



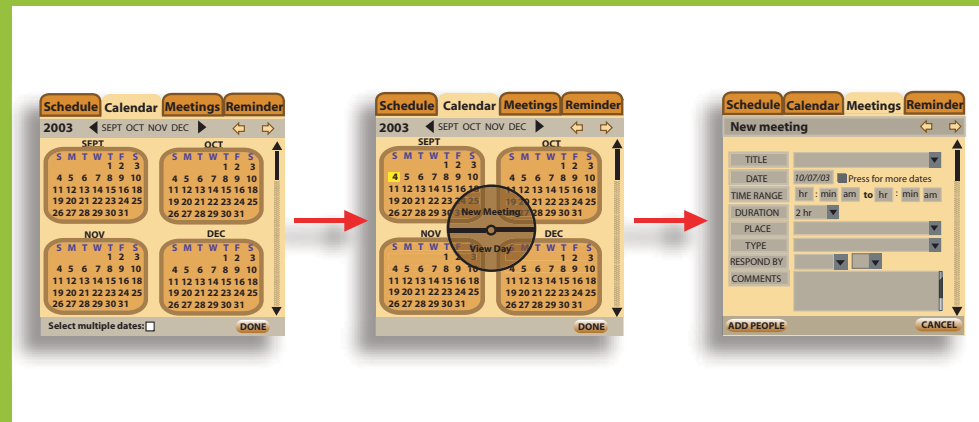
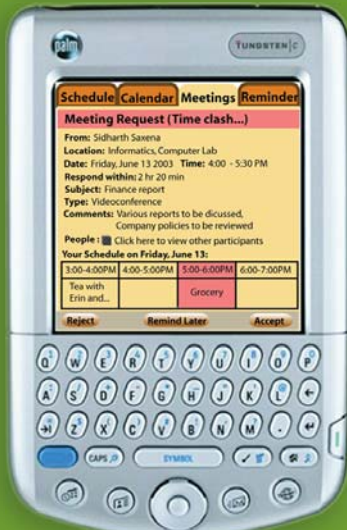
On the following pages you will find a selection of my design projects from the past four years. While they do not show my entire body of work, they display a diverse range of interests. I have worked on technology-centered projects like designing an interface for a Palm Pilot to conceptual experiences like creating experiential prototypes to convey handicaps to park rangers. Each project is different and what I enjoy the most are the design process and experiences themselves. This collection shows my desire to research the design space and understand the potential users for whatever I am creating. As a designer, I use a human-centered approach as a way of communicating what people cannot express themselves. My interests vary but my passions lie greatly in issues such as sustainability, design for the developing world, teaching and learning, and design simply to make a lasting difference. Gandhi once said to be the change you want. I continually strive to model my life as designer after these words.

– *Christian M. Beck*

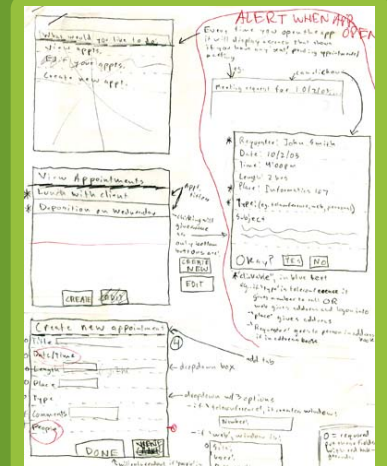
enjoy.

PALM PILOT SCHEDULER

2003



Storyboarding



Sketches

Tools

illustrator
photoshop

Methods

storyboarding
sketching
scenarios
flowchart
usability testing

Collaborators

Nicole Carrocio
Sidharth Saxena
Heide Tebbe

This was my first experience designing a graphical interface. The project was to design a scheduler for the Palm Pilot Tungsten C. The main feature it needed to include was a better means for people to find free times for available meetings. Additionally, the screen size and resolution provided a constraint to what we could accomplish. As a result this was also my first experience with understanding **trade-offs** in design.

The primary goal for this project was to aid the user in creating meetings with people as quickly as possible. The interface is a device that is used on the go so we understood the user would not want to spend a lot of time on the interface. Additionally, scheduling between business people is extremely difficult because of the frequency of conflicts. We designed a system that would tag contacts to help automate priority levels for who needed to be present at any given meeting.

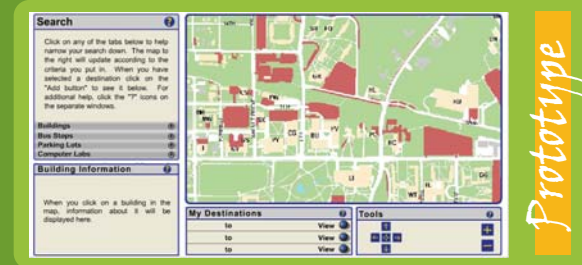
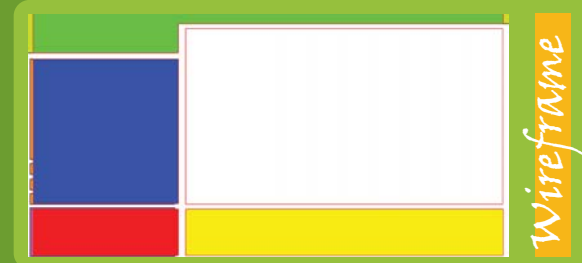
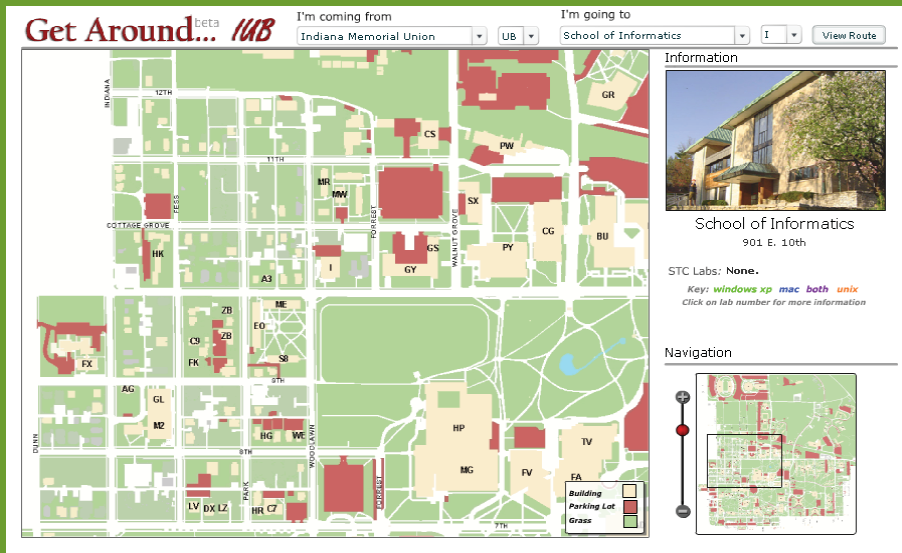
We also visualized how the palm pilot work to make the interaction more simple. Through usability testing we found the circular selection window much easier to select options from. Rather than drop-down menus, this format fit the use of a physical stylus much better. We experimented with alternatives to the tab format of navigation but found this to be the most conventional means of interaction. Again, understanding the **constraints** of this project weighed heavily in decisions about navigation.

As this was my first HCID experience, I became immersed into the design process as a whole. This project illustrated the value of developing specific **user requirements** (quick scheduling), constraints (stylus-operated) and environmental factors (on-the-go). I also began to understand how to bring users into the design process by creating specific **use scenarios** as illustrated in the sketch above. While I was already certain to be a designer when I worked on this project, this opened myself to the wonderful experience of designing.

IU CAMPUS ROUTE FINDER

2004

www.getaroundiu.com



Hi,
Please take this brief questionnaire to let us know how the campus community could best be served. Circle the best response.

General

1. What is your Age?
 - a) Under 18
 - b) 18-25
 - c) 25-35
 - d) 35-50
 - e) Over 50
2. What is your status?
 - a) Undergrad
 - b) Graduate
 - c) Faculty
 - d) Staff
3. How long have you been at IU Bloomington?
 - a) Less than 1 year
 - b) 1-3 years
 - c) 3-5 years
 - d) More than 3 years
4. Where do you live?
 - a) On-campus
 - b) Off-campus (Bloomington)
 - c) Out of town

Navigation

5. How do you usually get to campus locations?
 - a) Walk
 - b) Bike
 - c) Car/Motorcycle
 - d) Bus

6-11. How often do you have trouble locating...

6. Campus buildings?
 - a) Never
 - b) Sometimes
 - c) Frequently
7. Routes between buildings?
 - a) Never
 - b) Sometimes
 - c) Frequently
8. Open computer labs?
 - a) Never
 - b) Sometimes
 - c) Frequently
9. Appropriate parking lots?
 - a) Never
 - b) Sometimes
 - c) Frequently
10. Bus routes and schedules?
 - a) Never
 - b) Sometimes
 - c) Frequently
11. Other? Please describe: _____

Continued on back...

Survey

Tools

- macromedia flash
- actionsript
- arcGIS
- php
- html/xml

Methods

- programming
- wireframing
- sketching
- storyboarding
- usability testing

Collaborators

Dave Roedel

I started this project during my fourth undergraduate year as part of an assignment for a GIS course. My idea was to develop a routing application that would help students at Indiana University find the shortest walking distance between buildings on campus. I began by hand-tracing every walkway on campus from aerial photos (second from right). Using these walkways, I was able to create an interface for users by utilizing an existing shortest-route function to provide the pedestrian routes.

I picked this project up again for my senior capstone project. The goal for this iteration was to create a better interface so that it could be used online. The original platform this was intended for could not accommodate interaction so I had to re-create the functionality in Flash. Working with a team, we began drawing wireframes to layout how the interface would be organized. Within a couple months we developed our first hi-fidelity **prototype**.

While building the prototype and rethinking our design specifications we continued gathering data about our users. We assessed the needs of potential users by issuing surveys. Additionally, I designed and performed a series of **usability tests** to analyze the interaction with the interface. The design process constantly involved user feedback through these questionnaires and user testing.

The interface began as a simple, poorly functioning map. Through iteration we finalized the design shown in the main window. This project is fully functioning and currently in use. At the beginning of the 2006 Fall semester at Indiana University, I handed out flyers to college freshmen advertising the application. While we do not make any money from its use, the feedback we continually receive shows this to be a success.

SUSTAINABILITY by BIKING

2006



Tools

illustrator
photoshop

Methods

sketching
poster/brochure
logo design
prototyping

Collaborators

Matt Henry
Tonya Stroman

We worked on this project with the Environmental Learning and Sustainability Initiative (ELSI) at IU as part of a service learning project. Our goal was to design a system that would promote **sustainability** but also bring environmental literacy outside of the classroom. Most students are not very knowledgeable about sustainability and most will not take related courses. So, we set out to develop a strategy that would promote campus biking while also affecting environmental literacy and awareness.

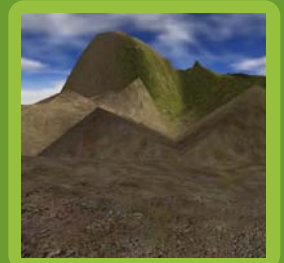
The system is geared around making bicycles more enjoyable and easy to use around campus. We mocked up a new bicycle parking lot that reduced the burden of locking bikes. We also proposed the idea of **customizable**, rented bikes that would allow students to add modifications as they rented the bikes from the university every semester. This concept was meant to ease the transition from the personal feel of cars. Each bike also has a sustainable interface to inform the user of how their actions affect the larger role of sustainability.

Our system also relied on the use of student energy cards (see sketch) and energy car permits (see cube). The cards worked alongside RFID sensors throughout the campus in bikes, computer labs, cars and rooms to store the student's energy usage. Each card had simple meters to motivate the student to conserve more. The car tag provided **incentive** not to drive. It comes equipped with RFID and a meter to keep track of miles travelled on campus. It removes parking privileges the more someone drives and vice-versa.

We not only designed a system but a larger initiative for the ELSI group. I designed a brochure to hand out but keeping in mind with the cause, I formed it as a cube in hopes that people would be more likely to keep it around rather than discarding it. I also designed a simple logo to be placed through the objects that would be sponsored by ELSI to increase awareness of the group. Their main concern was increasing **environmental literacy** and we felt we could achieve this by bringing ELSI and sustainability into the common discourse around campus.

IMPROVING PARK ACCESSIBILITY

2006



Tools

torque game engine
camtasia studio

Methods

storyboarding
experience prototyping
scenarios
bodystorming

Collaborators

Arvind Ashok
J. Michael Vore

This was a class project in how to make an **experience prototype**. We were instructed to prototype of a means for national park rangers to better assess their parks' accessibility. The goal of the project was not to prototype the device itself but to show the effect the device would have on the user. We went beyond simply thinking of usability because we really wanted to convey how a park ranger could empathize with park-goers who had various handicaps.

We used a program called Torque to create a virtual landscape to model the prototype effect. The program is normally used for making games but we utilized a small part of its capability to create a simple terrain and a character that could walk in it. On the far right is the "ranger" as he walks through our created park (the main image shows the overhead image of the park and loop trail). We created a series of screen recordings to show how the ranger would walk through the park.

Our focus in this project was to convey how an interface could give a ranger a better feel for what it is like to embody certain handicaps. After trying to simulate various handicaps ourselves (blindness, deafness, anxiety), we found that the major challenge is to provide the ranger with how the world is experienced through these park goes. Rather than using an interface to allow the ranger to check certain specifications around the grounds, we instead utilized 3-D modeling to physically change the landscape according to handicap.

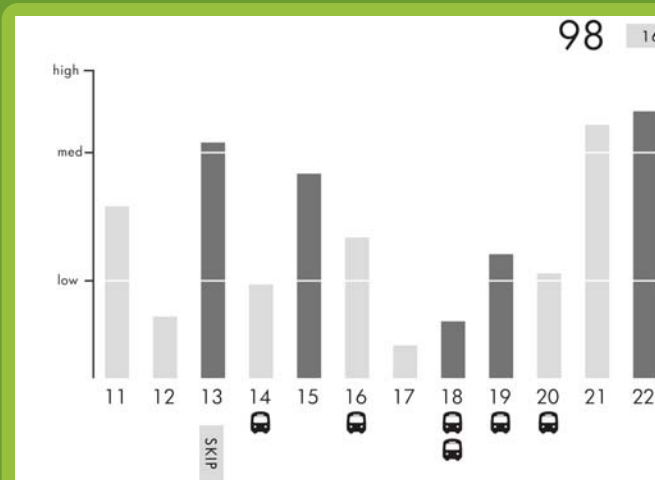
The right images show how the landscape of the park would change if the visitor had arthritic legs. Essentially, what would happen in the system is that it maps out the physical characteristics of the park then alters them based on a particular handicap. In this case, the system converts an otherwise low-grade incline to what it feels like to someone with arthritis in the top image—a trail with precarious inclines. This project showed what it is like to be **human-centered** rather than just user-centered.

ASSISTING INDIAN BUS CONDUCTORS

2007



model by Quagliara*



Interface Design



Research

Tools

illustrator
photoshop
maya

Methods

sketching
prototyping
3-D modeling
usability testing
surveys

Collaborators

Arvind Ashok
Nick Quagliara

For the 2007 CHI student design competition the theme was transportation and **SUSTAINABILITY** with the mantra to 'reach beyond'. We took this to heart and chose to design something for bus conductors in the Indian megalopolis, Madras. The city has an extensive public transit system in buses but the ridership is falling and the system itself is highly inefficient and polluting. The design space is highly restrictive in that buses are crowded and we are half a world away from the environment.

After doing extensive secondary research we found it would be difficult to change the system but we found how much of the buses hinge upon the role of the conductor. He tears tickets, takes money and tells the driver when to stop. Based on this insight we chose to focus our design efforts on helping and **augmenting** him (all conductors are male). From here we had a remote partner help us by surveying passengers and conductors in Madras and getting picture of the environment at bus stops (see above).

We saw the conductor's role as being pivotal but also very hectic. As a result, we tried to make design the object so that it would not interfere with his duties. Additionally, we did not want to merely replace the conductor with an automated system. We came up with an arm-band that serves mainly as a simple informational display. The information provides the conductor with real-time priority levels for upcoming stops, other bus locations and current number of passengers. Using this information, we gave the conductor the ability to make better **judgments** about when and where to stop.

Our design seeks to affect the Madras transit system from the bottom-up, using a **human-centered** approach. By focusing on the conductor this design has the ability to make bus stops more efficient, passenger transfers faster, and reduce traffic jams. We recognized early the constraints that faced us and the **cultural considerations** involved. From this we derived a simple, wearable device that seeks to assist and not replace. The end result we hope would be a less polluting and more sustainable transportation system.