ECE 1778:
Creative Applications for Mobile Devices

Lecture 6

February 13, 2013

Today

1. Assignments P4 and A4
2. Project Management and Execution
3. Schedule
4. Plan Presentations

Assignment P4

- Threads, Internet Files and Databases
  - Read a file containing names from an Internet-addressed file, do on a separate thread
  - Put names into a database
  - Emit searches on Google for the names on a different thread, and display one by one
  - Use threads (separate processes) to do the separate tasks.

- Due in two weeks – Tuesday Feb 26 at 6pm.

Assignment A4: Creativity, Sensors and You

- Key outcome of this course is to have Appers always thinking of ways to use this new Canvas that is a mobile device

- Goal of this assignment is to have you come up with creative apps in your field that make use of the sensors available today,
  - and perhaps some from the future

Recall, Mobile devices are:

- Powerful computers, capable of:
  - Optimization
  - Signal Processing
  - Data searching and sorting
- Networked well to the Internet
- Capable of several kinds of ‘output’
  - Screen
  - Sound
  - Vibration
  - Light

Be Creative!

- Part 1
  - Reprise & augment the description of your field, like that in A1

- Part 2
  - Given these sensors:
    1. Accelerometer
    2. Gyroscope
    3. Barometer
    4. Camera
    5. Light Sensor
    6. Proximity Detector

A4, Part 2, continued

- Come up with 3 Novel apps that make use of these sensors, **in your field**
  - Novel = no direct hit as an app for a Google search that there is an mobile app that already does this.

- Ask you to give some sense of the difficulty of the sensor processing you're asking for
  - e.g. Vision processing is hard, as you've heard
  - should calculate # of pieces of data that need to be looked at

- Can use any combination of sensors.
- Goal – give you practice being creative!

A4 Part 3

Consider the future, many more cool sensors invented:

1. 3D Sensing e.g. XYZ sensor – see video.
2. An ultrasound sensor that can look inside a body.
3. An Emotion Sensor – which says which emotion is being felt by the holder of the phone, and gives the intensity on a scale from 1 to 10.
4. A Blood Pressure Sensor
5. Brain Electrical Activity Sensor – brain electrical map.

- Invent three more Novel apps in your field
- Due in 2 weeks – Tuesday, February 26th at 6pm

Project Management and Execution

Your Project Plans

- Will have given you a well-defined final goal
- Should also have broken up work up into pieces
  - The block diagrams required in proposal

Now: Start Executing! How?

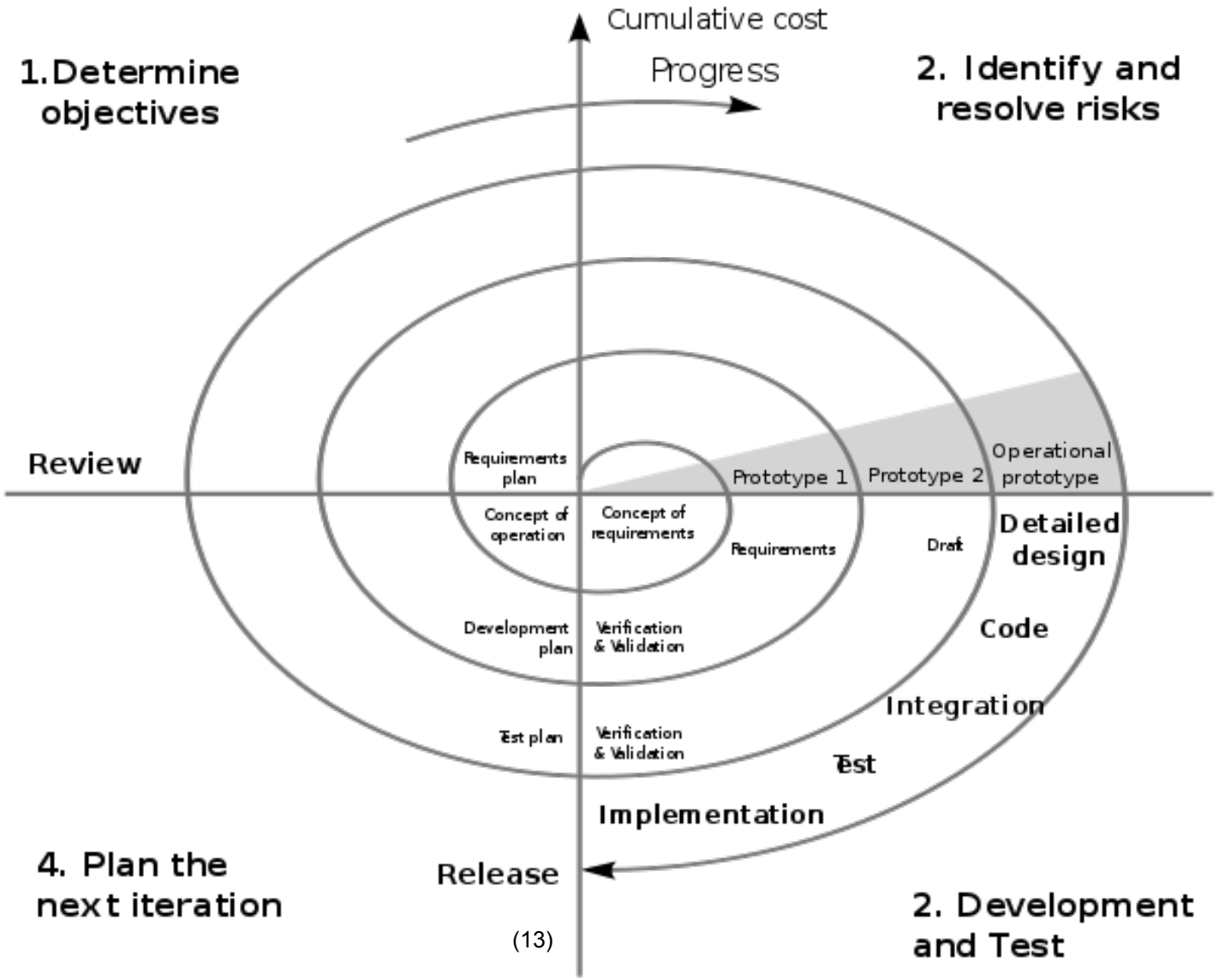
Focus: Spiral/Agile/Incremental Method

- Get the smallest part of your App working as soon as possible.
  - Exercise it, revise it, and build on it
  - Use your common sense to see if it is working, and if your goals need to be adjusted
  - After today's presentations, you should identify what the first working useful version should be 'Spiral 1' done in 2 weeks.

- Spiral vs. Waterfall method
  - Waterfall means plan everything out, documenting carefully
  - Software really needs to be exercised to see how well it works
  - Particularly true for user interface oriented software
    - but essentially true in all projects!

Waterfall vs. Spiral

Boehm's Spiral Model



Agile Software Manifesto

Agile Software Values: Choose

- **Individuals and interactions** over processes and tools
- **Working software** over comprehensive documentation
- **Customer collaboration** over contract negotiation
- **Responding to change** over following a plan

- while there is value in the items on the right, we value the items on the left more
  - From http://en.wikipedia.org/wiki/Agile_software_development

Spiral Method of Development

- To emphasize how important this is, the next key milestone in the course, presented March 6 is **Spiral 2**
  - A demonstration of a minimal working version of your app, after Spiral 1
  - Describe what it does, show it, say what next – say what you'll have done in Spiral 4
  - 5 minute Presentation (must include a live Demo) must be submitted **Tuesday March 5 at 9pm** to Braiden Brousseau, by email: braiden.brousseau@utoronto.ca

- March 6 is three weeks from now, a long time
  - You should get a working version of something prior to then
  - Call that **Spiral 1**
  - You should think now what your Spiral 1 is going to be

Next Steps

- Identify a Spiral 1 and Spiral 2

- Take your block diagrams, and break down into tasks
  - That lead to Spiral 1 and Spiral 2
  - Be prepared, of course, to adjust goals as you go along

Then:

- Define the tasks that need to happen
- Estimate how long they will take
  - If too long, re-do goals
  - Estimation is difficult; have to try; failure OK; can ask for help
- Assign Tasks to Each Team Member

Project Execution

- You're in a team, and you need to find an effective way to coordinate the team's work
- Agree
  - Who is doing what
  - When work will be done
- Have weekly or more frequent meeting; every 3 days?
  - If not in person, use Skype video or phone

Rule 1 for Effective teams:

- Make commitments,
  - check on commitments (task execution) each meeting
- Don't be unpleasant or nasty if commitment's not met, work together
  - However, don't 'look away' from it – face it and make a plan
  - Figure out if commitment was too ambitious
  - Re-work goals/commitments to be done next
- Do have expectation that contributions of each team member are equal

What About Disagreements?

- You're in a team, you're likely to have disagreements
- If this is your first project experience of this kind, this can be stressful

- **Resolution of disagreements is a crucial skill**
  - Take this as a opportunity to learn how to do it

Issues and Relationships

There are often two things going on when there is conflict:

1. Specific issues that give rise to a problem
   - Factual/strategic differences of opinion
2. Relationship between people
   - Trust, respect

Modified from: http://www.execstrategies.com/Facilitator/ConflictResolutionStrategies.htm

Relationship Focus

- Trust is at the root of all good relationships
  - Personal and professional
  - Must establish common goals and work towards them together
  - Trust is created when everyone believes that everyone else has the same goals

1. Maintain a fair, respectful communication style with careful listening
2. Expect and accept another's right to disagree
3. Realize the value of disagreement – it can lead to something better

The Schedule

1. February 20: Reading Week, **no class**
2. February 27: Michael Clarke and David Offierski from Konrad Group will give lecture on User Experience Design
3. March 6: Spiral 2 Presentations Part 1
4. March 13: Spiral 2 Presentations Part 2

5. Spiral 4 Presentations
   - March 20/27
6. Final Presentations
   - Weeks of April 3 & 10
7. Final Report Due April 12th

Assignment P4

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  - Emit searches on Google for the names on the thread, and display one by one
  - Use threads (separate processes) to do the separate tasks.
- Due in two weeks – Tuesday Feb 26 at 6pm.
- This is the last assignment.

Assignment A4: Creativity, Sensors and You

- Key outcome of this course is to have Appers always thinking of ways to use this new Canvas that is a mobile device

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Be Creative!

- Part 1
  - Reprise & augment the description of your field, like that in A1 but reflecting on what you've learned in this course – i.e. how does what you've learned relate to your field

- Part 2
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