Senior Design - Spring 2006
EE/CpE 424

Class 2 – 2/28/06
Outline

• Spring 2006 tasks
• Upcoming priorities
Senior Design Tasks – Spring ‘06

- Publish interim project report
- Develop final report
- Submit final report
- Oral/slide/poster presentations/demos
- Web site updates (15th)
- Weekly status Group Eff. Reports (Monday)

Timeline:
- 2/1
- 3/1
- 4/1
- 5/1/05
- Design Day: 4/27

Today
Senior Design Tasks – Spring ‘06

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2/1 3/1 4/1

Today

5/1/05

Design Day: 4/27

EE/CpE424: Senior Design
Spring 2006
Senior Design Tasks – Spring ‘06

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- 2/1
- 3/1
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- 5/1/05

Today

Design Day: 4/27
Verify Browser Compatibility
Not Everyone uses IE6.0
An Certain Unidentified Group’s Web Site:
Deliverables Schedule

• Interim project report due Tuesday after Spring Break (3/21/05)
  – Specific details on
    http://koala.ece.stevens-tech.edu/sd/material/Spring_Interim.pdf

  – Interim Progress Report vs. previous report focus:
    • updated design progress
    • current thinking about architecture, implementation, features and functions of prototype
    • how will you evaluate prototype performance?
    • subsystem tests and results
    • design risks and how to control them?
    • remaining technical issues

• Design Day is April 26th – less than 2 months from now
Design Day Resources Available

• 30” x 40” white poster board – I am assuming 2.5/group

• Large format HP DesignJet “plotter” in B200
  – You must coordinate the time you plan to use the plotter with TA so we can help you with this.
  – If previous years are any indication, most of you will show up after 6pm on the night before Design Day. If we run out of paper at that point, the chances of being able to find the special paper the plotter requires are slim. (Many groups were dismayed to see what happens when ink droplets are sprayed against paper that wasn’t designed to absorb them.)
  – Set your favorite illustrating tool (Powerpoint, PageMaker, MS Publisher, etc.) to a page size of ~22” x ~34” (D-size drawing) and generate pdf output. Bring the resulting file to B200 to print. (other printer formats have been used, but I have only tried .pdf)

• One or two 110 VAC outlets per group

• One or two Ethernet connections per group
Design Day 2003
Senior Design Day

- What will catch the interest of a passer-by?
- What have you done that is significant/worth demonstrating?

- Organization of the poster is important to maximize effectiveness
- Use each media (demo, words, pictures, conversation) to present what is best done with that media.

- Demonstrate your project concept
Project Brochure

• Introduced by a ‘03 ECE Senior Design group
  – Improved upon by ’04
  – ECE now sets the standard for other Departments’ Senior Design teams

• Provides a brief “take-away” synopsis of project

• Your project’s “business card”

• Each group must create one, put it on website, and bring at least 25 copies to Design Day

• Basic format at:
  http://koala.ece.stevens-tech.edu/sd/material/brochure format.pdf

  Enhanced format is worth extra credit

For more details, please visit our website:
http://koala.ece.stevens-tech.edu/sd/archive/03F-04S/websites/grpNN/
GPS Technology
Background: Basics 101

The Global Positioning System (GPS) is actually a constellation of 27 Earth-orbiting satellites (24 in operation and three extra in case one fails). Each of these solar-powered satellites circles the globe at about 12,000 miles, making two complete rotations every day. The orbits are arranged so that at any time, anywhere on Earth, there are at least four satellites "visible" in the sky.

A GPS receiver’s job is to locate 4 or more of these satellites, figure out the distance to each, and use this information to deduce its own location. This operation is based on a simple mathematical principle called trilateration. 3-D trilateration involves the intersection of the satellites’ spheres. A sphere is generated by using the distance between the receiver and a satellite as the radius. The receiver would exist on the surface of several satellite spheres at an intersecting point.

From www.howgpsworks.com

About the Stevens Campus:

"This land was a part of the island of Hoboken which was deeded on Feb. 16, 1663 by Peter Stuyvesant, governor of New Amsterdam, for the benefit of his sister Anna, widow of Samuel Bayard of Amsterdam. In 1784, these 564 acres belonging to Wilhe Bayard, her great great grandson, were declared forfeit because he had "joined the army of the King of Great Britain." They were bought at public auction for 13,360 pounds by Colonel John Stevens, "Treasurer on Horseback" of the state of New Jersey during the war of the Revolution.

In 1868, his son Edwin Augustus who had married Martha Bayard Dod of Princeton, a descendant in the seventh generation of Anna Stuyvesant Bayard, left this land and an endowment for a school of learning which was established in the year 1870 as the Stevens Institute of Technology."

-On the Wittenberg Wall plaque

Project Brochure

Group 2: eaGPS Senior Design Project 2004
A Sample Brochure from 2004

Environment Aware GPS Information Extravaganza

Project Description

The Global Positioning Satellite (GPS) System is one of the hottest technologies to permeate the consumer market from its military origins. GPS receivers are excellent at providing precise positional data on the globe, yet a vast potential for greater utilization of GPS technology as an interactive informational delivery aid remains to be tapped.

Current GPS systems for the consumer market make minimal use of the information provided by the technology. Our project intends to add environmental awareness, which the group defines as the ability to provide detailed information on what is situated at and around a particular location, and what is interesting or important about it, to portable GPS devices. By simply walking around and exploring, a user can get a full and meaningful account of a locale, including information such as the history of a statue or building, or perhaps that a restaurant near a particular location is highly regarded and is a "must-stop" eatery.

The group's approach to technically creating the described system involves the amalgamation of several existing technologies. The platform for this system is a Personal Digital Assistant (PDA) with a compatible GPS receiver module. The group has also developed a native application and database for this platform capable of providing the described usage.

Design Approach

PDA:
- HP iPaq H2215

Microsoft Products:
- Visual Studio .NET ’03
- SQL Server 2000
- Windows CE
- Embedded Visual Tools
- Pocket PC 2003 SDK

Earthmate GPS Receiver:
- USB-powered for laptop
- Bluetooth compatible

The Team Bios

Christopher Dong
Christopher Dong is the team leader of this project. Having the initial concept for this project, he has persistently driven the group mad in completing his "baby".

Nicole Taylor
Nicole Taylor is the assistant manager of this project. Her direct approach and calmness during adversity has made everyone jealous and scarred at the same time.

Omar McGarr
Omar McGarr is the leader of the ladies. The ladies like Omar. His past accomplishments are passing classes at the last moment and starting a game club based on the icebreaking game "Mafia".

Vijram Soor
Vijram Soor leads the procurement of project materials. The Police have yet to find the hoodies he's had (past... check the trunk). He was last seen impersonating a graduating engineer.

Allan Flores
Allan Flores is lovable, charming, and likes to flatter himself. His project support involved counting campus wildlife. None of the 2 bunkeys, 3 groundhogs, or geese were hurt.