Riley:

Sleep Background

Slides 1-8

Intro (SleepSync Title) / Slide 1

- "Hello everyone, we're Team Sapphire, and our project is SleepSync"
- "SleepSync focuses on helping users improve their sleep schedules by improving and building healthier consistent sleep habits."
- "Our tagline encapsulates our goal for SleepSync – *Get in Sync, Catch More Z's*."

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Transition to Team Bios / Slide 3

- "Before we get too deep into what SleepSync does, let's talk about the people behind it!"
- Introduce myself, let everyone else do their intros. When I finish explaining, say "Now onto RJ." Everyone else says "Now for X." X being the next person.

Transition to Running on Empty / Slide 5

- "Now that you know who's working on SleepSync, let's go over why healthy sleep habits are crucial and why we chose this project in the first place." *(BACKGROUND SLIDE)*
- "According to the CDC, sleep deprivation has become a major issue in the States."
- "Roughly ⅓ adults don't get enough sleep, and about 40% report unintentionally falling asleep during the day."
- "This goes to show how many adults are running on empty in their day to day lives."
- "And it's not just about being tired. Lack of sleep can affect our physical and mental health as well. This leads us into our next slide…"

Transition to The Sleep Gap / Slide 6

- "Sleep deficiency has a major impact on our health."
- "It has been linked to problems such as anxiety, depression, heart disease, stroke, and even kidney disease."
- "You can see how much sleep various age groups ideally need, but most adults are far below their recommended 7-8 hours."
- "Over time the difference becomes what we call – the sleep gap, and it can take a real toll on your body and mind."
- "That brings us to something closely related – sleep debt. Sleep debt is what happens when that gap builds up over time."

Transition to Sleep Debt & Risk / Slide 7

- "Sleep debt can be defined as the difference between how much sleep your body needs and how much sleep you actually get."
- "When you don't make up for that lost sleep, it adds up over time – and that can lead to fatigue, poor concentration, mood swing, and long-term health issues."
- "Sleep Debt tends to hit certain people harder than others."
- "Indivudals with busy schedules, night shifts, or unpredictable routines are especially at risk – like students, parents, and first responders."
- "So who exactly are the main groups struggling with this? That's what our next slide breaks down…"

Transition to Affected Groups / Slide 8

- “Technology Users – coders, gamers, and office workers who stay on screens late into the night.”
- “Night Owls – teenagers, young adults, and college students with irregular routines.”
- “Late shift workers – restaurant employees, hospital staff, or new parents whose work hours disrupt natural sleep.”
- “Health-concious individuals – athletes or gym-goers who may focus on training but not recovery.”
- “Each of these groups face different challenges, but the common thread stays the same – their sleep habits are not healthy”
- “So overall, sleep deprivation affects people in almost every aspect of life – from students to shift workers to everyday tech users. With that background in mind, Grant’s going to take it from here to talk about the more specific problem we have identified and how SleepSync is designed to solve it.”
  HAND OFF TO GRANT

Grant:

Problem Statement
Slides 10-12
Slide 10:
Ok, so what is the problem? Staring at a computer screen all night can make falling asleep difficult. Individuals can easily lose track of time, news and media stimulants keep the brain active, and the blue light reduces melatonin production all of which are bad for a healthy sleep. Due to these factors, coders and gamers are generally known to have irregular sleep schedules. When people stay up late, they need to wake up later to retain enough sleep. However, not everyone’s schedule allows time for late mornings despite staying up late. They still need to be up for work, class, fitness, and more. This leads to coders and gamers getting a lot less sleep than they need. **[CHANGE SLIDE]**
Slide 11:
So let's look at the problem characteristics. No resource has everything in one place for free. Many people struggle with their sleep schedule. People can lose track of time while they idly scroll their phones. Blue light from screens cause a decrease in melatonin. All of these issues can be solved by a variety of different apps, but no resource has everything for free. **[CHANGE SLIDE**]
Slide 12:
So let's look at our current process flow. It starts with a user needing to go to bed on time, early, or has the ability to go to bed late. Mostly, a user will fall into the first two, as they have work, scoring, and other obligations. Most of the time, a user is going to be on their phone either right before bed or in bed, which can lead to them not getting enough sleep and having a worse quality of sleep. They may also forget to set their alarm in the process, further hindering their day to day lives. Sleepsync is our solution to this problem because a good night's sleep is an important part of life. So let me turn it over to Alexa and she can tell you more about the solution. **[CHANGE SLIDE]**

Alexa:
Problem Solution
Slides 14-16
[Slide 13]
Thank you, Grant!
The question is how does SleepSync help solve this problem? It starts by helping to simplify the bedtime preparation routine.
[NEXT SLIDE]
Slide 14
Similar to the current process flow, a user prepares for bed, and instead of having to guess a time to sleep, a user can input a desired wakeup time and will get a wind-down time to help them fall asleep easier. Users who want to spend extra time using a device like their phone or playing video games will receive notifications about when to start winding down. Alarms will be automatically set, and users can adjust when they go off by letting the application know whether they need to get up early to prepare or are fine getting up late.
[NEXT SLIDE]
Slide 15
SleepSync is an application that will allow users to maintain a healthy, beneficial sleep schedule by using their desired wake-up time to inform them of their own optimal bedtime. The app will send personalized reminders during the designated “wind-down” windows to encourage users to start preparations for bed. SleepSync will also give users access to relaxing music, tips, and other resources to help in falling asleep faster and to help create a calming nighttime routine. All these features allow SleepSync to be more than an alarm; it's a sleep companion.
[NEXT SLIDE]
Slide 16
The Solution Characteristics of SleepSync include:

- Our application has all of these resources to improve users' sleep quality in one location. Users won't have to worry about having multiple applications to have similar resources
- Users are able to personalize their sleep schedule to fit their needs and any surprises life may bring, like trips, new infants, or illness
- Our app will increase users’ awareness of the time spent on their devices and will inform them of a time to start winding down.
- Our application will automate a blue-light filter that will increase in intensity the later in the afternoon it becomes.
- Users who prefer holistic sleep improvement tips will have the option to only receive resources relating to it. Such as stress management resources, helping them to exercise timing awareness, and educational tips about nutrition to improve sleep quality.

After talking about how SleepSync is a solution to this problem, let's pass it off to Thomas to talk about the functional components of SleepSync.
[NEXT SLIDE]
Slide 18

Thomas:
Functional components and development tools
Slides 18-20
Slide 18 - Major Functional Components: Thankyou Alexa! I'm excited to walk you through the major functional components of SleepSync.

At the core of our application, we have a Sleep Tracker that monitors users' sleep patterns throughout the night. This works hand-in-hand with our curated sleep resources and rest tip links to provide users with evidence-based guidance for better sleep.One of our key features is automatic blue light filtering, which helps reduce the disruptive effects of screen exposure before bedtime. This is a critical factor in maintaining healthy circadian rhythms.

We also offer personalized scheduled reminders for wind down and sleep. The system uses user data and input to generate a customized sleep schedule that truly benefits them. These scheduled reminders incorporate various information users may disclose at their discretion, creating a wind-down time that suits their unique circadian rhythm. We've also included recommended exercises to encourage deeper sleep, helping users physically prepare their bodies for rest.

Finally, we have color noises to help users fall asleep more easily. We offer white noise, which sounds like TV static; pink noise, like wind; green noise, similar to a waterfall; and brown noise, which mimics thunder. Each has different frequencies that work better for different people. **[CHANGE SLIDE]**

Slide 19 - Major Functional Components Diagram: Let me walk you through our system architecture to show you how all these components work together.

On the Presentation layer, users interact with our app through their desktop or mobile device UI. This connects to our SleepSync Application, which serves as the central hub. The Application layer communicates with our web server, which handles multiple critical functions. It connects to the Blue Light Filter for automatic screen adjustment, and pulls content from both YouTube Sleep Aid Resources API and our Website Sleep Aid Resources API to provide users with helpful content.

On the Data side, we have our Sleep Calculation Tool. The analytics page shows sleep duration and provides actionable insights with personalized suggestions based on user patterns. We're being very transparent about our sleep quality calculations, clearly explaining our logic and formula.

All of this feeds into our Storage layer, which consists of a PostgreSQL Database storing user data including name, age, gender, wake-up time, and sleep quality metrics. Our system calculates data for gender, age group, and wellness metrics, determining the ideal amount of sleep and when to wind down based on individual factors.

The app utilizes various sensors in the user's phone, with users sleeping with their phones on the bed beside them. When they wake up, the phone asks about sleep quality and provides a report on sleep cycles. The phone tracks movement during rest, with less

movement indicating deeper sleep cycles and peaceful rest, while more movement suggests lighter sleep cycles or possibly poor rest. **[CHANGE SLIDE]**

Slide 20 - Development Tools: Finally, let me cover the development tools we'll be using to bring SleepSync to life.

For our Frontend, we're using React with Tailwind CSS and HTML to create a responsive, modern user interface that works seamlessly across devices. On the Backend, we're leveraging Node.js for server-side logic and API development, with Java handling our core logic and additional backend services. This combination gives us both flexibility and robust performance. For Design and Collaboration, we're using Lucidchart to create diagrams and map out our process flows. We're using GitHub for version control and team collaboration, and Visual Studio Code as our primary IDE for development.

Looking ahead to Deployment, we're considering hosting via cloud services like AWS or Azure, and if we expand to a full cross-platform experience, we'll be looking at mobile app packaging for iOS and Android. This architecture ensures SleepSync can deliver personalized, data-driven sleep optimization while maintaining user privacy and providing transparency and actionable insights. Now let me hand it over to RJ, who will walk you through what SleepSync will and won't do, as well as our competition analysis. **[CHANGE SLIDE]**

RJ:
Do's and Dont's + Competition
Slides 21-23
SleepSync is designed to help people improve their sleep through smart, science-based tools built right into their phones.

- First, it tracks sleep cycles — things like how long you sleep and how much time you spend in light, deep, and REM sleep. By understanding those patterns, users can adjust their bedtime routines for better rest
- Next, it provides helpful resources — from quick articles and videos to practical tips about habits that affect sleep, like caffeine, light exposure, or screen time.
- SleepSync also uses your phone's 'warm screen' feature to automatically reduce blue light at night. That helps your body get ready for sleep by limiting light that keeps your brain alert
- And finally, all of these advanced sleep tools are completely free to users — no subscriptions or hidden costs.

So overall, SleepSync makes it easy and affordable for anyone to manage their sleep and build healthier habits
[NEXT SLIDE]

Slide 22

Now that we've talked about what SleepSync can do, it's also important to explain what it won't do — just to keep expectations clear.

- First, it won't diagnose or treat medical sleep disorders like insomnia or sleep apnea — those require professional healthcare treatment.
- It also won't guarantee instant results. Better sleep takes time and consistency, not a one-time fix.
- SleepSync isn't meant to replace all wellness apps. It focuses specifically on sleep health — not fitness, diet, or mental health tracking
- And lastly, it won't sync data from other apps. Everything you need is built directly into SleepSync, which keeps things simple and secure."

So, while SleepSync gives users powerful tools for better sleep, it stays within a focused, safe scope

[NEXT SLIDE]

Slide 23

Next, we have the Competition matrix

With a clear picture of SleepSync's capabilities and boundaries, the next step is understanding what challenges or risks might come with developing and using it.

Addie will now take us through our risk matrix to show how we've analyzed those factors

[NEXT SLIDE] **Slide 24**

Addie:

Thanks, RJ. Of course there's several risks when it comes to developing an application. A risk matrix helps us identify these issues and set up ways to mitigate them by visualizing the likelihood and impact. There's 3 types of risks we'll look at: User, customer, and technical.

User Risks are complications the people using the application may face. A main concern users may have is how their data will be used. Since SleepSync has to use user input to provide the most accurate information we can, we need to relieve concerns that user data will not be misused. We accomplish this by asking the user to sign an electronic legal agreement before signing up. This agreement will confirm the ways their data will be used while simultaneously being legal documentation of their rights to privacy. This ensures SleepSync is accountable for any misuse, putting users at ease with sharing their data. Another big risk is human error since SleepSync relies on the users inputting their logged hours of sleep. By developing a visually appealing user interface and easy to navigate portals, the application will be easier to use. Some examples include using a dark background with light font which is generally easier to see, big, bold buttons to prevent mispressing, and minimizing the amount of clicks to log sleep hours.

[CHANGE SLIDE] **Slide 24**

Customer Risks are complications that may occur when SleepSync is recommended by another source, i.e when a therapist identifies sleep issues in their client and encourages them to use SleepSync. The main risk with this is that there can be a lack of professional insight since the customer isn't necessarily using the application themselves. They may not know how to download the application or how to use the user interface. We can mitigate this by uploading a How-To video online to YouTube, Facebook, and TikTok. This video should be brief to keep attention but informative enough to be able to assist anyone with signing up for SleepSync and

navigate its basic resources. Another risk is the doubt of the effectiveness of SleepSync. In a society that doesn't prioritize sleep, we have to encourage customers that the benefits of getting enough sleep outweighs any cons. We can mitigate this by not only boasting the cost of SleepSync (which is free) but also by providing various scientific resources that argue the importance of sleep. We should make sure these sources are properly cited and violate no copyright issues, as that is another risk our application may face. **[CHANGE SLIDE]** **Slide 25**

Technical Risks are complications with design and engineering. The biggest con that SleepSync has is that we don't have wearable technology to track a user's sleep cycle. These devices are very costly - being hundreds of dollars - but the benefit is their accuracy. SleepSync can compensate for this issue by promoting our FREE resources to users. Although we rely on manual input for logging sleep, the articles, music, and advice we provide can effectively improve people's sleep quality without expensive tech wear. SleepSync will also follow recommended cybersecurity guidelines in order to ensure user data safety. We can accomplish this by requiring authentication when logging into the app via pin sent by a confirmed phone number or email address. We can also utilize biometrics by allowing users to use their fingerprints to log in. Data encryption will also be used as a safety precaution to protect user data against cyberattacks. **[CHANGE SLIDE]** **Slide 26**

Outro:
The last few slides contain our resources. This was Team Sapphire presenting SleepSync, and thank you for your time.