

Sketching User Interfaces

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About me

Bedarra Research Labs & Online-Learning.com

User Interface Designer
Client-Side Software Developer

Nortel Networks

Senior Product Design Manager
Senior User Interface Architect

Other

Art Director, MediaPlus Advertising
Owner, FAB! Design
B.F.A, Communications Design

www.online-learning.com/demos/portfolio

What we're going to cover

Why sketch?

What should we sketch?

Who should sketch?

When should we sketch during the design process?

Sketching tips

Sketching tools

Why Sketch?

Generate design alternatives

Product alternatives (value, usefulness, usability)

Technology alternatives (feasibility)

Too often we focus on **“the design”** instead of **“a design”**



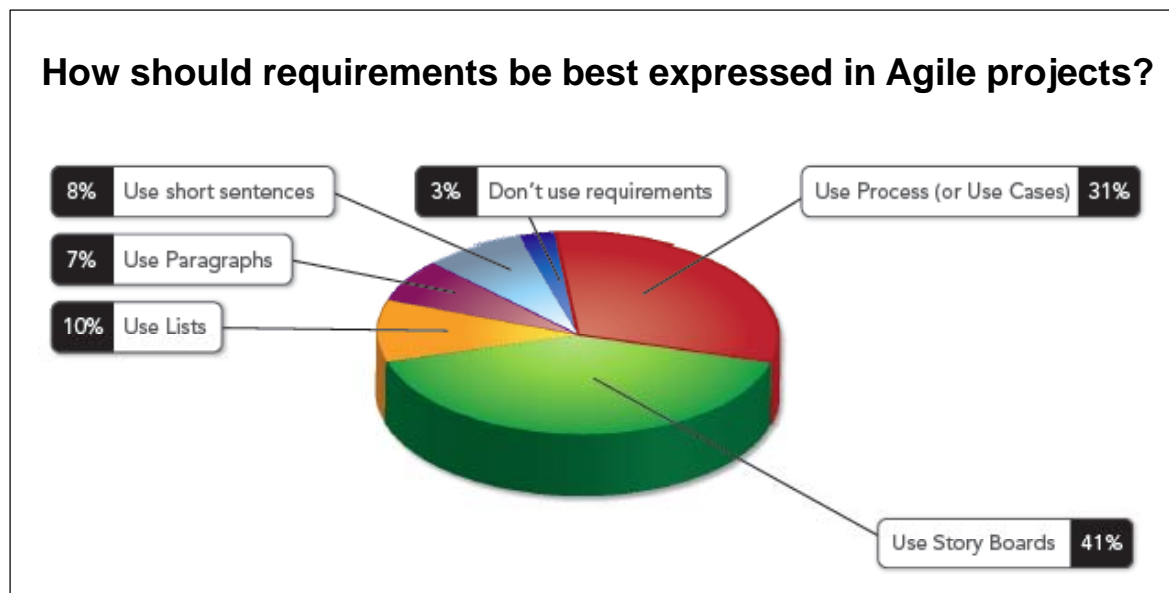
© Images by Jeff Patton

Developers understand sketches better than specs

“Requirements must be immediately consumable in Agile. If you are writing English prose, and paragraphs, developers will skip requirements all together and make their own.”

“...Requirements that include visual assets (such as business process diagrams, use cases, user interface mock-ups, and data relationships) require less interpretation from project teams and are more accurately leveraged for project direction...”

“We found that pictures are the right type of requirements.”



From The State Of Business Analysis In Agile Projects Survey © 2010 requirements.net.

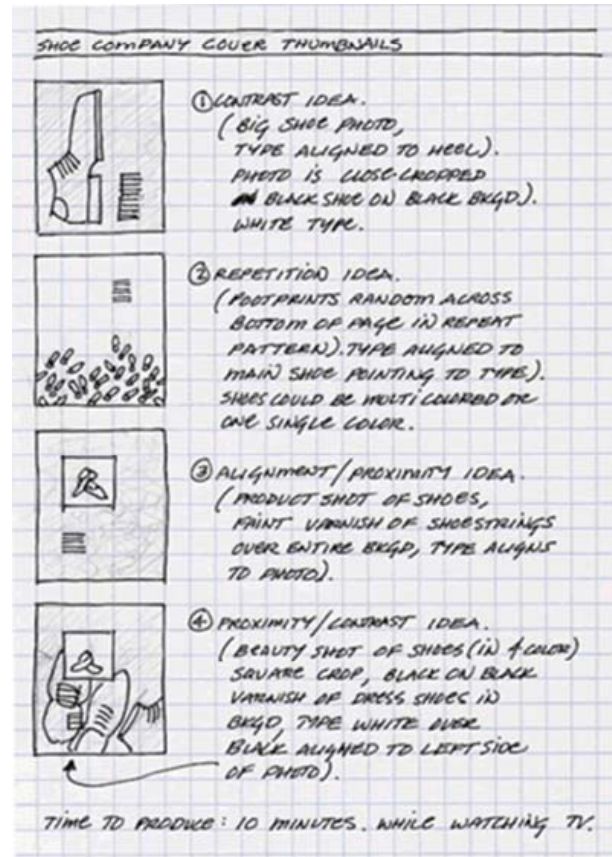
Why sketch?

Promotes collaboration inside the team



Why sketch?

Sketching is fast, cheap and easy...
Programming is slow, expensive and hard (very hard)...



Makes requirements concrete and tangible

Allows the team to visualize the system

!	Type	Name	Last run	Next run	Properties edited
<input type="checkbox"/>		Entire Site	01/05/2005 01:00	01/06/2005 01:00	03/05/2005 12:34
<input type="checkbox"/>		Main Pages	01/05/2005 01:00	01/06/2005 01:00	03/05/2005 12:34
<input type="checkbox"/>		Entire S	1:00	01/06/2005 01:00	03/05/2005 12:34
<input type="checkbox"/>		Main Pa	1:00	01/06/2005 01:00	03/05/2005 12:34
<input type="checkbox"/>		Entire S	1:00	01/06/2005 01:00	03/05/2005 12:34
<input type="checkbox"/>		Main Pa	1:00	01/06/2005 01:00	03/05/2005 12:34
<input type="checkbox"/>		DVD & V	1:00	01/06/2005 01:00	03/05/2005 12:34
<input type="checkbox"/>		Movies	1:00	01/06/2005 01:00	03/05/2005 12:34
<input type="checkbox"/>		Television	01/05/2005 01:00	01/06/2005 01:00	03/05/2005 12:34
<input type="checkbox"/>		Shop	01/05/2005 01:00	01/06/2005 01:00	03/05/2005 12:34
<input type="checkbox"/>		Win	01/05/2005 01:00	01/06/2005 01:00	03/05/2005 12:34

Use Cases In This Picture

1. Open business area
2. Print business area
3. Email business area
4. Export business area
5. Filter business area
6. Page list
7. Open help
8. Add report
9. Add dashboard
10. Add report configuration
11. Add dashboard configuration
12. List reports
13. List dashboards
14. List report configurations
15. List dashboard configurations
16. Open or view report
17. Copy report
18. Move report
19. Delete report
20. Open or view dashboard
21. Copy dashboard
22. Move dashboard
23. Delete dashboard
24. Open or view report config
25. Copy report config
26. Move report config
27. Delete report config
28. Open or view dash config
29. Copy dash config
30. Move dash config
31. Delete dash config

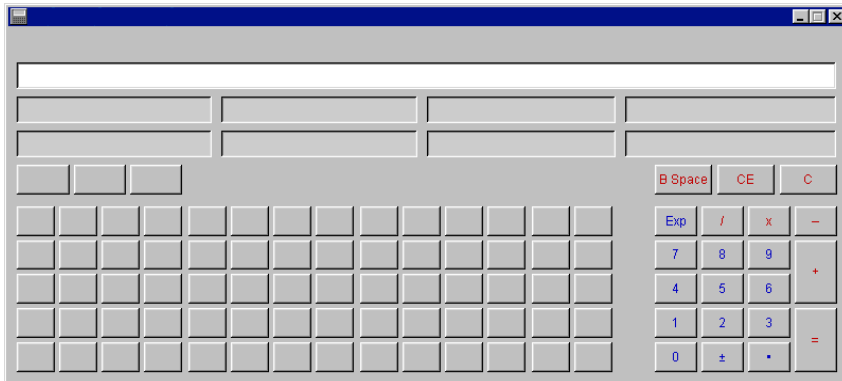
A GUI sketch is worth a thousand stories

Why sketch?

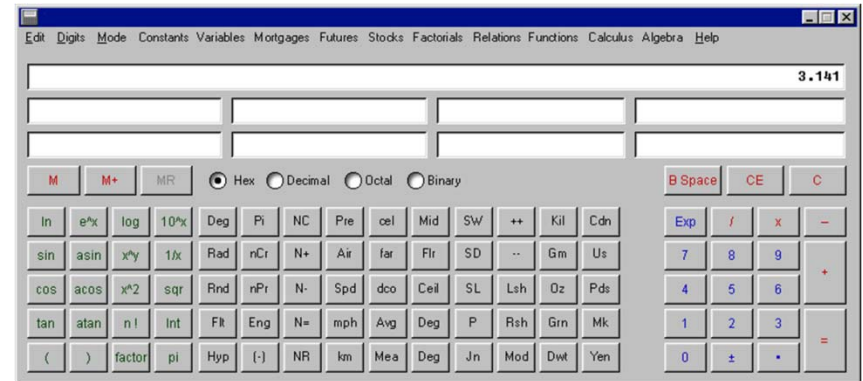
Helps the development team prioritize work items

Allows you to validate solutions with business and customers

Establishes a clear product vision



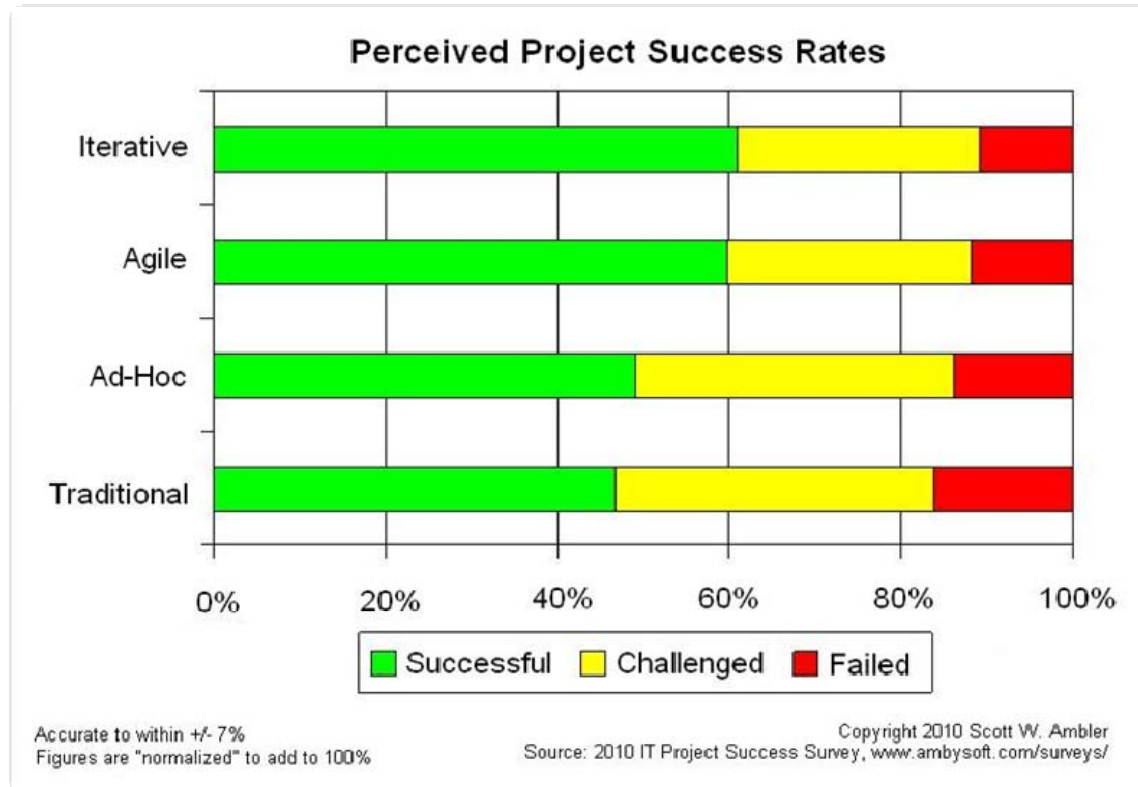
Release 1.0



Release N.N

60% of projects still challenged or worse...

I think projects often fail because we don't really know what we're building until it's too late. Sketching surfaces this issue quickly.



Who Sketches?

Anyone on the Design Team

Business and User Analysts

User Experience Designers and Prototypers

Software Architects

Software Designers and Prototypers

User Needs Analysts

When Should We Sketch?

When do you sketch?

“Sprint 0 has become a phrase misused to describe the planning that occurs **prior** to the first sprint”.

Ken Schawber, Co-creator of Scrum

“Separate design and development and have the user interface team progress **one step ahead** of the implementation team.”

Jakob Nielsen, From 2009 User Experience Projects

*Sketching should be done **before** and **during** development so that everyone knows what they are building **before** they try and build it.*

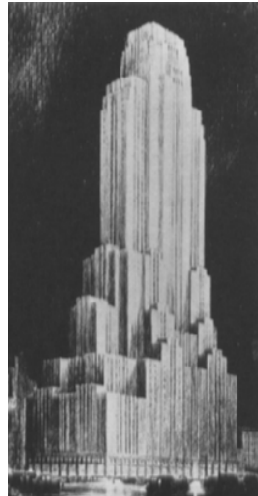
The “No Upfront Design” Myth

Myth: “Entire design for the Empire State Building was completed in two weeks!”

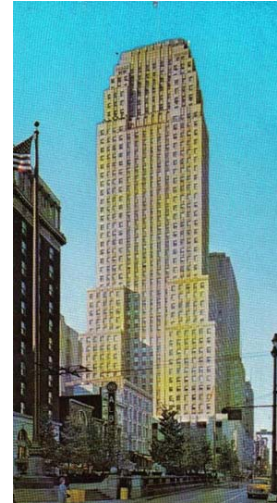
Fact: Team started *sketching* the building in 1927.



Reynolds Building
21 Stories
Completed 1929
Same Architect



**Waldorf Astoria
Office Building**
Initial Design 1928
Redesigned Summer 1929
Same Architect



Carew Tower
Built starting Sept 1929
49 Stories
**Different Architect
Same Builder**



Empire State
Build starting March 1930
102 stories including mast

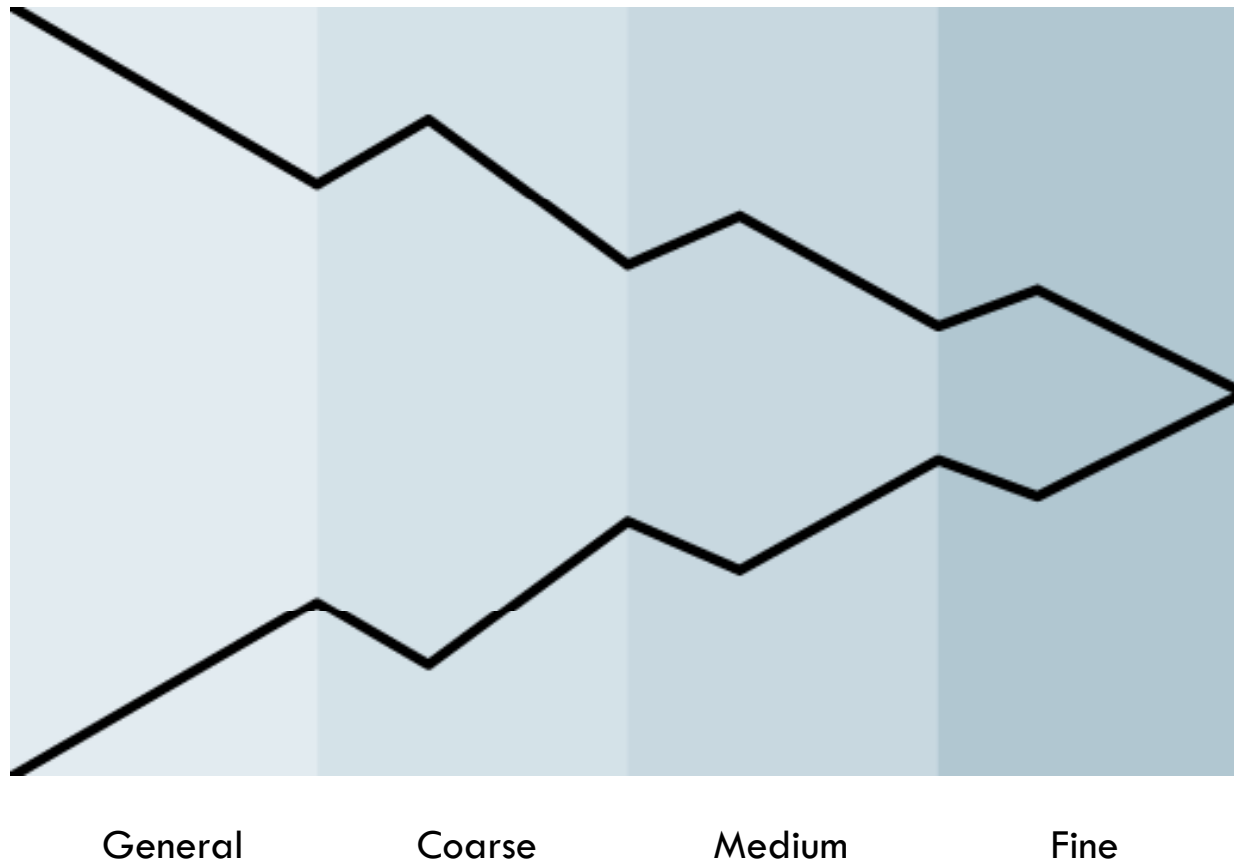
**“The building was planned and built, down to the smallest detail on paper,
before the first step was taken...”**

The Empire State Building: Making of a Landmark, John Tauranac. 1995

Generic View of Design Process

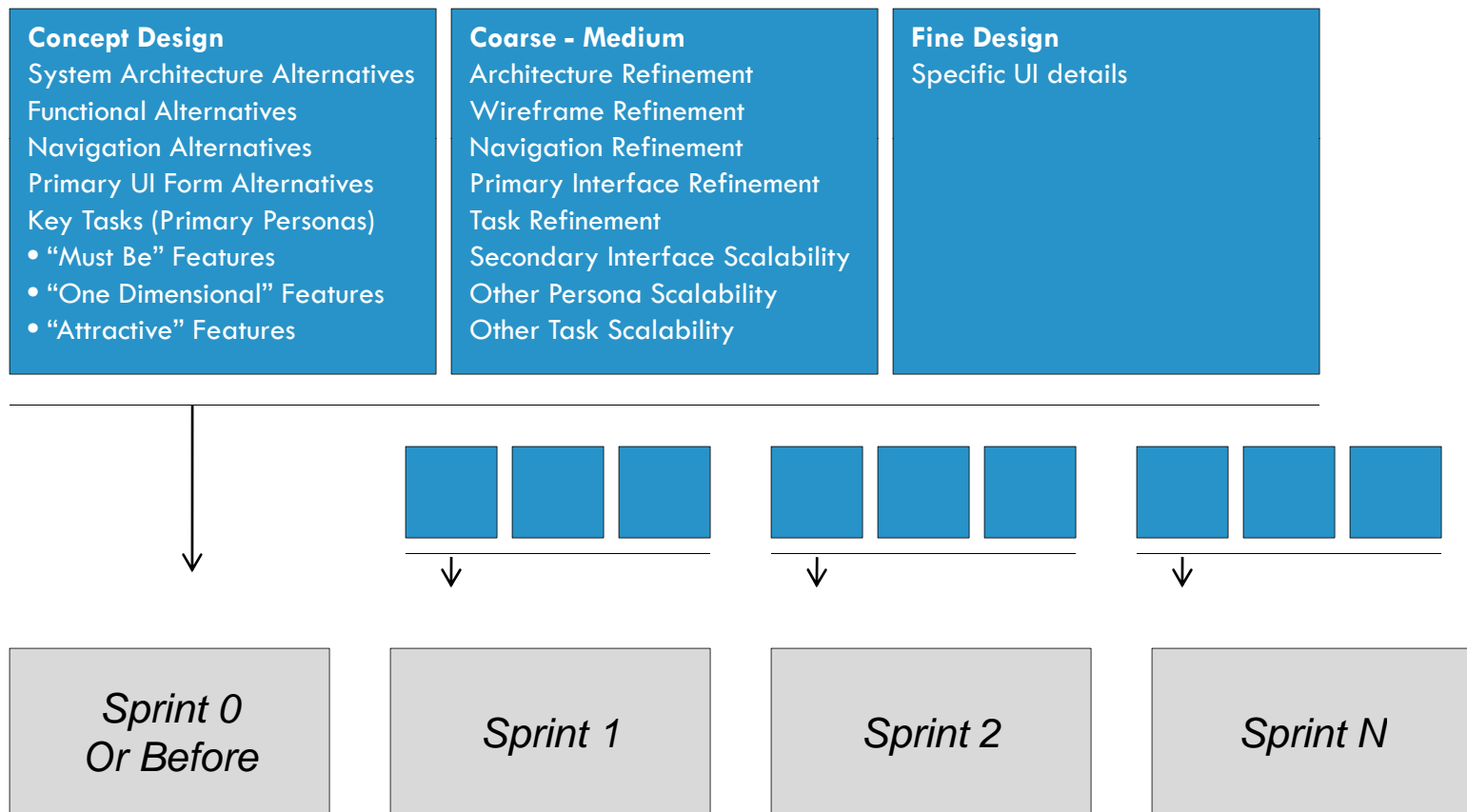
Pugh's Iterative Design Funnel

Concept Divergence Followed By Concept Convergence



Design Rollout

Concept Exploration and Basic Foundation Laid In/Before Sprint 0
Feature Design Rolls Out Throughout Project
Concept, Coarse, Fine Grain Design Occurs Across Multiple Sprints



What Should We Sketch?

What should we sketch?

1. Depends on what you are illustrating.
2. Depends on what you want to learn during verification.
3. Fidelity is a function of time and use of sketch.

Context alternatives (personas, problems, solutions)

System architectural alternatives

User scenario alternatives

Interface alternatives

Sequenced stories, taskflows or timelines

Specific stories or tasks

Interaction alternatives

Concept Design

System Architecture Alternatives
Functional Alternatives
Navigation Alternatives
Primary UI Form Alternatives
Key Tasks (Primary Personas)

- “Must Be” Features
- “One Dimensional” Features
- “Attractive” Features

Coarse - Medium

Architecture Refinement
Wireframe Refinement
Navigation Refinement
Primary Interface Refinement
Task Refinement
Secondary Interface Scalability
Other Persona Scalability
Other Task Scalability

Fine Design

Specific UI details

Design Context Sketches

Strategies, Problems, Behaviors, Scenarios

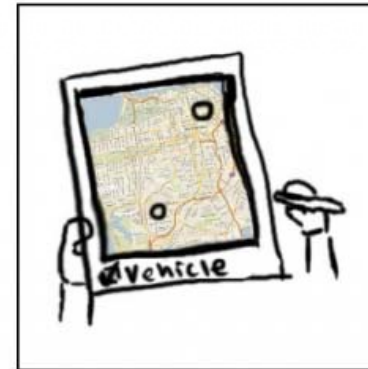
Trip Planning with a vehicle



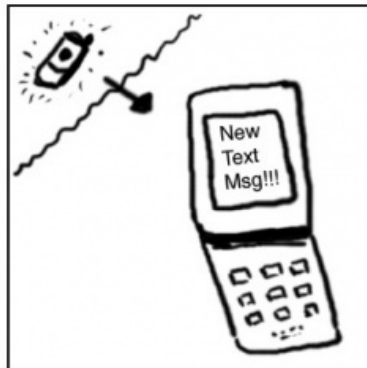
1) Commuter needs to go to a destination but does not know exactly how to get there.



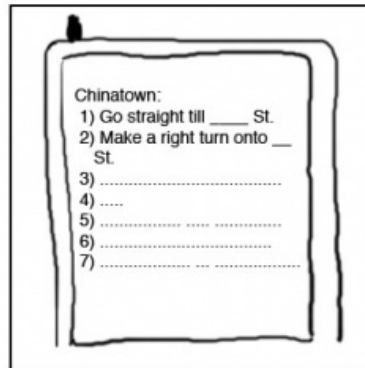
2) User takes out the Anoto digital pen and a copy of the local map pre-printed on Anoto paper.



3) User circles his current location and the destination and finally checks the vehicle box to request driving directions.



4) User receives a text message on his/her cell-phone containing the driving directions.



5) A list of detailed step-by-step driving directions is enclosed in the text message sent to the user.

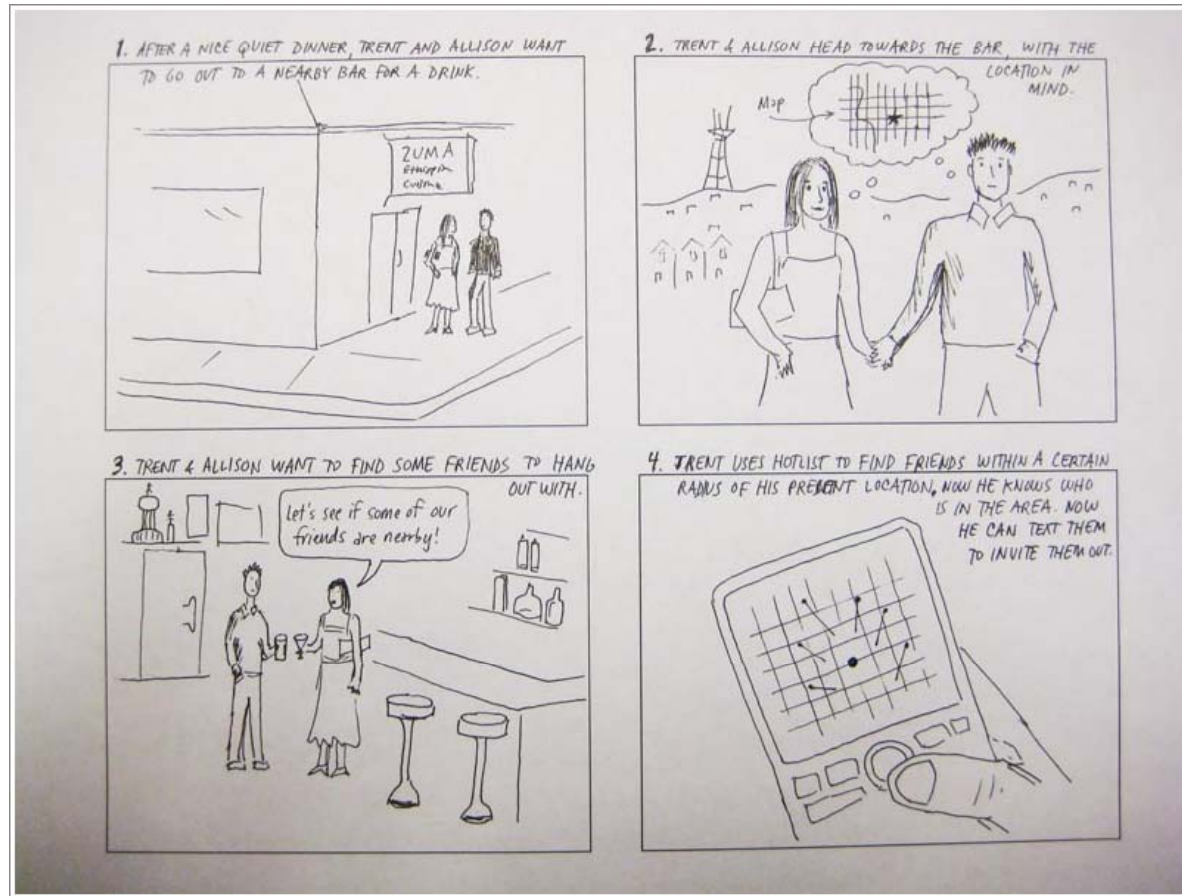


6) User can now focus on driving instead of worrying about how to get there.

©<http://vis.berkeley.edu/courses/cs160-fa06/wiki/index.php/ContextualInquiry-Group:KMAT>

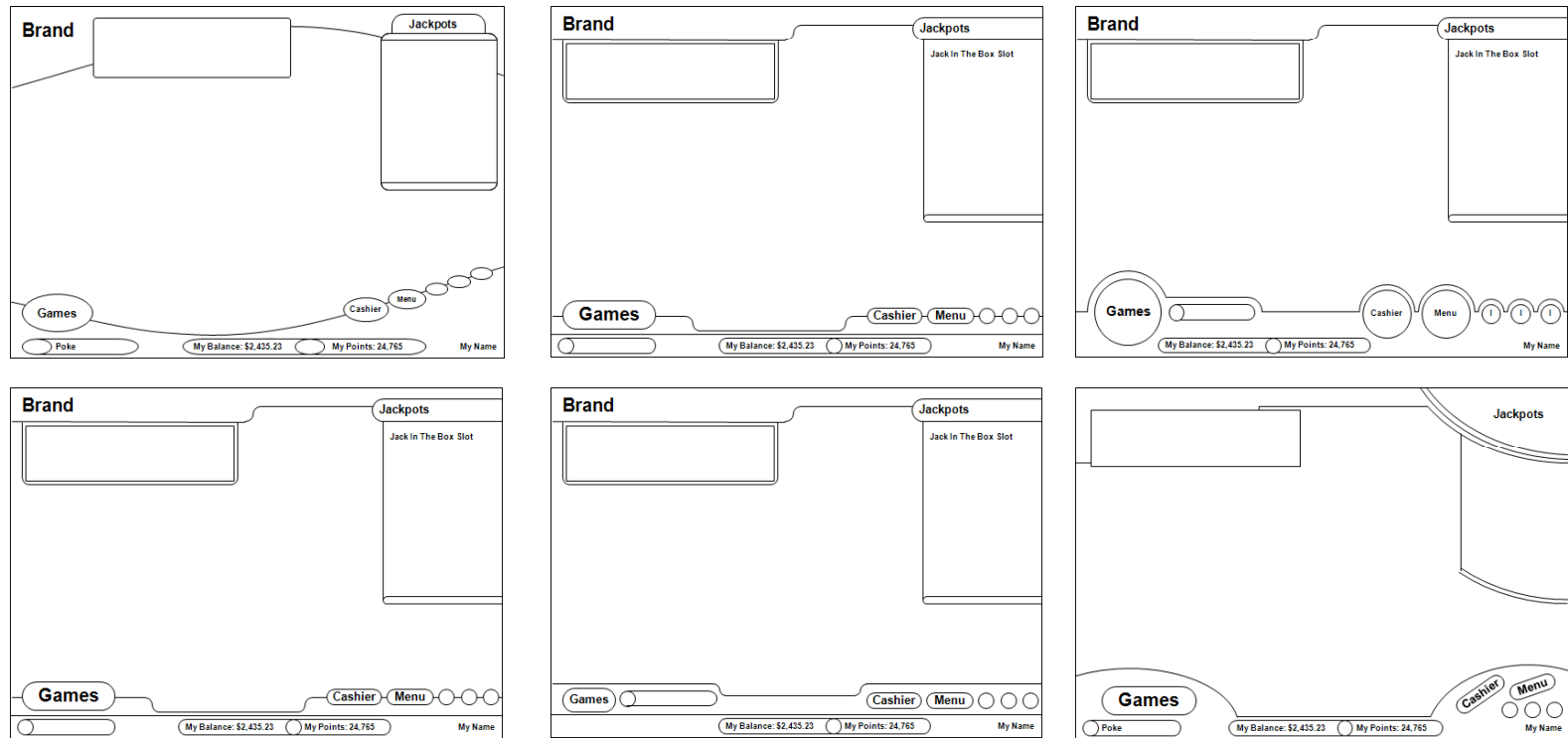
User Scenario Sketches

A sample storyboard for illustrating geolocation feature.



High-Level Form and Function Design Alternatives

Likely over 100 wireframes and comps

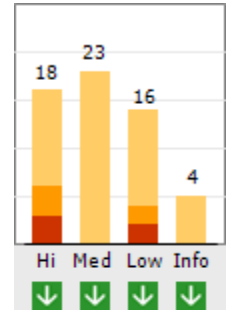
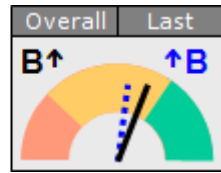
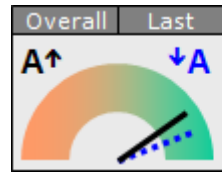
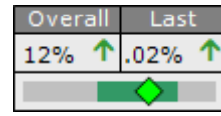
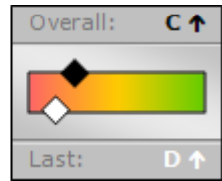
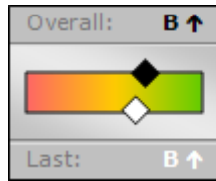


© Design Interpretive

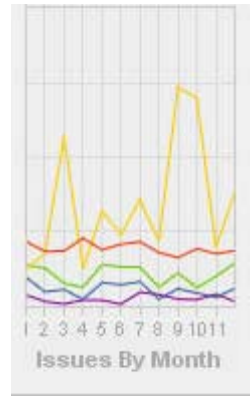
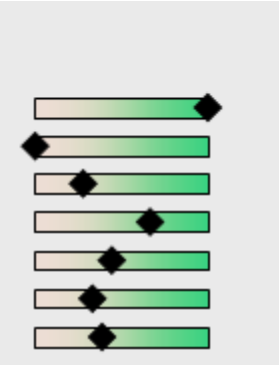
Detailed Form and Function Design Alternatives

Graphical display of issue trending over time
 These are sketches done in PowerPoint

Issue Summary By Region				
Region	Count	Issue Mix	% Chg	Trend
Products			+23%	↓↑
Coke			+11%	↓↑
New	232		+5%	↑↑
In Progress	2343		-23%	↓↑
Fixed	3425		+15%	↓↑
Avg Hrs To Repair	13		+15%	↓↑
Corporate			+11%	↓↑
Hydration			+11%	↓↑
Juice & Teas			+11%	↓↑
Sprite			+11%	↓↑
Locations			+23%	↓↑
Coca-Cola			+11%	↓↑
Coca-Cola			+11%	↓↑



	Broken Links			Graph Value
	Pages	Issues	%	
North	2342	13	0.555	100
South	5432	200	3.682	0
East	8765	238	2.715	31
West	6543	123	1.880	58
Products	6925	165	2.383	42
Services	11541	297	2.573	35
Customizations	4616	112	2.426	40



How Do We Sketch?

How to Sketch

Sketching **function (tasks)** using KANO

Sketching **function (task flows)** using timelines

Sketching **form** using LATCH

Sketching mechanics

Sketching interaction

Sketching function (tasks) using KANO

Task sorting drives architecture and ‘look & feel’

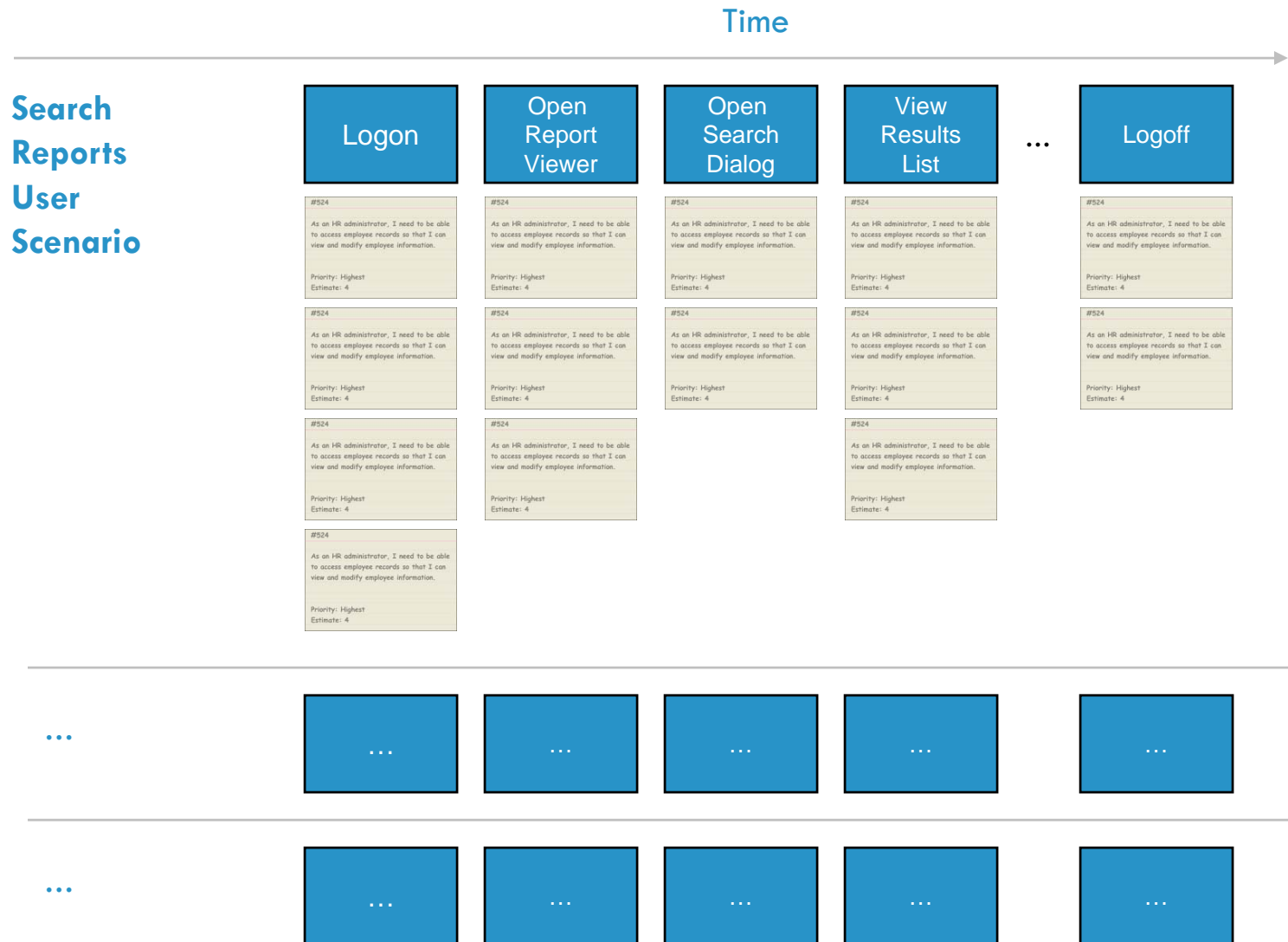
Task sorting helps you figure out what **NOT** to build

Kano model can be applied to sorting tasks

Persona-to-task mapping

Category	Description	Persona A	Persona B
Must Be	Taken for granted when filled. Dissatisfaction when not filled.		
One Dimensional	Satisfaction when filled. Dissatisfaction when not filled.		
Attractive	Satisfaction when filled. No dissatisfaction when not filled.		
Indifferent	Neither satisfaction or dissatisfaction		
Reverse	Satisfaction for some personas Dissatisfaction for other personas		

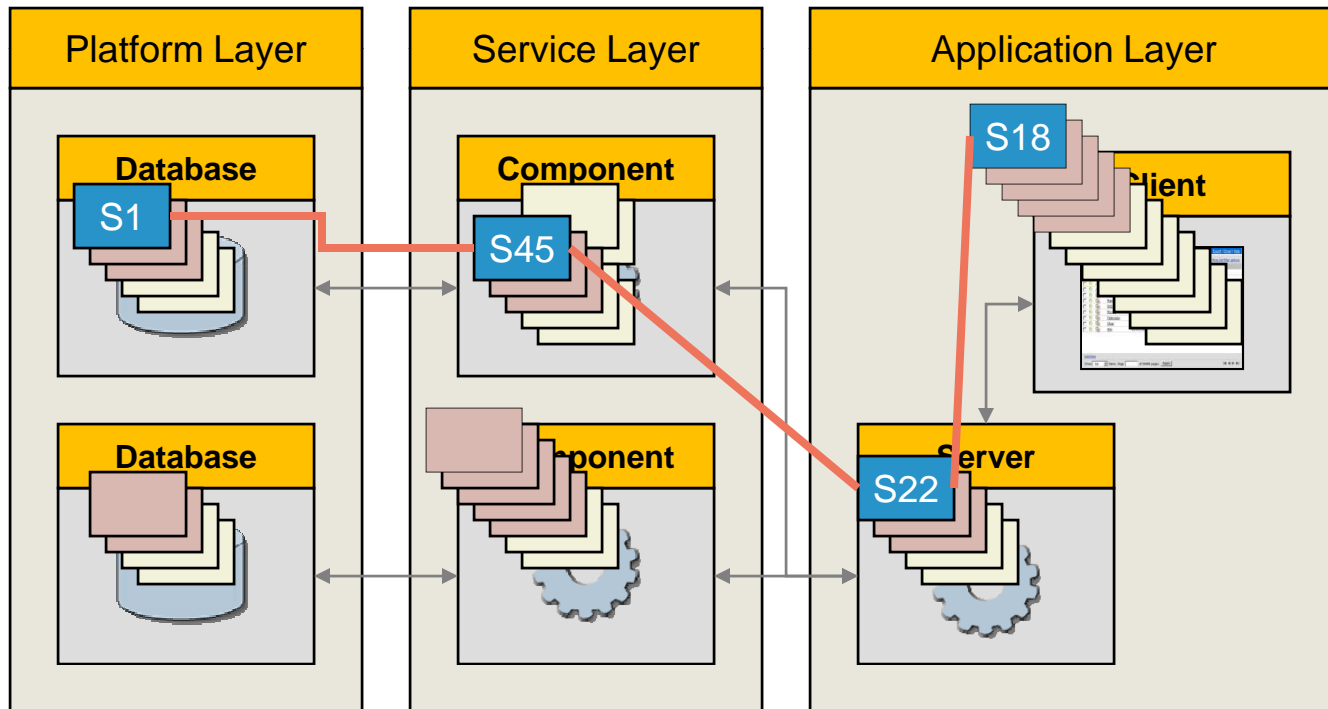
Sketching function (task flows) using timelines



Sketches Of User Scenarios Drive Development

Create a working 'thin slice' through the architecture

Also called tracer bullets, essential use cases



Sketching form using LATCH

Use LATCH to explore the user's organizational or mental model


Can be used in combination with each other

Views	Task 1	Task 2
Location or map views Used to show visual relationships between various display objects. (e.g. physical maps, network topologies, drawing, process, desktop)	X	
Alphanumeric views Used when tabular comparisons, search, filter are important (e.g. spreadsheets, alarm managers, email lists)		X
Time views Used when time is an important relationship (e.g. project management, calendars, planners, animation)	X	
Category views Used when the category is the important relationship (e.g. models, departments, organizations, classifications)		
Hierarchy views Used when seeing and understanding parent-child relationship is important (e.g. tree structure-based applications like Explorer or Outlook)	X	X

Based on Richard Saul Wurman's LATCH model. Read his book "Information Anxiety" for more information.

Example of a primary layout using a 'categorical' list

List model by category from search dialog




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Page 1 of 42 - 418 matches found
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Time share on Calabogie Lake. Facility has indoor pool, rental of boats, bikes, tennis, sand beach, dining room. Close to 9 hole & 36 hole golf courses. Mountain bike/hiking paths at Calabogie Peaks. Week 38 - 4th week of September. Come and enjoy the autumn colours, fish or boat on lovely Calabogie Lake. Take the chair lift up the Peaks to savour the sight of the surrounding mountains - a spectacular view not to be missed.


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\$68,000 **1288 Water Street # 350**
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Example of a primary interface using a 'location' model

“Location, location, location”

The screenshot displays a real estate search interface. At the top left is the REALTORS® logo with the tagline 'know real estate'. To the right are navigation links: Home, Help, Legal, Privacy Policy, Contact Us, and Français. Below these is a search bar with 'MLS® #' and a dropdown arrow, followed by buttons for 'Advanced Search', 'REALTOR® Search', 'Buyers Info', 'Sellers Info', and 'News'.

The main content area features a map of Kanata, Ontario, with various parks and neighborhoods labeled, including Lismer Pine Park, Beaver Pond Park, Varley Park, Lytle Park, Hazeldean, Roland Michener Field, Gow Park, Alice Wilson Woods, Beaverbrook Park, and Glen Cairn. Red circular markers with numbers (2, 3, 5) are placed on the map to indicate property locations. Above the map, it says 'Double-click or use the mouse wheel to zoom. Help 60 Properties / 1 Properties Not Mapped'. The map interface includes a compass, a zoom slider, and a 'Location' search bar.

On the left side, there is a 'Looking For' sidebar with the following filters:

- Residential (dropdown)
- Building Type: No Preference (dropdown)
- Style: (dropdown)
- Storeys: Any (dropdown), View: No Preference (dropdown)
- Beds: Any (dropdown), Baths: Any (dropdown)
- For Sale For Rent
- Price Range: 0 (dropdown), Unlimited (dropdown)
- Ownership/Title: No Preference (dropdown)
- Open House Only
- Garage Fireplace
- A/C Acreage
- Pool Waterfront
- Save Search: (input field)
- Search: (button)

On the right side, there is a list of property listings. The first listing is for \$167,900.00 in Kanata (MLS®710832), featuring 3 bedrooms and 2 bathrooms, listed by ROYAL LEPAGE GALE REAL ESTATE, BROKERAGE. The second listing is for \$169,900.00 in Ottawa (MLS®710599), featuring 3 bedrooms and 2 bathrooms, listed by ROYAL LEPAGE TEAM REALTY, BROKERAGE. The third listing is for \$172,900.00 in Ottawa (MLS®710660), featuring 3 bedrooms and 2 bathrooms, listed by KELLER WILLIAMS OTTAWA REALTY, BROKERAGE. The fourth listing is for \$174,500.00 in Kanata (MLS®709329). Below the listings is a 'Sort results by' dropdown menu set to 'Price' and 'Ascending'. The page number 'Page 1 of 6' and a 'Next' link are also visible.

Mechanics of Sketching

Course administration example from Scott Ambler
Content could be wall o' stickies, story cards,
task flows, interviews, etc



View student information

As a student, I want to be able to review my student information so that I can review it and make changes to it as necessary.
(e.g. view my personal information, view my courses, add courses, drop courses)

Done when:

1. See personal information such as first name, middle name, last name, student id, and modification date.
2. See course information such as title, code, and mark.
3. Edit name.
- 4 Add or drop course information

1. Invest in a set of tools

Pencil & Eraser
Sharpie Twin Tip
Fine Tip Marker
Marker Paper
Tracing Paper

A piece of graph paper

Pantone Markers – Warm or Cool Gray 1,3,5,7 (optional)

Scanner (optional)

OR

One of the many, many, many GUI building tools



2. Draw thumbnails of 'function'

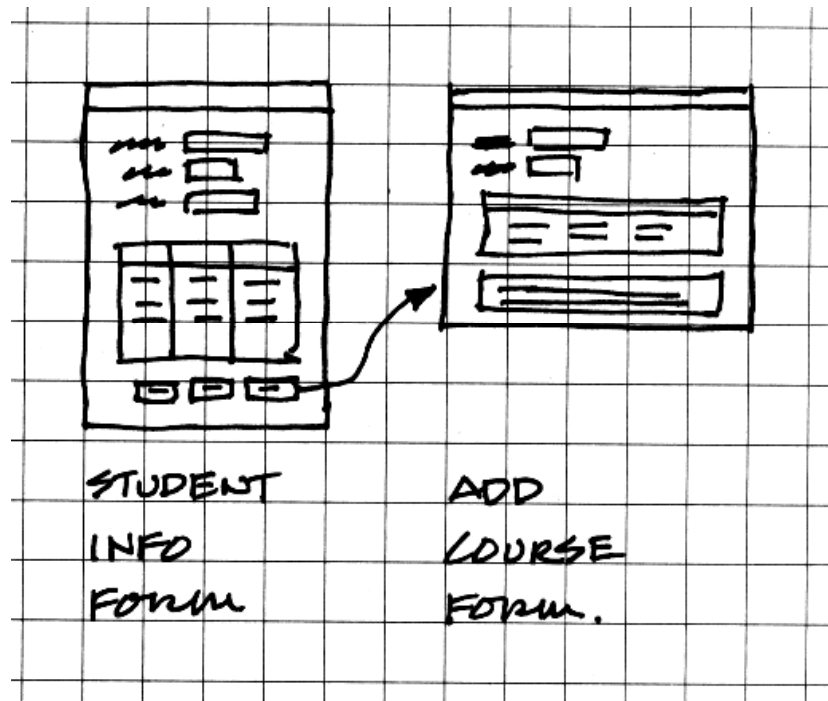
Tasks or task flows

View student information

As a student, I want to be able to review my student information so that I can review it and make changes to it as necessary. (e.g. view my personal information, view my courses, add courses, drop courses)

Done when:

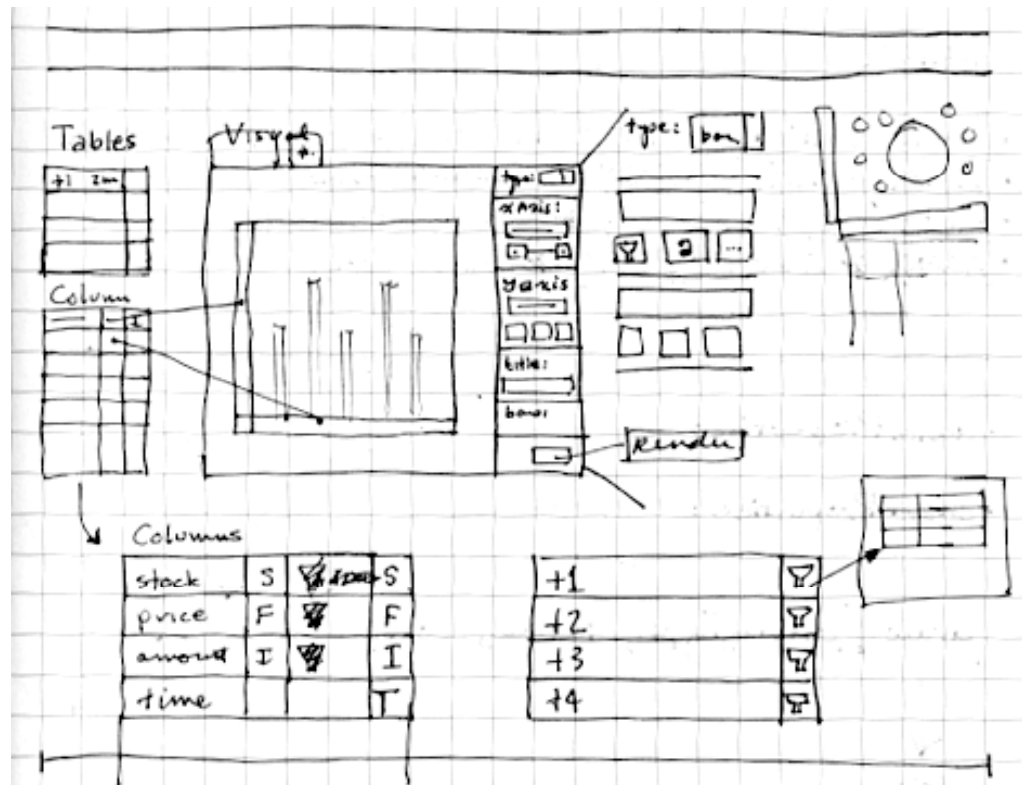
1. See personal information such as first name, middle name, last name, student id, and modification date.
2. See course information such as title, code, and mark.
3. Edit name.
- 4 Add or drop course information



Draw thumbnails of 'form'

Try drawing more than one alternative.

Thumbnails are about THINKING rather than DOING



Sketch mechanics: Before

This was Scott's original sketch...

View student information

As a student, I want to be able to review my student information so that I can review it and make changes to it as necessary.
(e.g. view my personal information, view my courses, add courses, drop courses)

Done when:

1. See personal information such as first name, middle name, last name, student id, and modification date.
2. See course information such as title, code, and mark.
3. Edit name.
4. Add or drop course information

Student Information Help

Student Number: 789-567-234

First Name:

Middle:

Surname:

Salutation:

Date First Edited: June 14 2003

Seminars:

Seminar	Term	Mark	Status
CSC 100 Intro to CS	Fall 2003	A+	Passed
CSC 200 Intro to AM	Fall 2003	A	Passed
CSC 203 Advanced AM	Spring 2004	-	Enrolled

© Scott Ambler www.ambysoft.com/

Sketch Mechanics: Improving on Scott's sketch

Draw in pencil first so you can erase mistakes

Use a grid under your sketch to line things up

Make corners square

Print text so that other people can read it

Student Information Help

Student Number: 789-567-234

First Name: Scott

Middle: William

Surname: Amber

Salutation: Mr. B

Date First Enroll: June 14 2003

Seminars:

Seminar	Term	Ave	Status
CSC 100 Intro to CS	Fall 2003	A+	Passed
CSC 200 Intro to AM	Fall 2003	A	Passed
CSC 203 Advanced AM	Spring 2004	-	Enrolled

Add... Enroll Transcript Close

VIEW STUDENT INFO

STUDENT ID: 555-234-1212

SALUTATION:

FIRST NAME:

MIDDLE NAME:

LAST NAME:

LAST MODIFIED: JAN-23-2011

COURSES

	NAME	ID	%
⊗	HISTORY	H101	80
⊗	MATH	M102	90

ADD COURSE

? SAVE CANCEL

Sketch Mechanics: Now add some contrast

- Thick lines around the edges
- Use accent shades on items and add comments
- Use drop shadows sparingly

VIEW STUDENT INFO

STUDENT NO: 555-234-1212

SALUTATION: ..

FIRST NAME:

MIDDLE NAME:

LAST NAME:

LAST MODIFIED: JAN-23-2011

COURSES

	NAME	ID	%	
<input checked="" type="checkbox"/>	HISTORY	H101	80	
<input checked="" type="checkbox"/>	MATH	M102	90	

ADD COURSE

? SAVE CANCEL

VIEW STUDENT INFO

STUDENT NO: 555-234-1212

SALUTATION: MR ▾

FIRST NAME: ROBERT

MIDDLE NAME: WILLIAM

LAST NAME: SMITH

LAST MODIFIED: JAN-23-2011

COURSES

	NAME	ID	%	STATUS	
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<input checked="" type="checkbox"/>	MATH	M102	90	ENROLL	▼

ADD COURSE

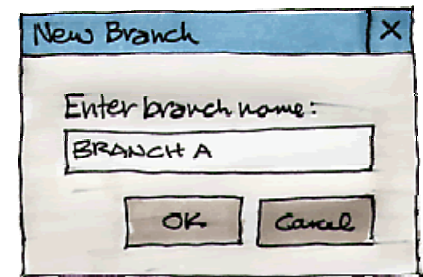
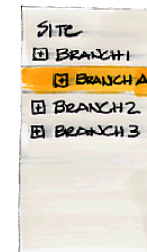
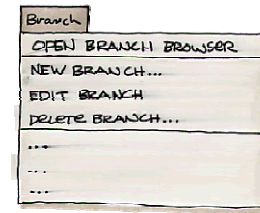
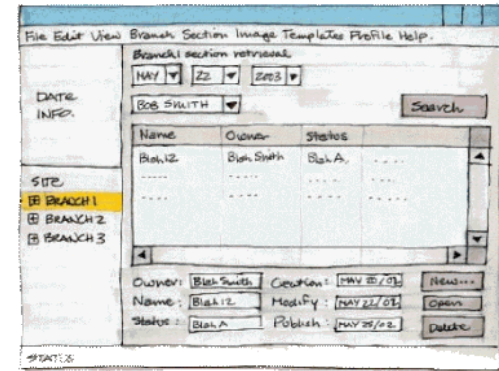
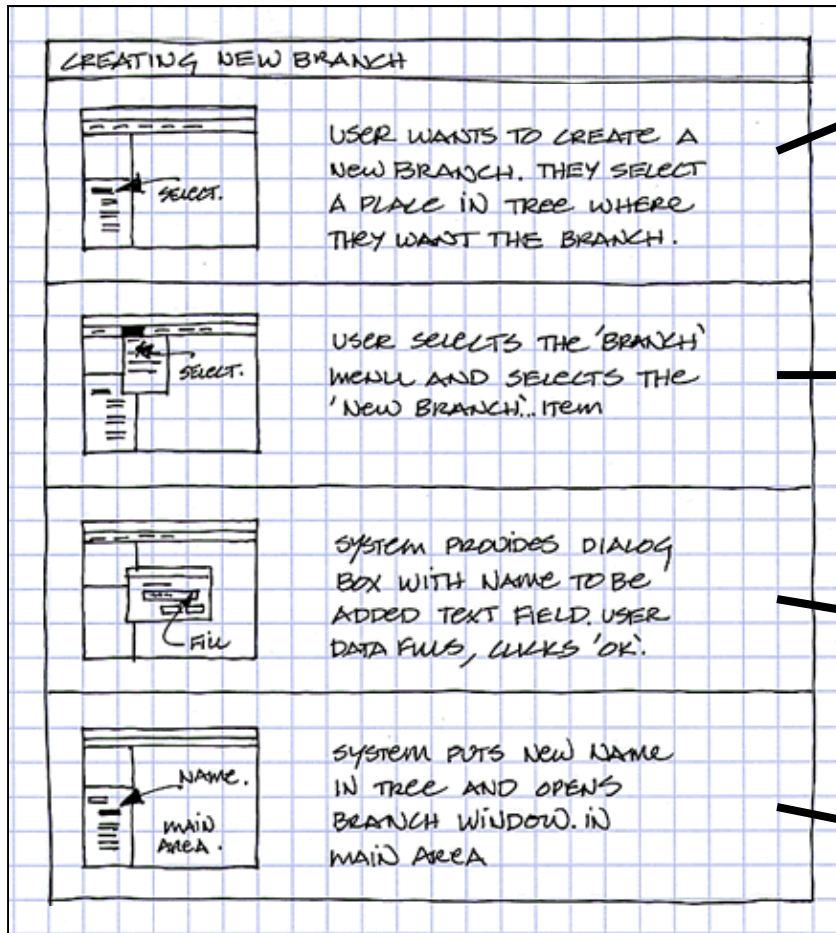
? SAVE CANCEL

DELETE ICONS

HELP ICON

Sketch Mechanics: Adding interaction

Use tracing paper or PowerPoint



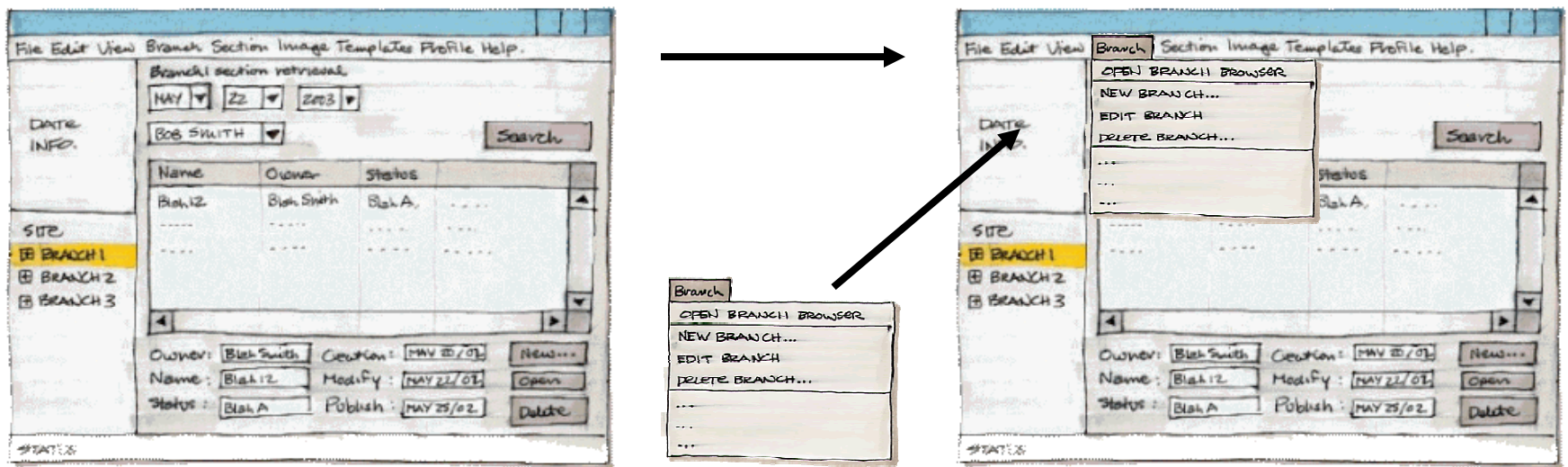
Sketch Mechanics: Low-fidelity prototyping

If you are using paper, it is like putting paper clothes on paper dolls

If you are using PowerPoint, it is a sequence of slides

Very fast, very cheap and very approachable

Increase the fidelity as necessary (paper, PPT, flash, software)



Low-Fidelity Prototype Example

Low-fidelity prototype

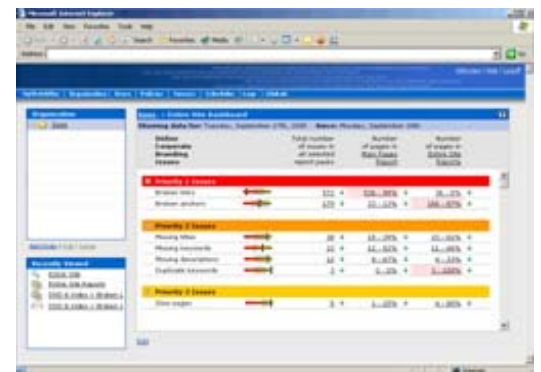
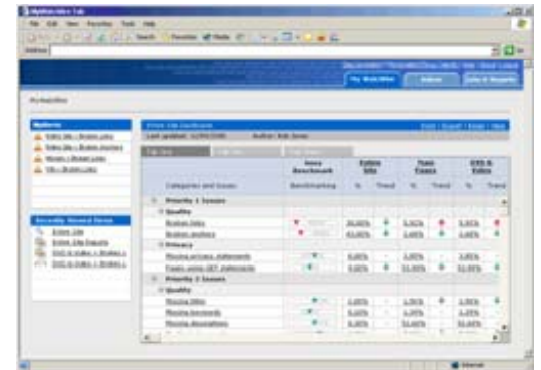
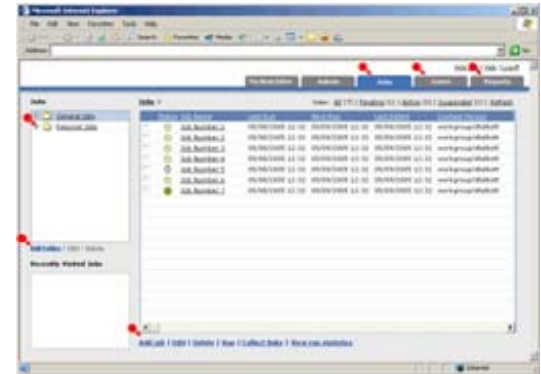
- Initially rough and then later refined drawings
- Interactive branching allowed walkthrough
- User model, task model, task flows
- 3 structure and navigation alternatives
- 2 visual form alternatives

Concept iterations

- 6 iterations (expanding from 8 to 48 screens)
- 3 sprints
- 3 internal / 2 external customer sessions

Detail iterations

- 3 iterations (148 screens)
- 8 sprints
- 3 internal / 1 external customer sessions



Tons O' Tools

Pros: Eliminates tedious operations, add interaction, review, doc
Cons: Slow, pre-canned widgets

Adobe FireWorks CS4
Adobe Flash Catalyst (former Thermo)
Autolt
Axure
Balsamiq Mockups (integrates with JIRA)
Blueprint
Creately
DesignerVista
Denim
EasyPrototype
FlairBuilder
ForeUI
Carreta GUI Design Studio Commercial
Hot Gloo Subscription
JavaFx Open Source
Justinmind Prototyper Commercial
JustProto Subscription
LucidChart
Lucid Spec

Microsoft Expression Blend
Microsoft SketchFlow
Mockflow Subscription
Mockingbird Subscription
MockupScreens
Napkin Open Source
Pencil Open Source (Integrates with FireFox)
Pidoco
ProtoShare
Quplo
ScreenArchitect
Serena Prototype Composer
Simulify
Storyboard Suite
Smart Draw
Visio stencils
WireframeSketcher (integrates with Eclipse)
InPreso Screens

Pencil

Free Firefox Plug-in

View Student Information [] [] [X]

Student Number: 234-543-6675

Salutation: Mr ▼

First Name: Robert

Middle Name: William

Last Name: Smith

Modified On: January 23rd, 2011

Courses

<input type="checkbox"/>	Name	Code	%	Status
<input checked="" type="checkbox"/>	History	H001	90	Done
<input type="checkbox"/>	Math	M001	80	In Progress

[?] [Save] [Cancel]

Need to figure out status names

Thank You!