *We've got lots of data, and lots more coming in...*

*We need you to build an API and Web Viewer into this database!*

# API Project:

We already have a "dashboard" tool that lets us "look" into the server and retrieve user data, built by a team from CSM!

We need now an API that lets our "Corporate Wellness" customers request sleep data from a group of employees.

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## USE CASE:

A local commercial trucking company has 20 drivers. The trucking industry is notoriously sensitive about sleep apnea. A truck crash kills or injures someone in the US every 14 minutes! About 1/2 of those crashes are fatigue related.

So, the trucking company purchases 20 EverSleep units, and a "subscription".

The "subscription" gives them access to a web viewer - which lets them register each truck driver (once) and automatically downloads (emails?) sleep reports from the server each day.

The API connects and communicates between the server and the web viewer.

A summary report is also generated....

"These 10 drivers are doing just fine, these 3 drivers haven't used EverSleep in more than 1 month, and these 5 guys REALLY need to go to the doctor!"

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All of this technology needs to be built!

These tasks are in order of priority, **and** in order of complexity. How many can we finish?

1. API
  - 1.1. We'd like to request a serial number and report number, and have a JSON file returned.
2. Security
  - 2.1. We need to use OAUTH2 and JWT tokens to authenticate the inbound request.
3. Web Viewer
  - 3.1. Simple, nice-looking web-based viewer that lets us build a "group" (of truck drivers for instance) with user names, passwords, etc.
4. Machine Learning?
  - 4.1. Given a specific user, can you make predictions about his outcomes over time?

## Schedule:

- Sprint 1: Intro, definitions, access to tools
- Sprint 2: Specific requirements, begin work
- Sprint 3: Implementation, Check-in
- Sprint 4: Implementation, Check-in, Course Correct
- Sprint 5: Implementation, Check-in, Final Update
- Sprint 6: Final Tweaks, Presentation

## Technologies:

- JSON Data
- OAUTH2 & JWT Tokens
- AWS Servers
- JavaScript / Node JS (Current Dashboard)
- Relational Database (SQL or clone)
- GITLAB Repository
- Agile Tool = Taiga
- See photos and a sample file below!

## Specifics:

- Work from home, from school, or on-site in North Golden
- No required "work hours" (i.e. 9-5)
- Guidance from senior engineers
- You'll have lots of leeway to bring new technology! Very little definition to date
- Potential Internship after the project is over
- Team Size 3-5

## Contact:

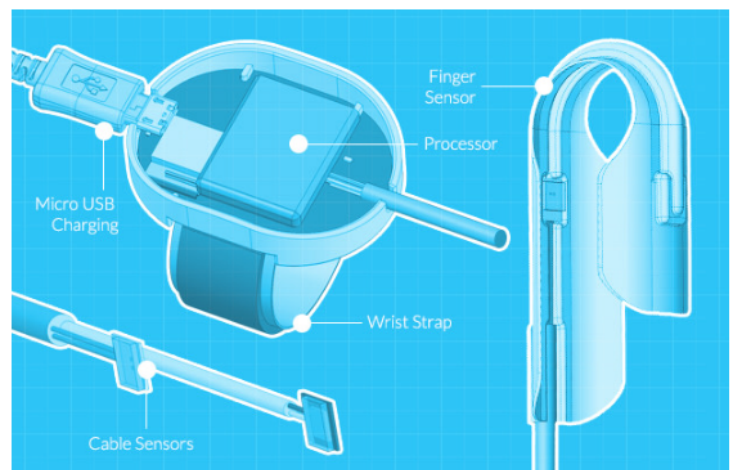
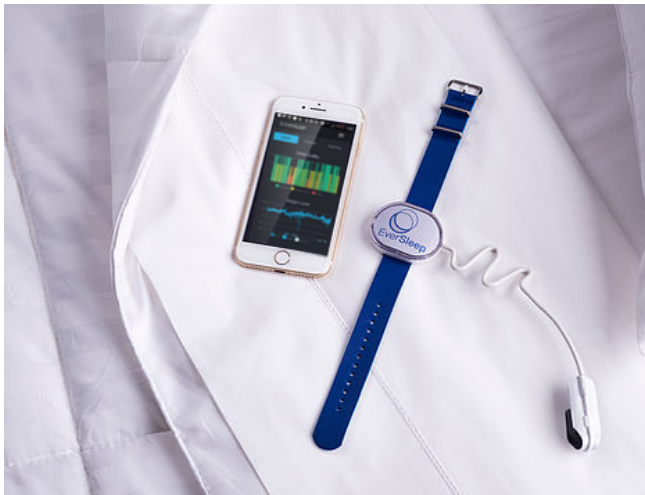
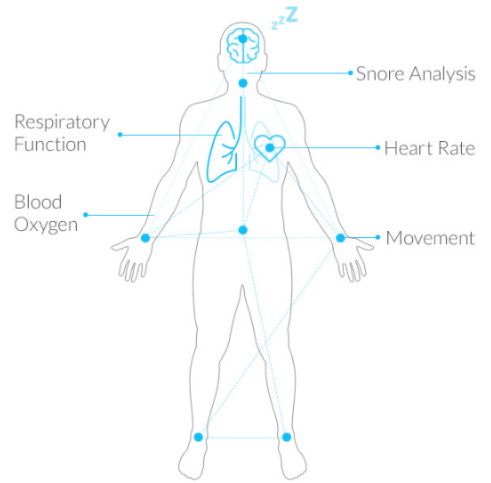
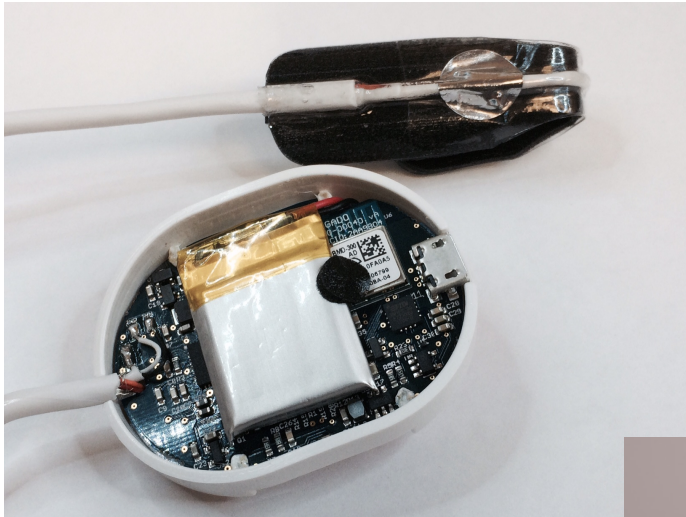
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p.s. If anybody wants to purchase an EverSleep from our website... here is a secret code for the employee \$20 discount: SAVE20

[www.GetEverSleep.com](http://www.GetEverSleep.com)

# What's Different About EverSleep?

EverSleep uses advanced **sleep-lab technology** to provide the data and coaching you need at home.



```

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