CS 305: Social, Ethical and Legal Implications of Computing

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We will be right back, after these messages …

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Do you know about PCEP?

- PCEP is the PSU/PDX Cooperative Education Program
  - a 2-year internship program in which CS students work 20 hrs / week while taking 8 credits on campus.
  - PCEP gives you real-life work experience, money, professional contacts, and more
- See http://web.cecs.pdx.edu/~pcep/.
- There will be **Mandatory** Orientation Session on 9 April 2014 (FAB 086-01 at 18:30).

Looking for a Job?

- Check out the departmental Job List at:
  - http://www.cs.pdx.edu/resources/jobs
- The password is “psujobs”. New jobs are added daily, so check back frequently!

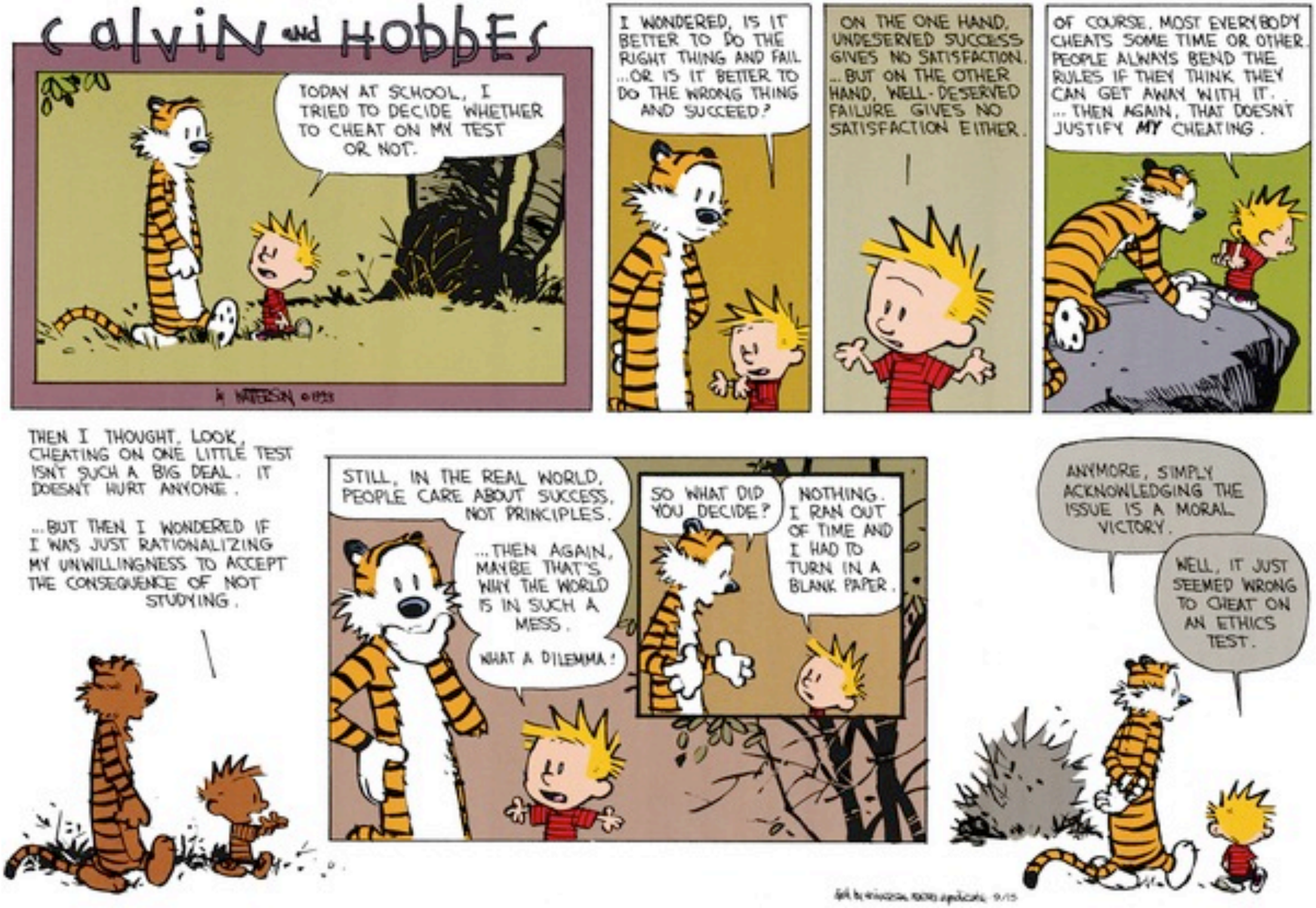
Course Goals

1. Identify the ethical issues that relate to computing in real situations you may encounter.
2. Decide whether a given action is ethical within the context of professional computing ethics, and justify that decision.
3. Look up relevant ethical standards developed by the ACM.
4. Prepare and deliver a short professional-quality talk on a topic relating to ethical, legal, and social implications of computing.
5. Research and write a professional-quality paper about a topic relating to social, legal, and ethical implications of computing.
6. Recognize situations in which there may be computing-related legal issues and know some legal principles to apply.
7. State several important impacts of computing on society.
8. State several examples of important ethical principles as they apply to computing related situations.

Course Information

- **Time and Location.** Tuesday & Thursday, 16:40-18:30 in FAB 150. No class on 29th April.
- **Web site:** http://www.cs.pdx.edu/~black/Ethics
- **Text.** A Gift of Fire (4th ed) Sara Baase. Pearson, 2013. ISBN-13: 978013249267-6.
- **Grading Policies.** Grades will be based on homework (25%), attendance/participation (20%), preliminary slides & abstract (5%), your presentation (20%), your evaluation of others' presentations (10%), and your paper (20%). ***In order to pass this class, you must receive at least 50% of the points in each category*.**
- **Academic Integrity.** You are expected to behave with integrity at all times. Cheating will result in a grade of zero on the assignment or exam on which the student cheats and the initiation of disciplinary action at the university level. Allowing another student to use your work as his/her own is also academic misconduct.

Calvin and Hobbes by Bill Watterson



Computing and Society

- How has computing and digital technology affected society?

Computing and Society

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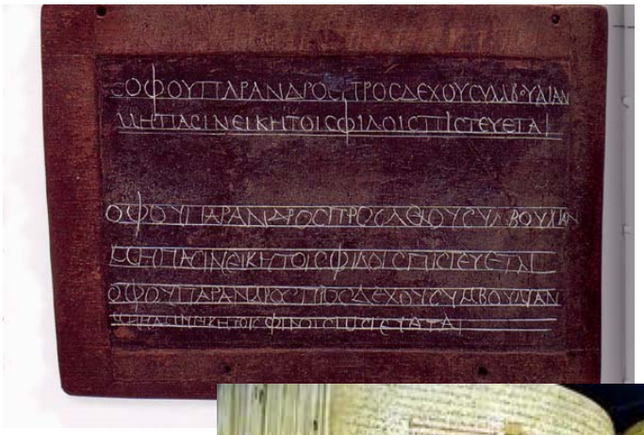
- Digital technology allows us to store, organize and retrieve massive amounts of data

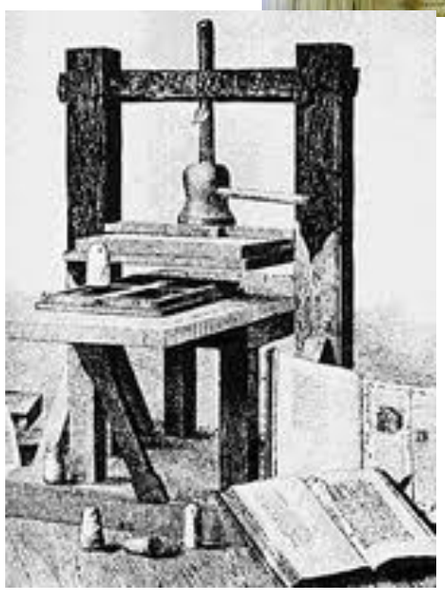
How did we get here?

- A short history of computing

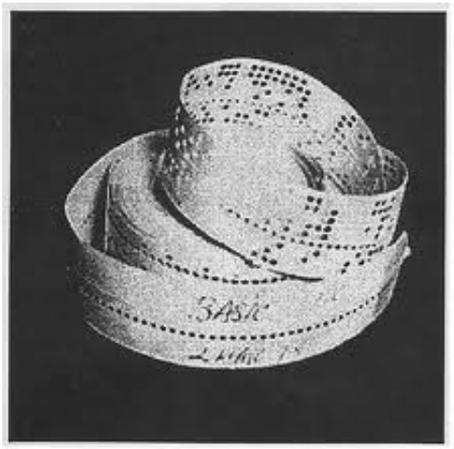
Storing, Organizing and Retrieving Massive Amounts of Data

- Storing Data
  - Wax Tablets [2000BC] – auxiliary storage
  - Codex [200s] – from scrolls to books
  - The Printing Press [1450s] – write once, produce many

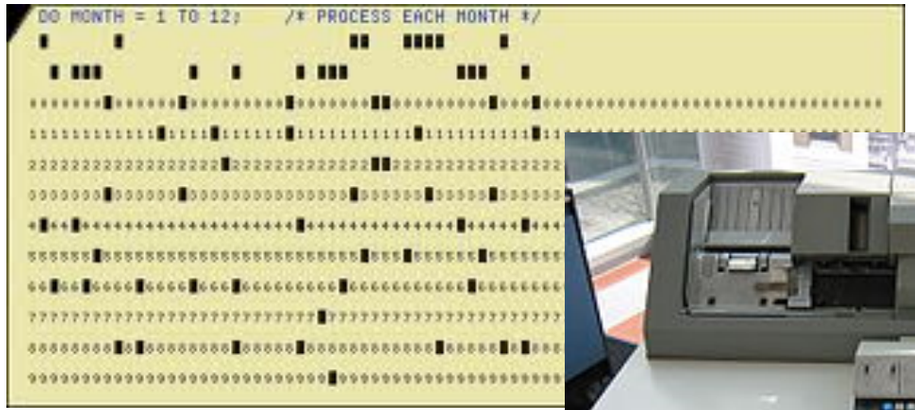




- Paper Tape [1870s]



- Punched Cards [1890s] – Herman Hollarith

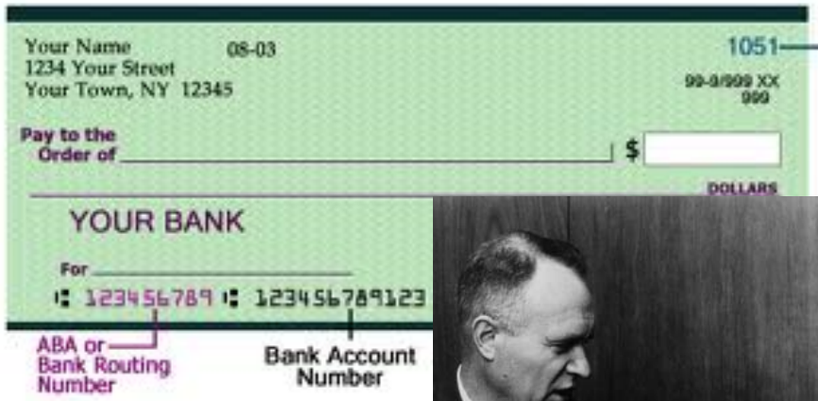


- Magnetic Storage [1920s] - audio

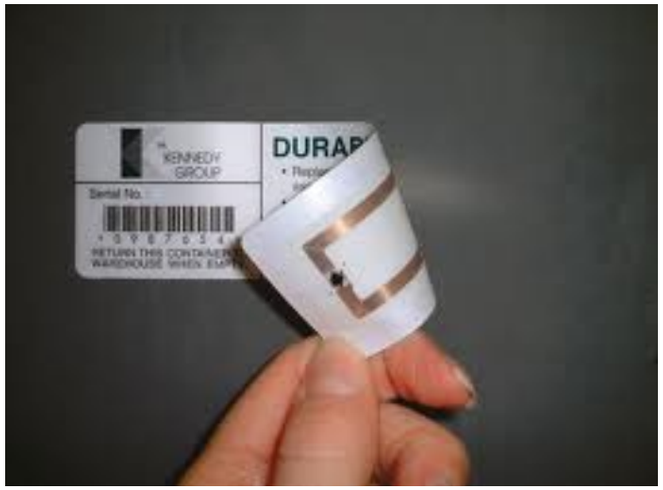
- Magnetic Data Tape [1951] - ~10M on a 2400 ft reel

- Hard Disk [1956] – 5M @ $35K/year – *RANDOM ACCESS*!

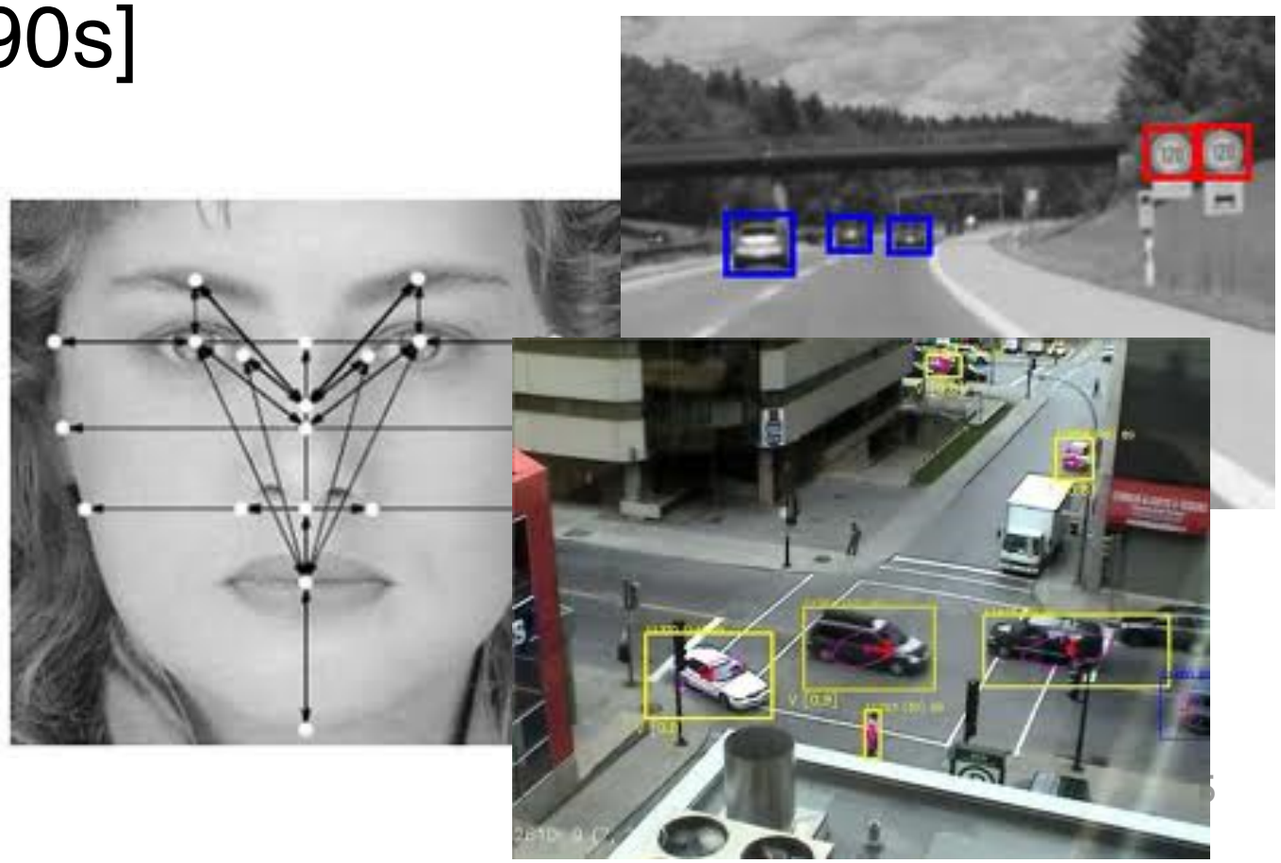
- Acquiring Data
  - Keyboarding [1920s] – IBM card punch
  - Optical Character Recognition [1950s]
  - Speech Recognition [1961]
  - Barcodes [1974]



- Radio-frequency identification (RFID) [1980s]



- Video Recognition [1990s]



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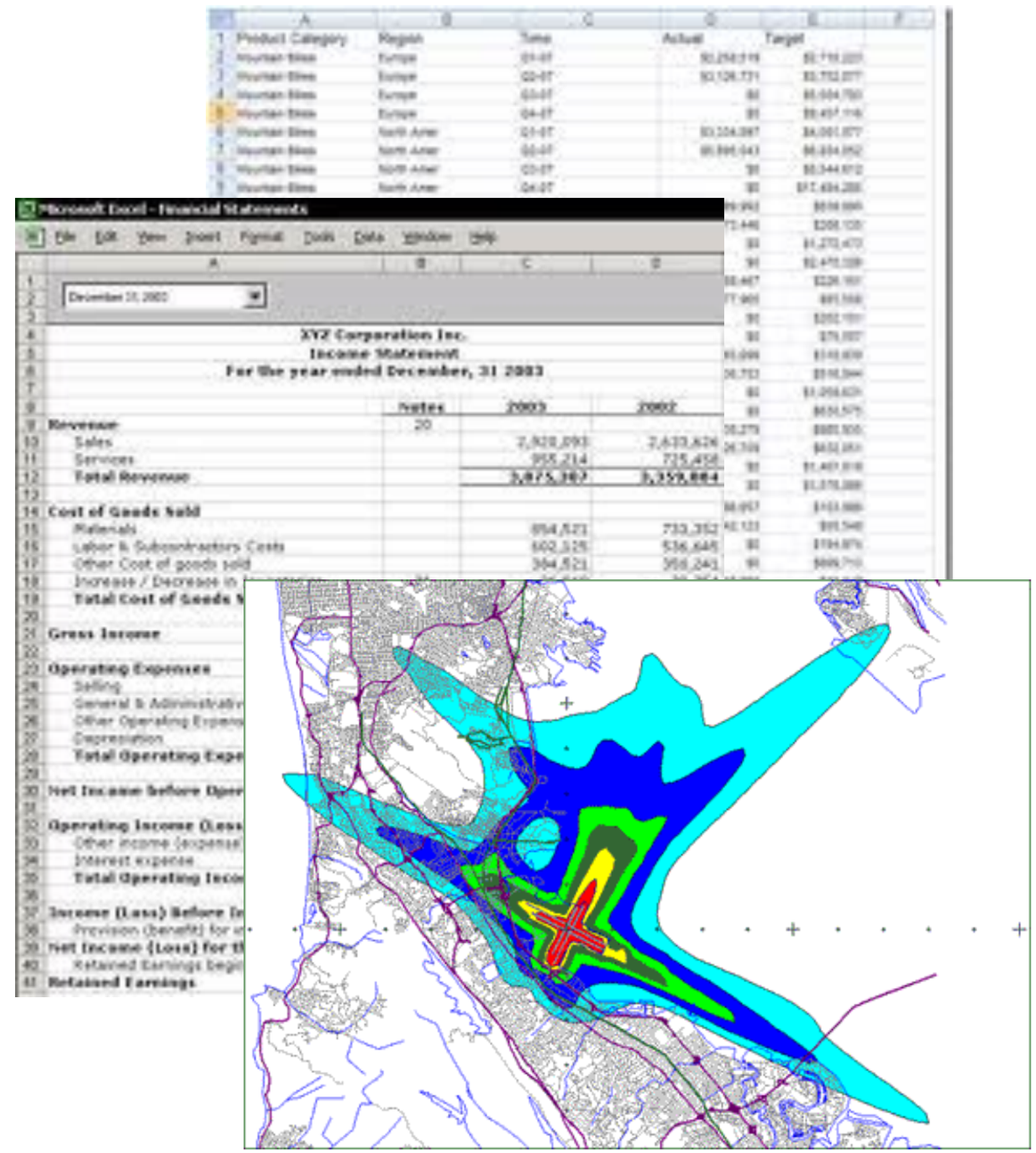
- Processing Data
  - Tabular summaries
  - Computations
  - Models
  - Predictions



Computing and Society

- How has computing and digital technology affected society?
- Digital technology allows us to store, organize and retrieve massive amounts of data
- Digital technology allows anybody to communicate with thousands or millions of people at a time

Ethical Behavior

- "Society"
  - Association of people organized under a system of rules designed to advance the good of its members over time
  - Cooperation promotes the common good
  - People in society compete with each other to divide limited benefits amongst themselves

Ethical Behavior

- Morality
  - Rules of conduct describing how people should behave in various situations
  - Moral dilemma – when a person belongs to multiple societies with conflicting rules
    - A pacifist living by the rules of his/her religion living in a country with a mandatory military service
  - What are some moral dilemmas you have encountered?

Ethical Behavior

- Ethics
  - Philosophical study of morality
  - Examination of moral beliefs and behavior
  - Rational, systematic analysis of conduct that can cause benefit or harm to other people
    - Focused on voluntary, moral choices people make
    - *Not* focused on choices that do not affect others
    - *Not* focused on involuntary choices
  - Technology forces us to update our moral guidelines constantly!
    - We must decide if problems are morally bad, good, or neutral based on our current (possibly out-of-date) moral guidelines

Ethical Problems

- An ethical problem: a situation in which reasonable people may differ as to whether certain behavior is morally justifiable
- Ethics requires rational, systematic analysis
  - "Doing ethics": creating *explanations* for why certain actions are right or wrong
  - Explanations: facts, shared values, logic

Ethical Theories

- Provide a framework for moral decision-making
  - Applied consistently to determine whether an action is right or wrong
  - Allow a person to present a persuasive, logical argument as to why certain actions should or should not be allowed
  - The argument should be persuasive to a skeptical, yet open-minded audience

Ethical Theories

- Theories covered in book
  - Kantianism (Deontological Ethics)
  - Utilitarianism (Rule & Act)
  - Natural Rights
  - Ethical egoism
  - Social contract theory

Class Discussion

- Read Handout on Toyota's firmware
- Discussion Questions:
  - Is software-controlled throttle an inherently bad idea?
  - What are the responsibilities of a software engineer working for Toyota when they hear a company PR Rep say: "*There are no real-world scenarios in which Toyota electronics can cause unintended acceleration.*" [http://tinyurl.com/qy5cncd]

Discussion Scenario 1

An organization dedicated to reducing spam tries to get Internet service providers (ISPs) in an East Asian country to stop the spammers by protecting their mail servers. When this effort is unsuccessful, the anti-spam organization puts the addresses of these ISPs on its “black list”. Many ISPs in the United states consult the black list and refuse to accept email from the black-listed ISPs.

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This action has two results.

1. The amount of spam received by the typical email user in the United States drops by 25 per cent.
2. Tens of thousands of innocent computer users in the East Asian country are unable to send email to friends and business associates in the United States.

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Discussion Questions

- Did the anti-spam organization do anything wrong?
- Did the ISPs that refused to accept email from the blacklisted ISPs do anything wrong?
- Who benefited from the organization's action?
- Who was hurt by the organization's action?
- Could the organization have achieved its goals through a better course of action?
- What additional information, if any, would help you answer the previous question?

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Discussion Scenario

The East Dakota State Police (EDSP) installs video cameras on all of that state's freeway overpasses. The cameras are connected to computers that can reliably detect cars traveling more than 5 mph above the speed limit. They also have image recognition software that enables them to read license plates and capture high-resolution pictures of the vehicle drivers. If the picture of the driver matches the driver's license photo of one of the registered owners of the vehicle, the system issues a speeding ticket to the driver.

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- After six months, the number of people speeding on East Dakota's freeways is reduced by 90 per cent.
- The FBI asks the EDSP for real-time access to the information collected by the video cameras. The EDSP complies with this request. Three months later, the FBI uses this information to arrest five members of a terrorist organization.

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Scenario 3

- Did the East Dakota State Police do anything wrong?
- Who benefited from the actions of the EDSP?
- Who was harmed by the actions of the EDSP?
- What other courses of action could the EDSP have taken to achieve its objectives?
- What additional information, if any, would help you answer the previous question?

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