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"All we have to decide is what to do with the time that is given to us. There are other forces at work in this world Frodo, besides the will of evil." -Gandalf, The Lord of the Rings

Deciding what to do with our time is hard, and we don't always make the right choices. This isn't because we are bad decision makers, but because we don't have all of the information we need to make an informed decision. We need to know what our goals are, what we already have planned, and what choices we can make. These things are always changing and difficult to remember. That's why we are designing Balance. It will remember your goals, show you how to reach them, and keep track of your progress. It will automate the most difficult and tedious tasks of personal time management and help you reach the time balance that you want.

CI Target, Stakeholders, and Participants

All of the people for our contextual inquiries were selected due to the fact that they lead very busy lives and have deadlines, but also tend to have a lot of flexibility with their daily schedules. We wanted to figure out how people chose to spend their time and maintained a balance when they had a lot of freedom with how to do so.

Contextual Inquiry #1: Software Developer Working From Home

Our first contextual inquiry was with a salary based software developer who only works from his home office. He is given a daily or weekly task to complete by pulling a task from a list created by himself and other employees. The current overall task of his department is to build a complete suite of web tools to manage the company efficiently. He spends a majority of his time at home and would like a better way to schedule his daily routine around a full day of work.

Contextual Inquiry #2: Pharmacist On a Fixed-Rotation Schedule

Our second contextual inquiry was with a pharmacist who works in a drug store. He has a “fixed rotation” schedule. That is, within each week he has a fixed schedule, but every week the schedule is different. He will know his schedule in at least a month’s advance.

He is already used to his “fixed rotation” and he plans his personal life around it. If he works in the morning, he will go to the gym for about 2 or 3 times that week. If he works at night, he will just stay at home in the morning because he doesn’t want to be tired before he goes to work. He has two days off each week. One thing that bothers him is that he can’t have a project that he wants to do which takes more than two days. He hardly has a chance to get out of town for a vacation.

Contextual Inquiry #3: Newspaper Editors With a Daily Deadline

Our third and final group of participants were the editors of campus newspaper. We went to the newsroom late in the evening, where the next day’s newspaper was being put together. The editors have a hard deadline of 11PM to finish the newspaper for the next day. Many spend all evening in the newsroom, working on the paper and waiting for articles and pictures to come in from writers and photographers.

CI Results and Themes

Theme 1: Individualization

The primary theme we found between contextual inquiries was the importance of individualization. Everyone has a different ideal time balance, and tries different things to meet their own goals. We need to make sure that our solution is flexible enough to meet any personalized goal the user throws at it.

Theme 2: Schedule Sharing

Another important theme was the idea of sharing a schedule. Both work and socializing depend on other people, so being able to communicate and plan together is important, but everyone uses a different planner. In addition, the most popular planners do not actively track users. In some cases, if the user goes off schedule, they need to manually shift all the other events. Unfortunately this adds more time and work onto a person who is already busy. Our participants expressed interest in an application that could easily import schedules from their other calendars and integrate them together.

Theme 3: Automatic Notification

Finally, the last theme we saw was automatic notifications. People came up with all kinds of different alarms to notify them before important events. We want to make sure that they don't miss these notifications even if they forget their phone/computer or run out of battery.

Answers to Task Analysis Questions

1. Who is going to use the design?

Busy people who have to create their own schedules. For example: independent contractors who work from home, the editors at newspaper office, professors or TAs at school, and pharmacists at drug stores.

2. What tasks do they now perform?

Most of them already use some kind of schedule like Google calendar, Dayforce, automatic phone reminders, or notebook planners. These schedulers can display their plans, but can't check their hours spent on work, sleep or social life. They also can't share information such as bus times, or other people's schedules.

3. What tasks are desired?

Tasks that can keep track of hours spending on work, sleep and social life, help the users to achieve their ideal balance of time. Pulling information from other applications such as google calendar into our application would make it easy to quickly update schedules, or to automatically notify the user when something outside of their control changes. Sharing schedules over social networks would help users find out the best times to hang out without extensive planning.

4. How are the tasks learned?

These tasks are already a part of our users' lives as they plan their schedules and learn from experience how a poor time balance can affect their happiness and productivity. We need make these tasks easy to manage, especially for people who don't like entering a lot of data into an application, or don't have time to constantly update their plans.

5. Where are the tasks performed?

These tasks are performed at home, in the office and at school, but only during downtime. Users must be able to easily access the application any time they want, especially in short notice.

6. What is the relationship between the person and data?

The data gathered reveals how much time users spend on their work, study, entertainment, sleep and so on. Each user has their own ideal time balance, a set of personal goals which they could achieve if they had easy access to this data.

7. What other tools does the person have?

There are many competing tools such as Google calendar, Dayforce, automatic phone reminders, and notebook planners.

8. How do people communicate with each other?

People currently struggle to communicate their schedules over different networks, each with their own format. Our technology could share busy schedules and find out the best work and social time.

9. How often are the tasks performed?

The simplest tasks like schedule planning are performed many times throughout the day, but much larger decisions like choosing job responsibilities, quarterly classes, and commute plans are only done each week or less often.

10. What are the time constraints on the tasks?

When the user is busy, they may only have minutes or even seconds to check their schedule and understand their time balance. However, we can't limit the interaction for users who want to put in more effort to thoroughly analyze their time balance.

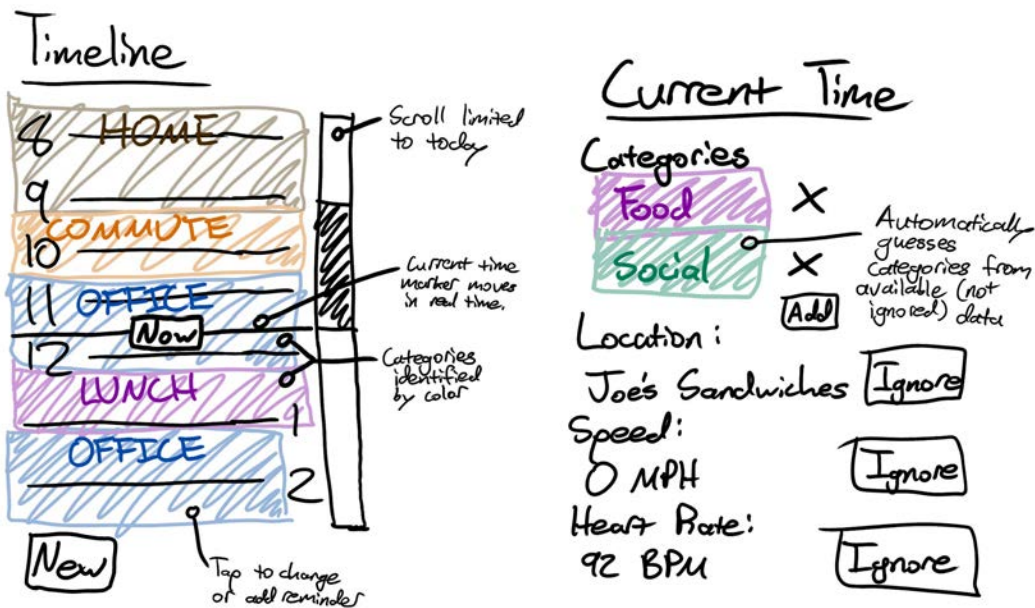
11. What happens when things go wrong?

When users forget to input their schedule, they may miss critical deadlines or otherwise throw off their time balance. When the technology fails, they may be stressed and frustrated. In the worst case scenario, they might lose their schedule entirely.

Proposed Design Sketches

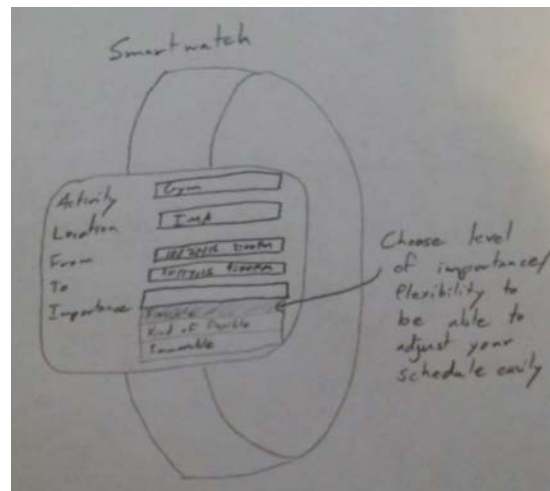
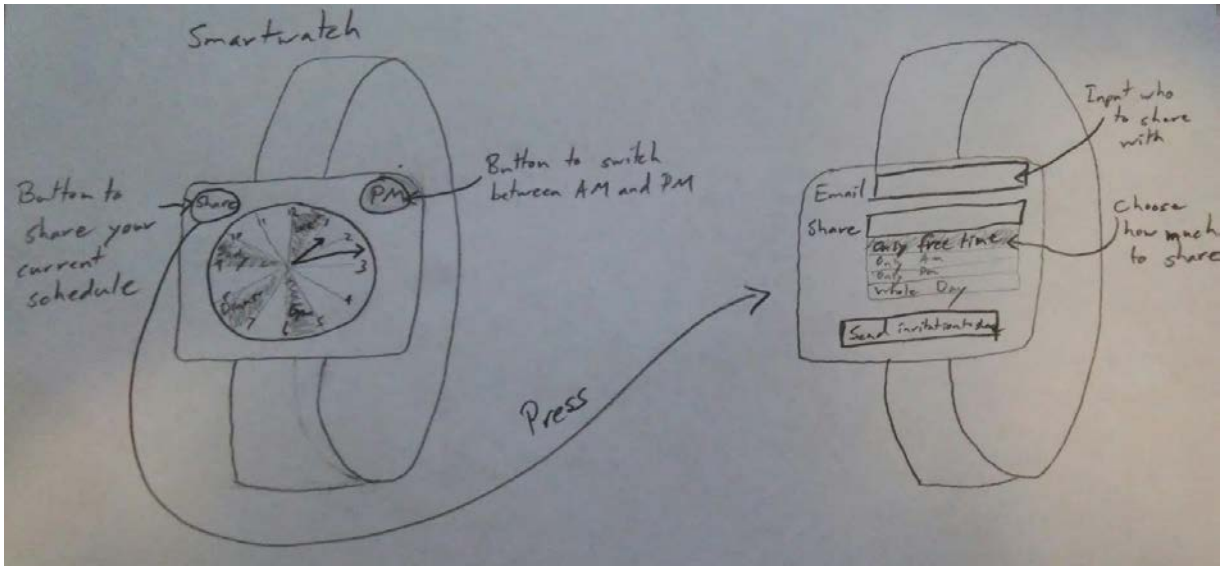
Design Proposal #1: Phone App

The phone app design was the most lightweight. It had the fewest onboard features, but it was simple to use and non-intrusive. It could be integrated into the user's existing phone, allowing them to use it without drastically changing their habits. Unfortunately, this design was very limited by the availability and features of one device.



Design Proposal #2: Smartwatch

The smartwatch design was fairly simplistic because of the limited space on the screen for the user. The schedule screen looks like a typical watch face for familiarity and ease of use. The activities are color-coded and there is a button to switch from AM to PM (see sketch for task #2). The smartwatch could have a built in heart rate sensor to monitor exercise, and bluetooth or wifi to synchronize or communicate. This design primarily focused on making things really easy and low-burden on the user

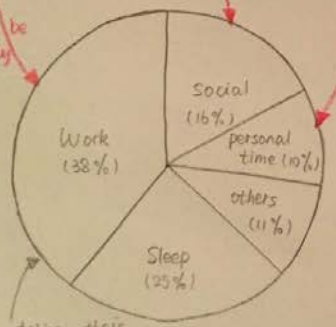


Design Proposal #3: Webpage

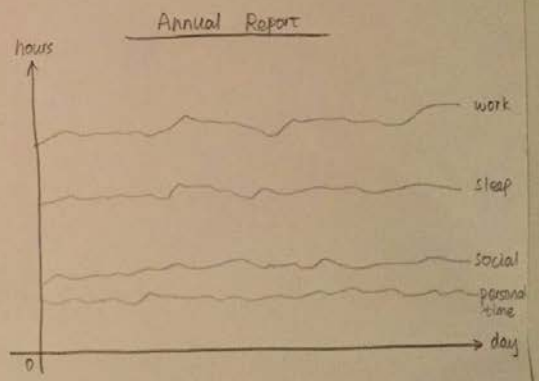
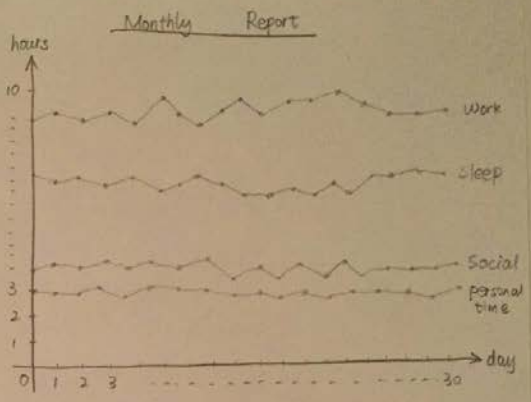
The webpage design would allow users to easily access their full schedule online using a desktop or laptop. It's not lightweight or necessarily mobile, but it is a full functioned application which is always online. With a very rich GUI, It would be easy to set up tasks in the calendar, import schedules from other applications, share schedules with friends, and balance the time spent on different categories of tasks.

Calendar	M	T	W	Th
4:00 am				
10:00 am				
11:00 am	Meeting		Go to the gym	
12:00 pm		Have lunch with friends		

tasks can be automatically categorized



Users can define their own categories



Written Scenarios

Scenario #1: Meeting Personal Goals

Bill is a hard-working dentist who wants to play guitar for his friend's punk rock band. Unfortunately, he has very little control over his patients who are always making last-minute appointments or cancelling the appointments they made months ago. He has to make all of his fickle patients' appointments while also attending 50% of the band's rehearsals, as well as their opening show (just one month away!). The band is so punk that they don't plan rehearsals until the day before and they outright refuse to use e-mail.

Bill realizes that he can't get ready for the big show without help, so he decides to use Balance. He sets up Balance to sync with his professional appointment schedule that is hosted online. Every morning, Balance downloads his appointments from his home computer and updates them throughout the day from his work computer at the office. Balance notifies him 5 minutes before an appointment when he's at the office and 1 hour before an appointment when he's at home. Balance vibrates and displays the notification to gently remind him, unless of course he already dismissed the notification in advance, in which case it does nothing.

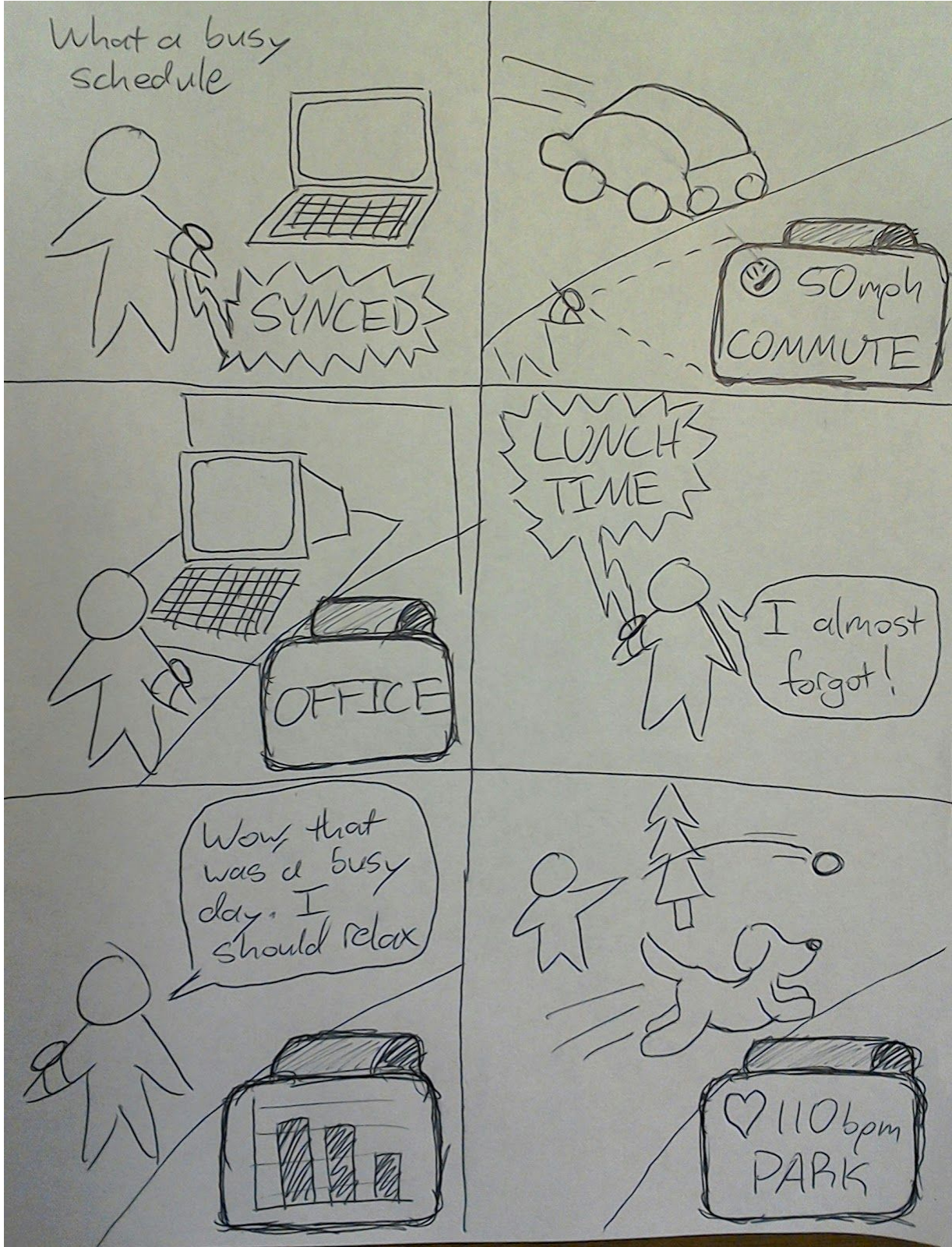
Bill sets up a new category of time, "guitar practice". Both band rehearsals and solo practice count as "guitar practice", and he sets a goal for himself to reach 60 hours of practice in one month. He has to tell Balance when he starts practicing solo because the device can't detect such a unique category all out on its own, but it can tell that he has stopped practicing when he changes locations, if he forgets to stop tracking it. Balance also knows that he is probably practicing whenever he is at his friend's house. It syncs with Facebook, so rehearsals get added to his schedule whenever the band members post them as Facebook events.

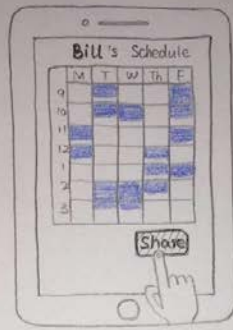
At the end of each day, Bill can see how long he spent in appointments and decide how much time he should spend practicing. Every day he can see how much closer he is getting to reaching his goal of 60 hours, and he can tell when he is falling behind. Bill loves punk rock, so he actually reaches his goal in less than a month and sets a new goal of 30 more hours. Needless to say, he and the band rock the show.

Scenario #2: Sharing with friends

Adam is a salesman who has a busy schedule everyday. He wants to hang out with his friends more often, but he is not able to know when his friends are going to be free. So he decides to use Balance. He shares his schedule with his friends using Balance. Balance is able to compare his schedule with his friends who also use Balance and find out what time they are free. Therefore, they can hang out together.

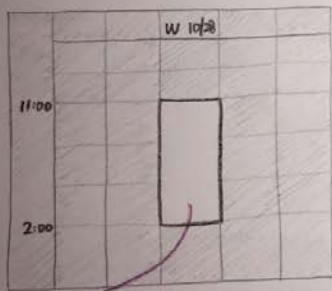
Storyboards of the Selected Design





Compare Schedule with Friends

Time	M	Tu	We	Th	F
9:00					
10:00	A	B	A	A	
11:00	A	B	AB	A	
12:00	B	A		A	AB
1:00	B	A		AB	A
2:00	A	A		B	AB
3:00	A	B	B	B	A



Both Adam and Bill are free!

Hang out with Friend

