Rapid Visualization
(G22.3033-011)

“The Project Binoculars”

Gary Zamchick, Brian Amento, NYU Spring ‘05
Overview:

• Drawing Inspiration
• Value Proposition
• RV and Innovation: An Iterative Process
• RV Methods & Goals
• Class Requirements
Drawing Inspiration
Walking Backwards into a Career

- **Illustrator**: Someone that comes up with ideas for a newspaper or magazine story. (NYT, W.S Journal, BW)
- **Multimedia Designer**: Someone that comes up with ideas for new ways of presenting media. (Teletext, Time Inc. New Media, ESI)
- **Rapid Prototyper**: Someone that comes up with ideas for new technologies. (AT&T Labs-Research)
- **Principal Information Designer**: Someone that comes up with ideas about how to present information (NGA)
- **Envisioner** (Rockwell): Someone that comes up with ideas...a Parade, a Children’s hospital, A watershow in Singapore, the future of shopping, an immersive museum...
Applying methods common in creative domains...
...to the development of novel technologies.

Exercise more vision and control over projects. Improve ability to define goals, envision solutions and define the user.
One constant

“I can’t think without a pencil in my hand.”

- Saul Steinberg
This class is about using simple drawings...

...to capture ideas, build on them, look at things in new ways, play, and communicate...

Rapid Visualization Spring ‘06
What you visualize is what you can get

"John uses the crossbow. He rides the horse by the store. The store is under the large willow. The small allasaurus is in front of the horse. The dinosaur faces John. A gigantic teacup is in front of the store. A mushroom is in the right of the store."
Wristband emits electromagnetic field detecting position of fingers, this translates to ASCII characters transmitted (bluetooth) to text-to-scene app on belt device. Castle scene is overlayed in townspeople’s visual environment through the augmented reality glasses.
Rapid Visualization gives you a license to consider the impossible.
Explore a set of useful intersections
Visclaimer

- This is NOT about large data set or programming visualization.

- It is NOT about information visualization (though it supports it.)

- It is about applying VISUAL thinking to application development
Value Proposition
Uncover valuable opportunities at the intersection of technical domains. Saves money usually lost to costly development cycles.

Higher value concepts; shorter time to market
- Tony O’Driscoll, IBM
Rapid Visualization & Innovation

An Iterative Rapid Visualization Process

Iteration 1
- Model Brainstorm...
  1. Visual/verbal attributes & metaphors
     Pages: 4
  2. Key visual concepts
     Pages: 1
  3. Brainstorm
     Pages: 2
  4. Early models
     Pages: 5
  5. Team feedback
     Page: 1
  6. Low tech model
     Pages: 4

...and Synthesis

Iteration 2
- Continuum Brainstorm...
  1. Visual/Verbal attributes & metaphors
     Pages: 2
  2. 1st pass models
     Pages: 2
  3. Sequence
     Pages: 4
  4. Dog & Pony
     Pages: 2

...and Synthesis

Iteration 3
- Refinement &...
  1. Powerpoint review by Leadership
     Team
     Pages: 5
  2. Mechanistic view
     Pages: 1
  3. Resource allocation
     Page: 1
  4. Leadership team feedback
     Pages: 2
  5. Final types
     Pages: 4

...Results

IBM Center For Advanced Learning
The benefit of being “irrational” is not always obvious to business managers...

Alan Cooper, *Inmates are running the asylum*

RV methods make consideration of the ridiculous, a cost-effective option.
Where RV makes a BIG difference:

- Clarifying Vision
- Defining goals
- Defining end user
- Design Iteration
- Putting feature debates to rest.
Some additional rationale

- **It’s the way of the future:** IDEO, Pentagram, Cooper Interactive - are strong advocates
- **It pays:** Companies spend a lot of money on this - from Citibank to Prudential to Time Warner to AT&T to IBM.
- **The market is enormous:** Anyone developing new products and services; Financial - News - Tech - Entertainment...
- **It’s a fun Job, someone has to do It**
Rapid Visualization Methods And Benefits
A New Set of Tools

- Concept sketches
- Storyboards
- User scenarios
- Service mock-ups
- Animation
We all develop our own way of applying them
Use simple sketches to represent powerful ideas.

Galvanize the efforts of a team.
Project ourselves into other people’s shoes...
Clearly define the end user
Envision novel solutions
Focus on things you are passionate about!
Lesson Overview

• Lesson 1 – Intro to Rapid Visualization
• Lesson 2 – AT&T Labs-Research
• Lesson 3 – Ah!, Aha!, Ha! Ha! Huh?
• Lesson 4 – Tool Visualization Brainstorm
• Lesson 5 – Tool Development – GUI
• Lesson 6 – Java 2D (applet development) – (Brian)
• Lesson 7 – NGA Case Study: RV and Kiosk Implementation – Midterm Project Due
• Lesson 8 – IBM Case Study: RV and Learning Models
• Lesson 9 – “WordsEye” – Bob Coyne Visit
• Lesson 10 – “Illustrative interfaces” W Bradford Paley Visit
• Lesson 11 – Envisioning Places (Rockwell) /Heuristics (Brian)
• Lesson 12 – Student Presentations (1)
• Lesson 13 – Student Presentations (2)
• Lesson 14 – Mini-Market Presentations
• Lesson 15 – Mini Market Presentations
Class Structure and Requirements

• This course has two key aspects:
  1. Lectures and discussion: Methods, case studies, visual explorations, ideation sessions, playful asides, personal visual approaches...
     - Class Exercises
     - Assignments - Due the following week

2. Tool Development:
• Tool Visualization - Midterm project
• Tool Design & Implementation - Final project
Tool Development:

- **Tool Visualization:**
  The use-of rapid visualization techniques to define a problem, target a user (define a persona) and visualize potential solutions.

- **Tool Design & Implementation:**
  The creation of a novel software application in Java 2D and Swing that results from the visualization work.
Tool Development Goal:
Must be inventive and highly relevant to a given user population. Emphasis on visual tools.

Examples:
1. Attendance Map
2. Nano-visualization tool
3. Ideation tool
4. Spring 2004 Examples
1. **Attendance Map application**  
   (A model for your final projects)

- **Implemented in Java 2D and Swing**  
  *(Reminder: circulate sheet for name, sketch of self, principal interest in CS, favorite type of music, country of birth)*
2. Nano-Visualization tool

**User need:** Tools that allow researchers to see useful configurations of molecules.

**Solution:** Create tool that maps molecules to a library of mechanical forms. Use this to visualize useful nano configurations.
3. Ideation tool

**User need:** Creative people lack tools that help them brainstorm new ideas and products.

**Solution:** An interface that searches for and brings together ideas and imagery from far-flung domains.
Spring 2004 examples

Experts comment on your lifestyle

MED UI
Eye Focus GUI
Heads Up
Mall Display

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• Tool Visualization Methodology
  - Team ideation exercises and sessions
  - Assignments

• Tool design & Implementation
  - Specification
  - Implementation
  - Final Presentation
  - Mini-Market Presentation

(Students will work in teams of two.)
Mini Market Presentations

- Improve upon the applications of your peers as if you were a competitive company.

- Sell us on the improvements you recommend with supporting visual materials.

- No additional programming required.
• **Student Presentations**
  2 Days - 20 min per - Schedule TK

• **Mini-Market Days**
  2 Days - 20 min per - Schedule TK
Grading

- Class Exercises - 25%
  - you must be present for these.
- Assignments - 25%
- Tool Development - 50%
  - Tool Visualization 25% (midterm project)
  - Tool Design & Implementation 25%
    - Includes Mini Market Analysis
Materials

- Java (1.4) - Java 2D and Swing (Free)
- 11” X 14” Bristol pad (Pearl Paint/Canal St.)
- Black Uniball Roller Pens (Micro .5mm) or Opti-Flow pens (Staples)
- #2 Pencils
- Post-its (3 - 5 pack)
- 2 Kneaded erasers
- Optional: a black concept sketch book
Assignment: My Exhibit Hall (Experience map)

• Imagine a museum exhibit space (25 X 50 ft). It is an immersive interactive environment supported by novel technologies. Its purpose is to herald what you as innovator have to offer the world.

• On an 11” x 14” sheet, draw 3 interactive exhibits within the space defining key accomplishments (some exaggeration of the truth is preferable.) Consider how people navigate in the environment, how they activate the interactives, what they see and do...Do little vignette drawings that show details. Use pencil (lightly!) to do rough sketches of the scene and then finalize drawing with pen. Try to imagine what would engage the visitors in your process, your thinking, your history. Be surprising.
Top 6 Key Take Away’s

#6: Rapid Visualization is a powerful tool for envisioning new products and services.

It was true then...

It is true now...
Top 6 Key Take Away’s

#5: You don’t have to be Leonardo to do it.
Top 6 Key Take Away’s

#4 - “The best way to get great ideas is to come up with a lot of ideas.” (Linus Pauling)

(a picture is worth a thousand words, a prototype is worth a thousand pictures.)

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Top 6 Key Take Away’s

#2 - New methods and tools can look where others have stopped looking.

“Everything that can be invented has been invented.”

Commissioner of Patents (1899)
Top 6 Key Take Away’s

#3 - The visualization of an end-user must be concrete, not elastic (as much as we may want them to be).

The Elastic User
Top 6 Key Take Away’s

#1 - Don’t underestimate the value of FUN.
Contact and other info

- **Office Hour**: After class (in this room)
- **Zamchick email**: zamchick@cs.nyu.edu
- **Amento email**: amento@cs.nyu.edu
- **TA email**: TK
- **Course Website**: cs.nyu.edu/courses/spring06/G22.3033-011/index.htm
- **Subscribe to**: www.cs.nyu.edu/mailman/listinfo/g22_3033_011_sp04
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