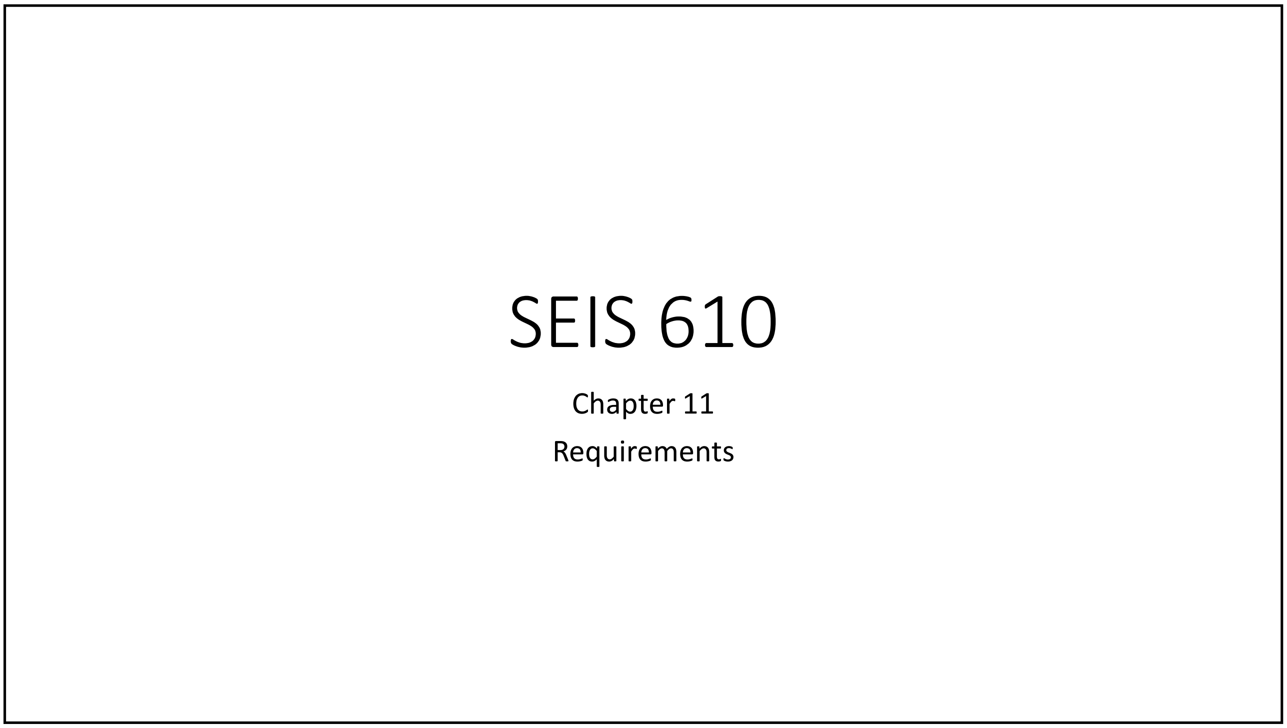
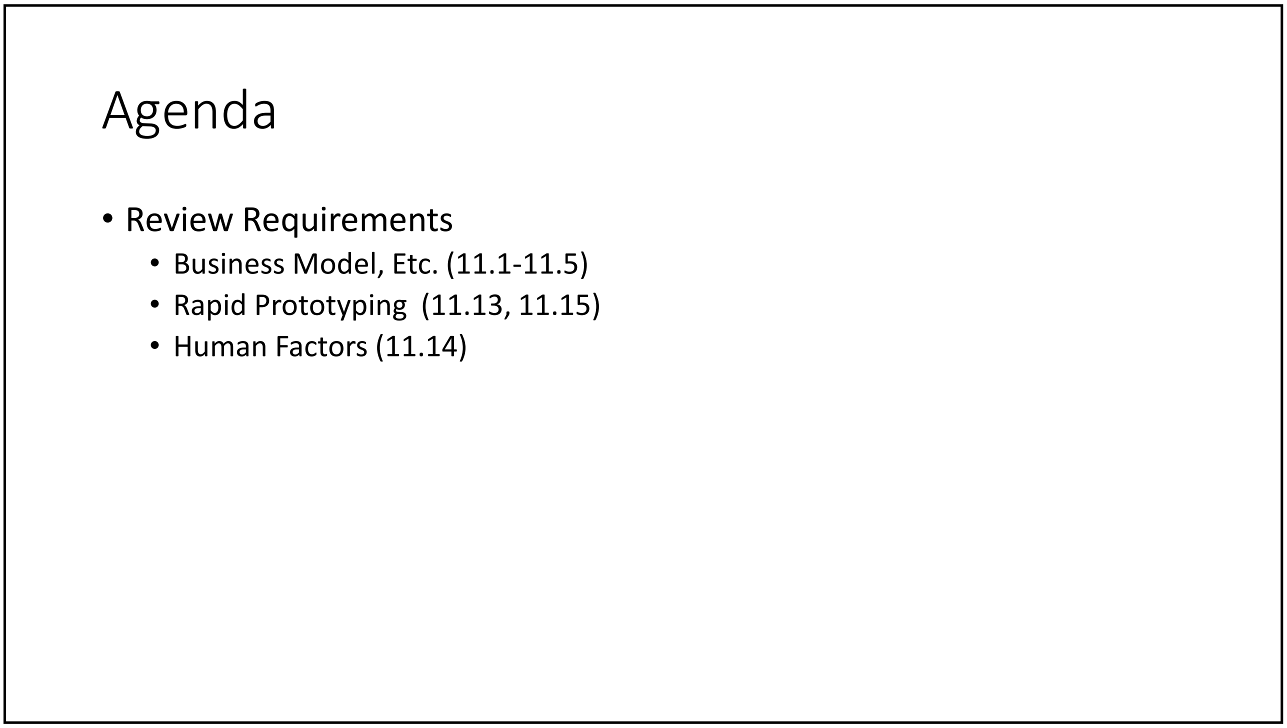


SEIS 610

Chapter 11

Requirements



Agenda

- Review Requirements
  - Business Model, Etc. (11.1-11.5)
  - Rapid Prototyping (11.13, 11.15)
  - Human Factors (11.14)

Chapter 11 – put another way

Chapter 11: Requirements

- The Requirements ~~Phase~~ Workflow
- Determining What the Client Needs
- Understanding the Domain
- The Business Model
- Initial Requirements
- Rapid Prototyping
- Human Factors
- Rapid Prototyping as a Specification Technique
- Challenges of the Requirements

Requirements – Business Model (11.1-11.5)

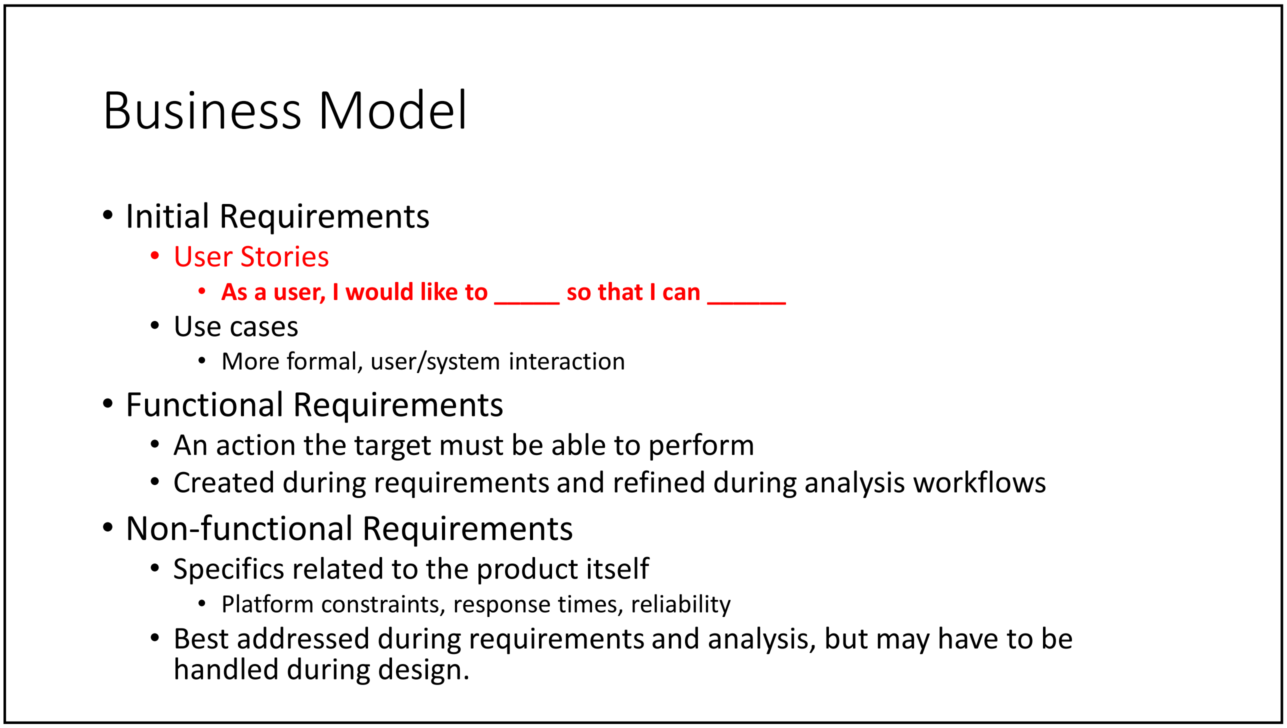
- First: Understand the domain
  - Acquire familiarity with application domain (Important)
  - You can’t hope to automate a process for somebody without understanding the problem they are trying to solve.
  - This is why we have a glossary!
- Business Model
  - Business model of the ‘domain’
  - How do they make money?
  - Why is this product valuable

Requirements – Business Model

- Why should/should software help?
  - How much will the software cost to create?
  - Is the software going to be sold or used internally?
  - If it is going to be sold as a product:
    - For how much?
    - How much do competitive products cost?
    - What features do competitive products have?
    - Where will this product fit within the product offerings?
    - Can you think of two people besides family members who will buy it??

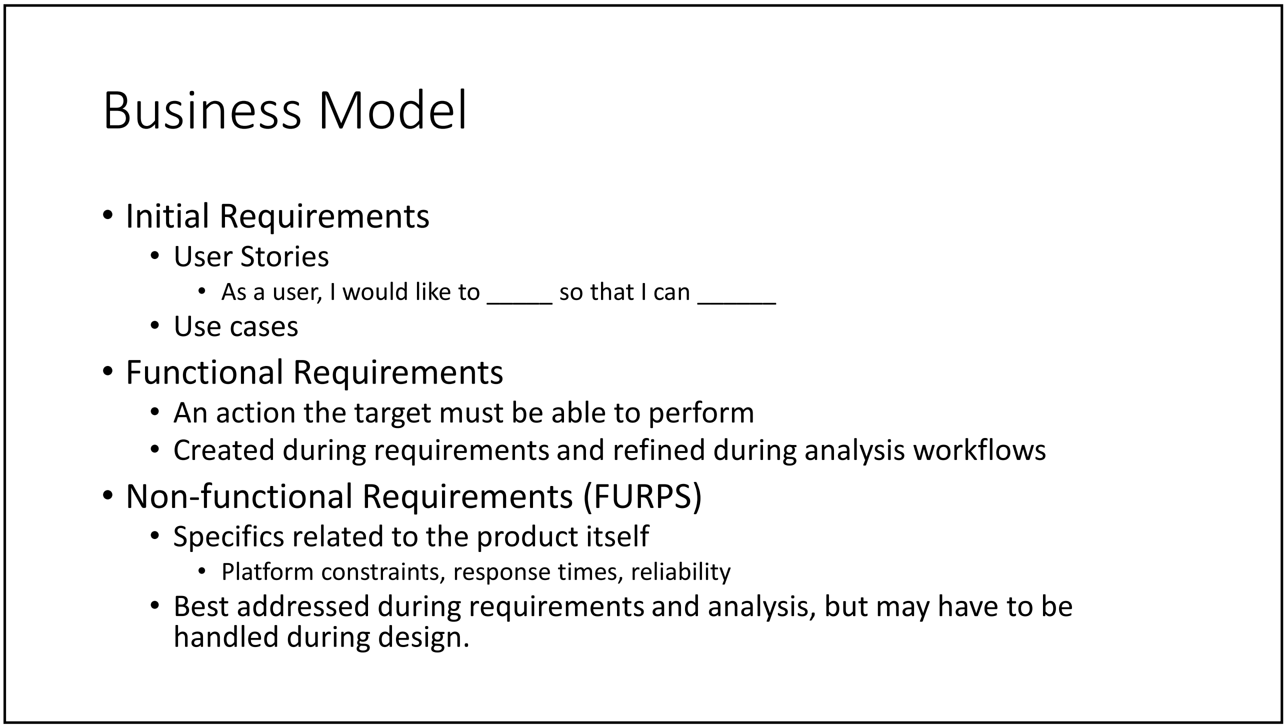
Business Model

- Ask yourself: “Why should the software help?”
  - How much is it costing not to have the software?
  - How do you figure that out? Understand the domain!
- Understanding the domain
  - Interviewing
  - Surveys and Questionnaires
  - Direct Observation



Business Model

- Initial Requirements
  - User Stories
    - **As a user, I would like to _____ so that I can ______**
  - Use cases
    - More formal, user/system interaction
- Functional Requirements
  - An action the target must be able to perform
  - Created during requirements and refined during analysis workflows
- Non-functional Requirements
  - Specifics related to the product itself
    - Platform constraints, response times, reliability
  - Best addressed during requirements and analysis, but may have to be handled during design.



Business Model

- Initial Requirements
  - User Stories
    - As a user, I would like to _____ so that I can ______
  - Use cases
- Functional Requirements
  - An action the target must be able to perform
  - Created during requirements and refined during analysis workflows
- Non-functional Requirements (FURPS)
  - Specifics related to the product itself
    - Platform constraints, response times, reliability
  - Best addressed during requirements and analysis, but may have to be handled during design.

11.5 Initial Requirements

- Heavily influenced by ‘business model’
- Requirements may be modified
- Functional requirement
  - Specifies an action the target must be able to perform
- Non-functional requirement, Quality requirement
  - Platform constraints
  - Response times
  - Reliability

11.5 Initial Requirements

- Functional
  - Handled during requirements and analysis workflows
- Non-functional
  - Sometimes handled during design workflow
- In agile, RUP
  - Your use cases
  - Your user stories
  - Become the requirements

Software Rapid Prototype (11.13, 11.15)

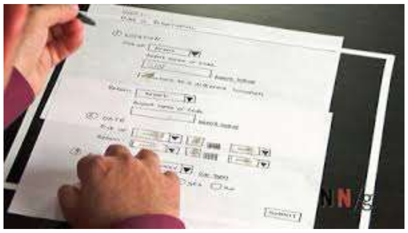
- Prototyping
  - The process of developing a trial version of the system
  - Gives engineers and users a chance to ”test drive” the software
  - Perhaps a way of correcting the weakness of “waterfall”
- Benefits
  - Improve usability factors
  - Understanding of requirements
  - Even effort reductions are seen
- Problems
  - Many times standards are not enforced for the prototype
  - Less coherent design and integration results
  - Then not thrown away!

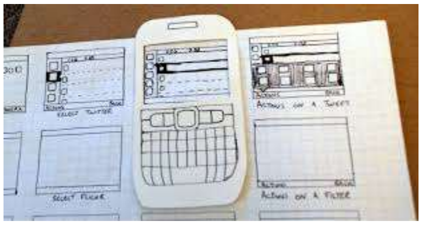
Rapid Prototyping (11.13, 11.15)

Software Rapid Prototype

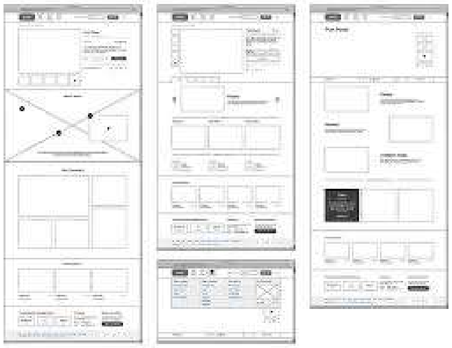
- Throw-away vs. keep-it
- Throw-away
  - Just like it sounds—discard the prototype when finished
- Keep-it (evolutionary programming)
  - ”Well we made it this far, may as well not throw it away”
  - Likely developed with loose standards
  - Less coherent design and integration results
  - Big ball-of-mud design going forward

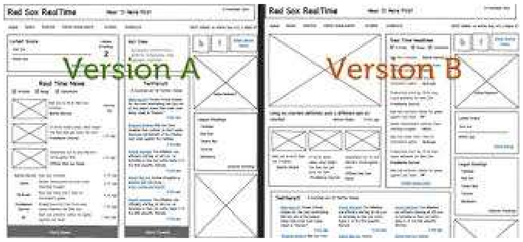
Paper Prototypes

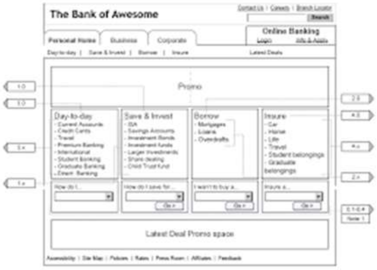




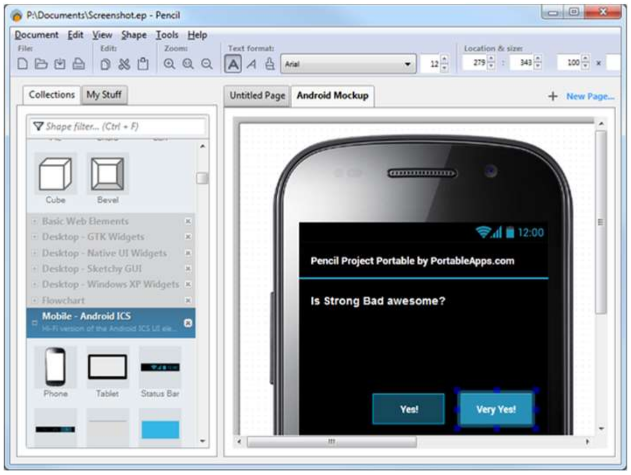
Paper Prototypes –Wireframe





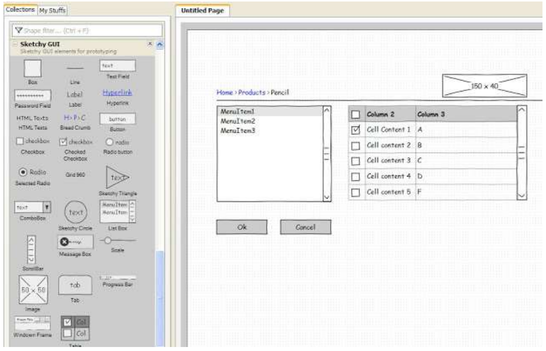


Sample Rapid Prototypes – Evolus' Pencil



Pencil Project Portable by PortableApps.com

Is Strong Bad awesome?

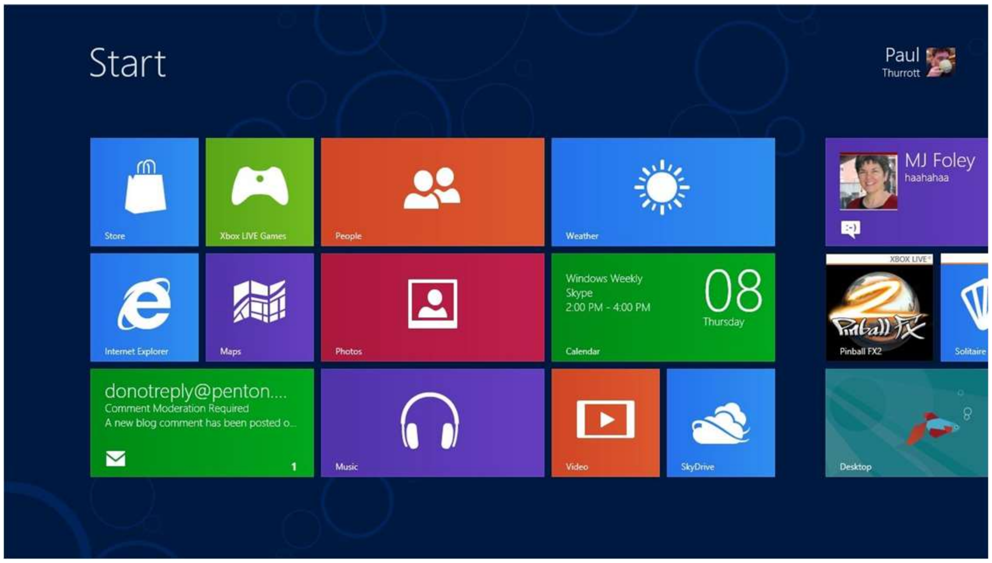


http://pencil.evolus.vn/

Human Factors (11.14)

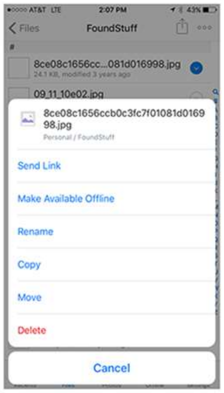
- User friendliness
- Size of letters
- ADA requirements
- Read up before you start for your platform
  - http://beijerinc.com/pdf/whitepaper/interface_design_best_practices.pdf
  - http://developer.android.com/guide/practices/index.html
  - http://www.applicoinc.com/blog/ios-mobile-app-development-guide/
- Other

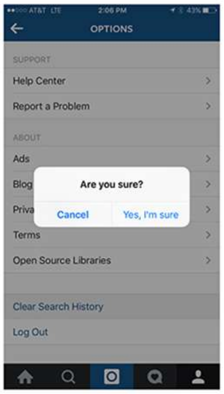
Windows Metro

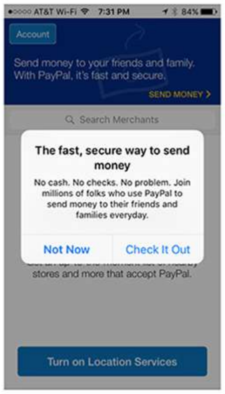


donotreply@penton....
Comment Moderation Required
A new blog comment has been posted o...

IOS







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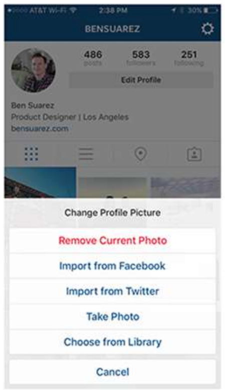
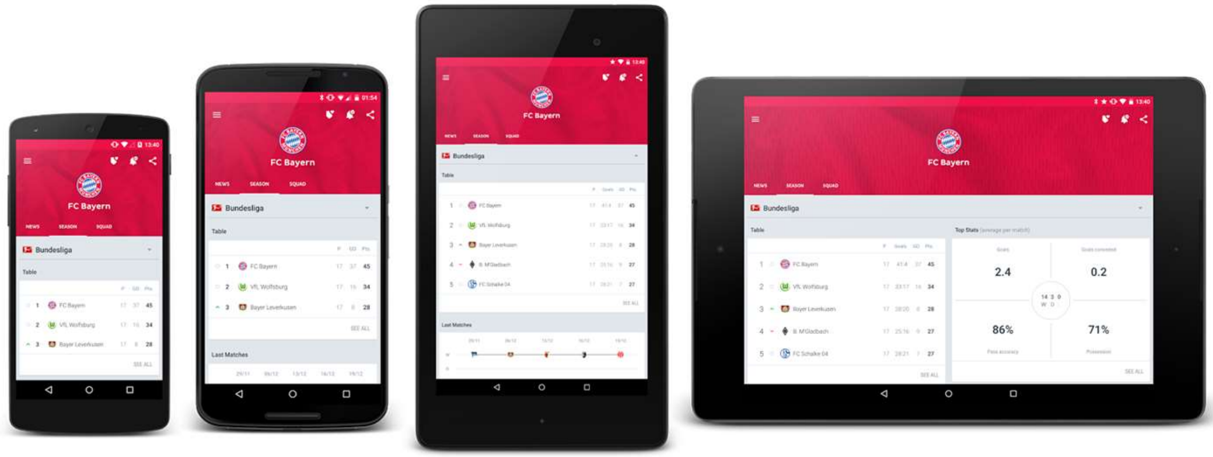
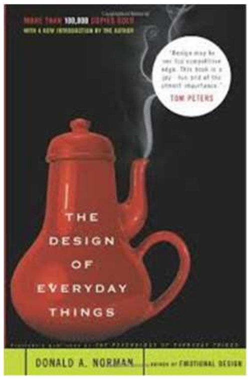


Android



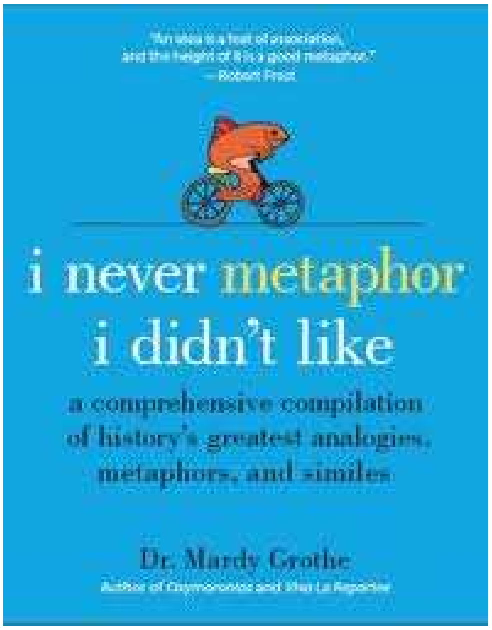
User Interface Thoughts

- Design of Everyday Things
- Don Norman

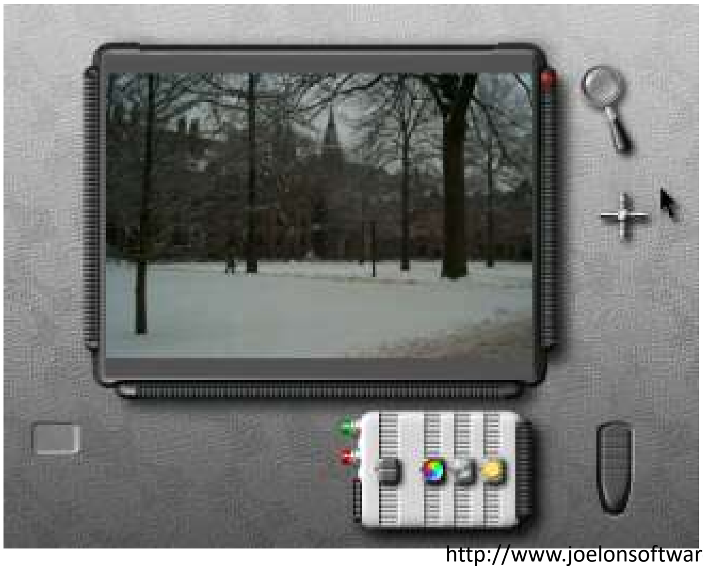


Affordances/Metaphors

- Affordances: Well-designed objects make it clear how they work just by looking at them.
  - (Design of Everyday Things)
- Metaphors
  - An Interface metaphor is a set of user interface visuals, actions and procedures that exploit specific knowledge that users already have of other domains.
  - The purpose of the interface metaphor is to give the user instantaneous knowledge about how to interact with the user interface.
  - They are designed to be similar to physical entities but also have their own properties
  - From wikipedia

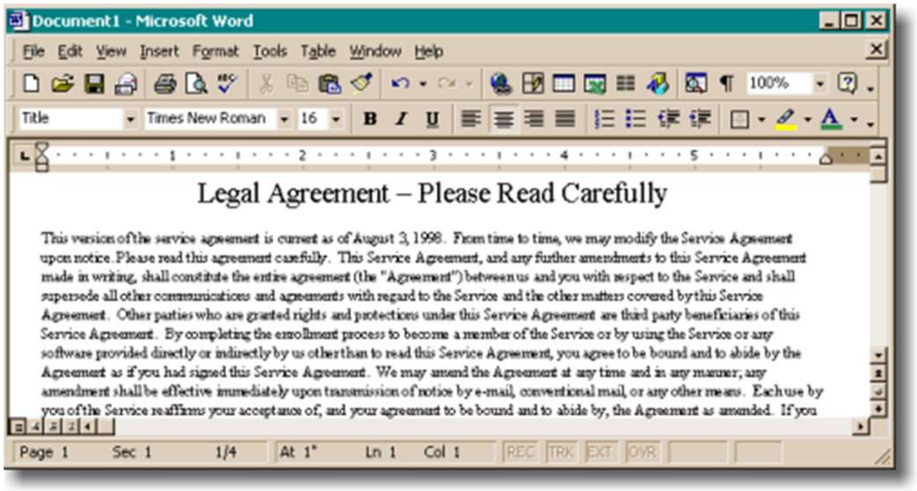

"An idea is a feat of association,
and the height of it is a good metaphor."
— Robert Frost
i never metaphor i didn't like
a comprehensive compilation of history's greatest analogies, metaphors, and similes
Dr. Mardy Grothe
Author of Oxymoronica and Viva La Repartee

Any idea how to zoom?



http://www.joelonsoftware.com/uibook/chapters/fog0000000060.html

Any idea how to zoom?

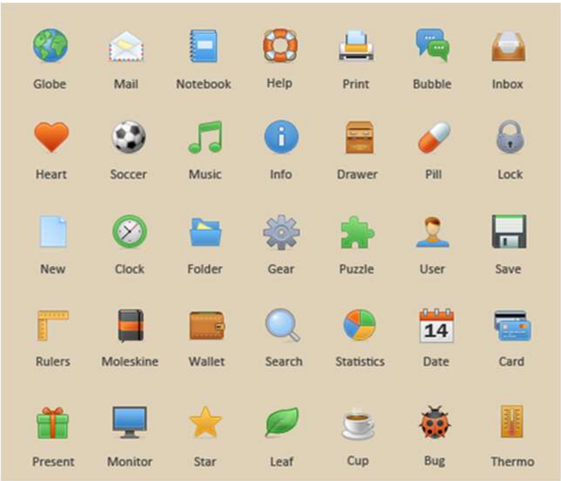

Document1 - Microsoft Word
File Edit View Insert Format Tools Table Window Help
100%
Title
Times New Roman
16
B I U
Page 1 Sec 1 1/4 At 1" Ln 1 Col 1 REC TRK EXT OVR

Legal Agreement – Please Read Carefully

This version ofthe service agreement is current as of August 3, 1998. From time to time, we may modify the Service Agreement upon notice. Please read this agreement carefully. This Service Agreement, and any further amendments to this Service Agreement made in writing, shall constitute the entire agreement (the "Agreement") between us and you with respect to the Service and shall supersede all other communications and agreements with regard to the Service and the other matters covered by this Service Agreement. Other parties who are granted rights and protections under this Service Agreement are third party beneficiaries of this Service Agreement. By completing the enrollment process to become a member of the Service or by using the Service or any software provided directly or indirectly by us other than to read this Service Agreement, you agree to be bound and to abide by the Agreement as if you had signed this Service Agreement. We may amend the Agreement at any time and in any manner; any amendment shall be effective immediately upon transmission of notice by e-mail, conventional mail, or any other means. Each use by you of the Service reaffirms your acceptance of, and your agreement to be bound and to abide by, the Agreement as amended. If you

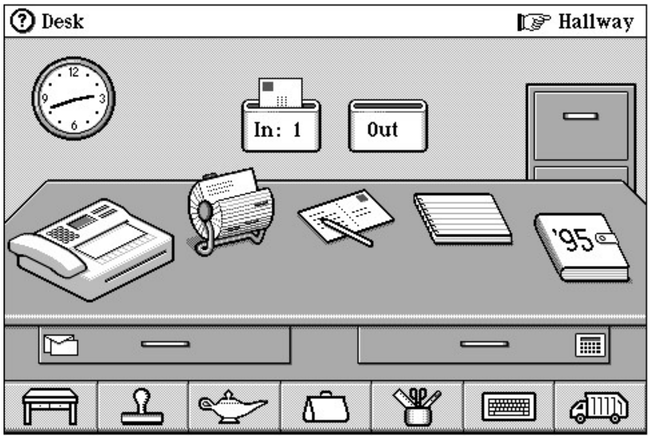
http://www.joelonsoftware.com/uibook/chapters/fog0000000060.html

Icons



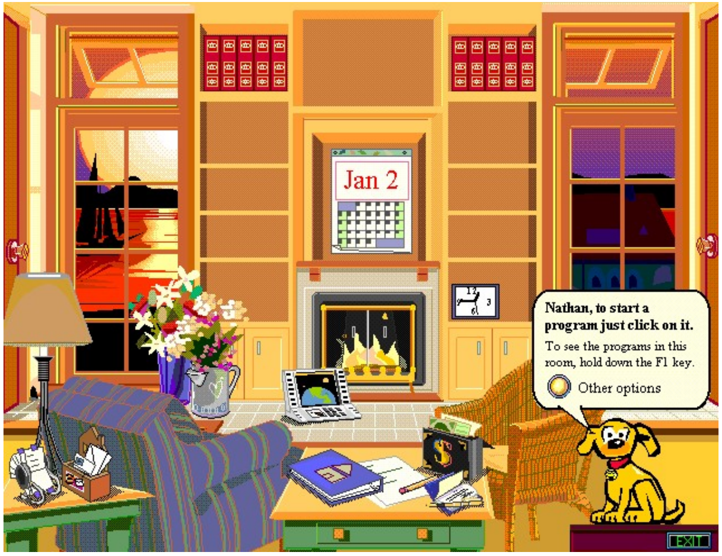
www.webdesignhot.com

General Magic's defunct Magic Cap operating system



www.codinghorror.com

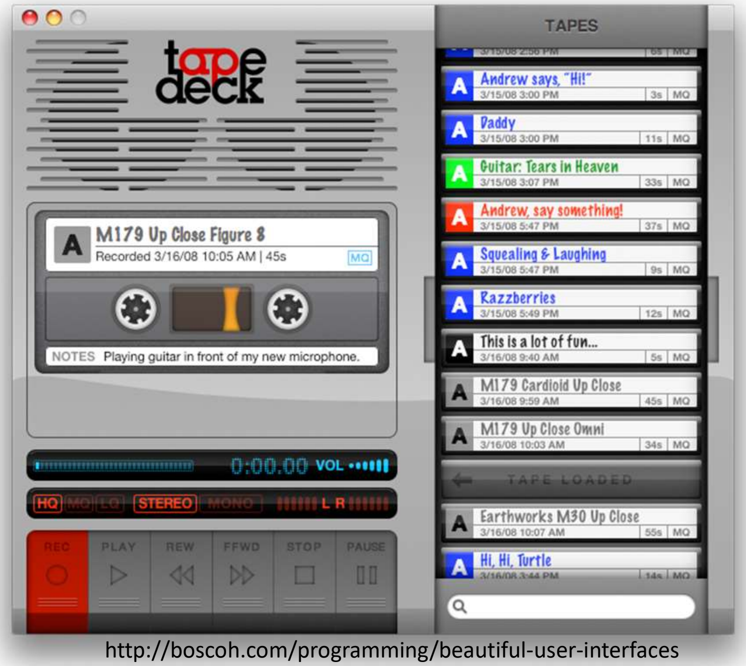
Microsoft Bob



Nathan, to start a program just click on it.

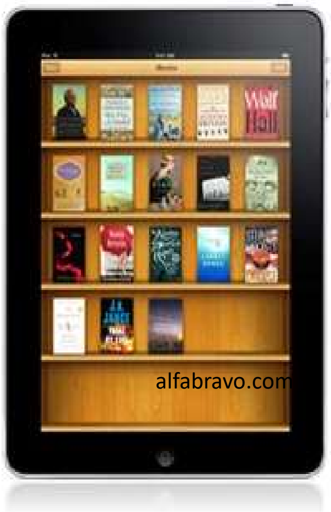
To see the programs in this room, hold down the F1 key.

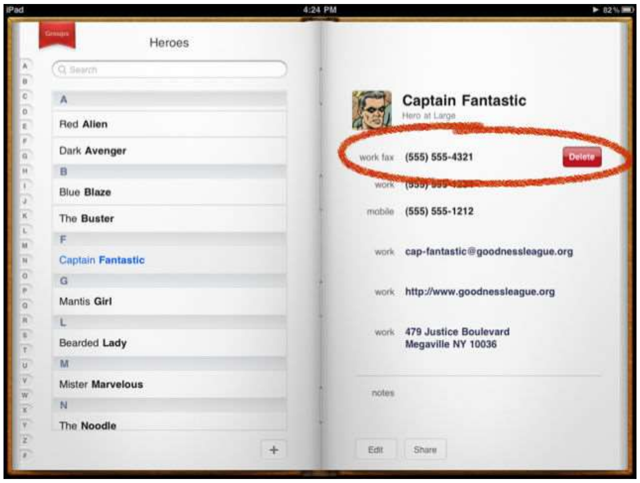
○ Other options


tape deck
TAPES
Andrew says, "Hi!" 3/15/08 3:00 PM 3s MQ
Daddy 3/15/08 3:00 PM 11s MQ
Guitar: Tears in Heaven 3/15/08 3:07 PM 33s MQ
Andrew, say something! 3/15/08 5:47 PM 37s MQ
Squealing & Laughing 3/15/08 5:47 PM 9s MQ
Razzberries 3/15/08 5:49 PM 12s MQ
This is a lot of fun... 3/16/08 9:40 AM 5s MQ
M179 Cardioid Up Close 3/16/08 9:59 AM 45s MQ
M179 Up Close Omni 3/16/08 10:03 AM 34s MQ
TAPE LOADED
Earthworks M30 Up Close 3/16/08 10:07 AM 55s MQ
Hi, Hi, Turtle 3/16/08 3:44 PM 14s MQ
M179 Up Close Figure 8
Recorded 3/16/08 10:05 AM | 45s
MQ
NOTES Playing guitar in front of my new microphone.
0:00.00 VOL
HQ MQ LQ STEREO MONO L R
REC
PLAY
REW
FFWD
STOP
PAUSE

http://boscoh.com/programming/beautiful-user-interfaces

E-book Metaphor


alfabravo.com



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work http://www.goodnessleague.org

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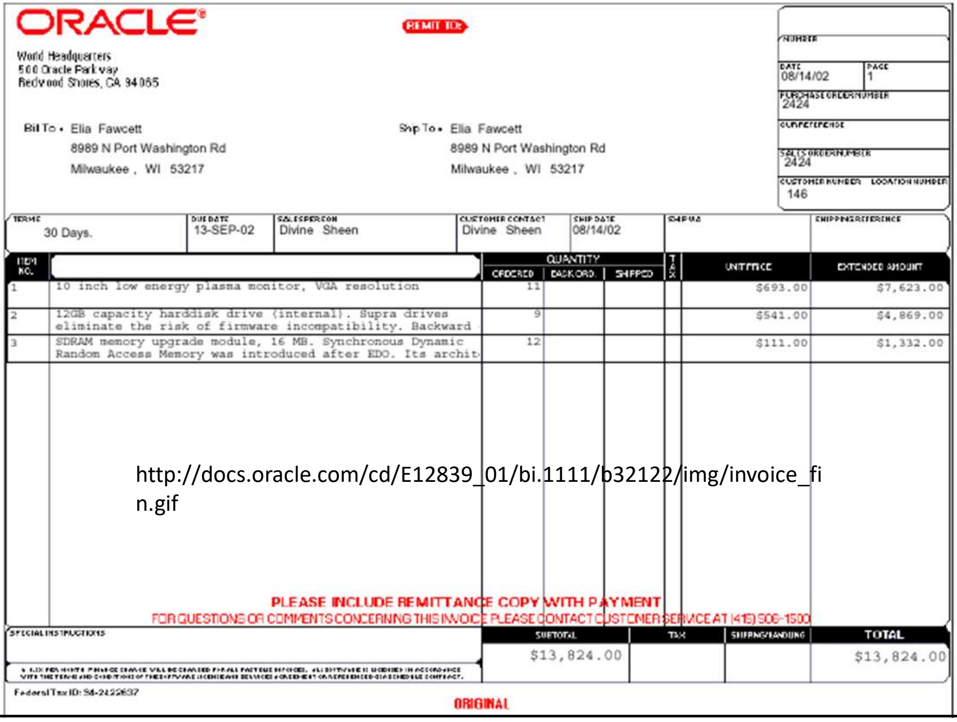
notes

globalmoxie.com

Drewtech.com

DASHDAQ XL DRIVING PERFORMANCE TO THE NEXT LEVEL

http://www.youtube.com/watch?v=Nj697OF6Cmo



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Milwaukee , WI 53217

NUMBER	
DATE 08/14/02	PAGE 1
PURCHASE ORDER NUMBER 2424	
OUR REFERENCE	
SALES ORDER NUMBER 2424	
CUSTOMER NUMBER 146	LOCATION NUMBER

TERMS	DUE DATE	SALESPERSON	CUSTOMER CONTACT	SHIP DATE	SHIP VIA	SHIPPING REFERENCE
30 Days.	13-SEP-02	Divine Sheen	Divine Sheen	08/14/02		

ITEM NO.		QUANTITY ORDERED	QUANTITY BACKORD.	QUANTITY SHIPPED	TAX	UNIT PRICE	EXTENDED AMOUNT
1	10 inch low energy plasma monitor, VGA resolution	11				$693.00	$7,623.00
2	12GB capacity harddisk drive (internal). Supra drives eliminate the risk of firmware incompatibility. Backward	9				$541.00	$4,869.00
3	SDRAM memory upgrade module, 16 MB. Synchronous Dynamic Random Access Memory was introduced after EDO. Its archit	12				$111.00	$1,332.00

PLEASE INCLUDE REMITTANCE COPY WITH PAYMENT

FOR QUESTIONS OR COMMENTS CONCERNING THIS INVOICE PLEASE CONTACT CUSTOMER SERVICE AT (415) 506-1500

SPECIAL INSTRUCTIONS

SUBTOTAL	TAX	SHIPPING/HANDLING	TOTAL
$13,824.00			$13,824.00

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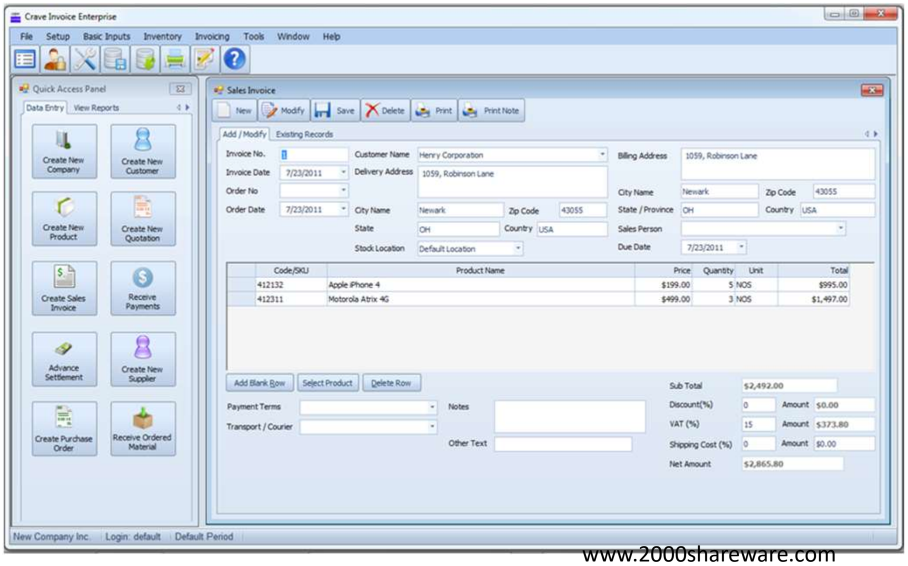
http://docs.oracle.com/cd/E12839_01/bi.1111/b32122/img/invoice_fin.gif

Invoice Program?



Invoice No. 1

Invoice Date 7/23/2011

Order No

Order Date 7/23/2011

Customer Name Henry Corporation

Delivery Address 1059, Robinson Lane

City Name Newark Zip Code 43055

State OH Country USA

Stock Location Default Location

Billing Address 1059, Robinson Lane

City Name Newark Zip Code 43055

State / Province OH Country USA

Sales Person

Due Date 7/23/2011

Code/SKU	Product Name	Price	Quantity	Unit	Total
412132	Apple iPhone 4	$199.00	5	NOS	$995.00
412311	Motorola Atrix 4G	$499.00	3	NOS	$1,497.00

Payment Terms

Transport / Courier

Notes

Other Text

Sub Total $2,492.00

Discount(%) 0 Amount $0.00

VAT (%) 15 Amount $373.80

Shipping Cost (%) 0 Amount $0.00

Net Amount $2,865.80

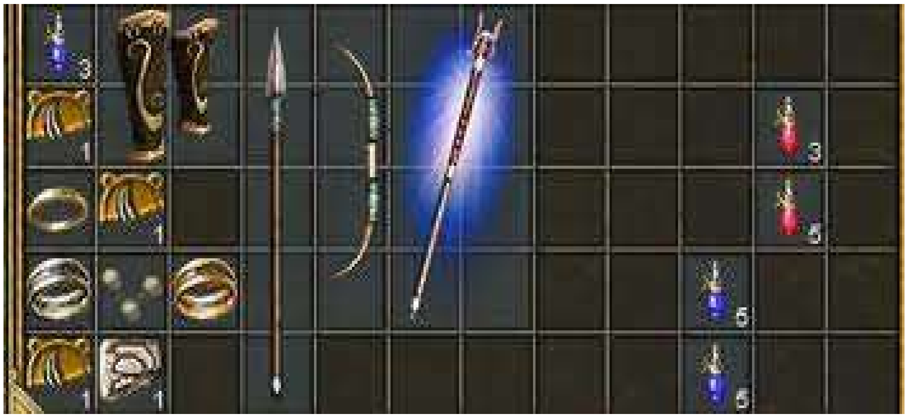
www.2000shareware.com

Inventory (real)

inmotionsystems.wordpress.com

Inventory/Shelf Metaphor

- www.rockpapershotgun.com



Visual Interaction Design: Beyond the Interface Metaphor

- http://old.sigchi.org/bulletin/1997.2/vid.html
- “When a metaphor is applied to a system, it gives the system a particular set of ***affordances***. “
- “Metaphor is a container for a particular set of **affordances**.”
- “The book metaphor includes a set of affordances, including those for page-turning, reading text, bookmarking, and so on.”
- “The blank sheet of paper metaphor affords marking and erasing, and so on.”

Affordances/Metaphors

- Affordances only have meaning when considered with respect to a particular group of users.
  - The front door to your home affords passage to you and your family, but not to a giraffe.
  - A grade school desk affords sitting to a child, but not to an adult.
  - This article affords reading only to people who read English and have enough motivation to continue reading.
- Affordances must be designed with the user in mind.

http://old.sigchi.org/bulletin/1997.2/vid.html

Affordances/Metaphors

- When we create an interface metaphor, we are, in essence, dumping the contents of the metaphor (its affordance set) onto the computer system.
- Some of those affordances fit nicely onto the system's feature set (else that metaphor would not have been chosen), others do not have a corresponding feature in the system, and some of the system's features are left affordance-less, invisible.

Affordances/Metaphors

- Metaphor is good as a stage of design, suggesting to us what features might be appropriate in the system or supplying us
- A stepping-off point for the look and behavior of the interface.
- But we need to get beyond the metaphor, even allowing the system to grow to where it no longer resembles that original metaphor at all.

Reusing the Rapid Prototype (11.15)

- Problems with rapid prototypes
  - Assumption you are farther than you are
  - Hurt feelings. (really)
    - High resolution prototypes have a lot of time put in
  - Desire not to “waste” the rapid prototype
  - Rapid prototypes poorly coded

11.17 Metrics for the Requirements Workflow

- Volatility and speed of convergence are measures of how rapidly the client’s needs are determined

Metrics for the Requirements Workflow

- The number of changes made during subsequent phases
- Changes initiated by the developers
  - Too many changes can mean the process is flawed
- Changes initiated by the client
  - Moving target problem

11.18 Challenges of the Requirements Phase

- Employees of the client organization often feel threatened by computerization
- The requirements team members must be able to negotiate
  - The client's needs may have to be scaled down
- Key employees of the client organization may not have the time for essential in-depth discussions
- Flexibility and objectivity are essential

Challenges

- Team must inform client to decide what is important
  - Developers may have to withdraw if no solution
- Flexibility and objectivity are essential for requirements elicitations
  - Should approach each interview with no preconceived ideas
  - Should never make assumptions about requirements

- The end!