

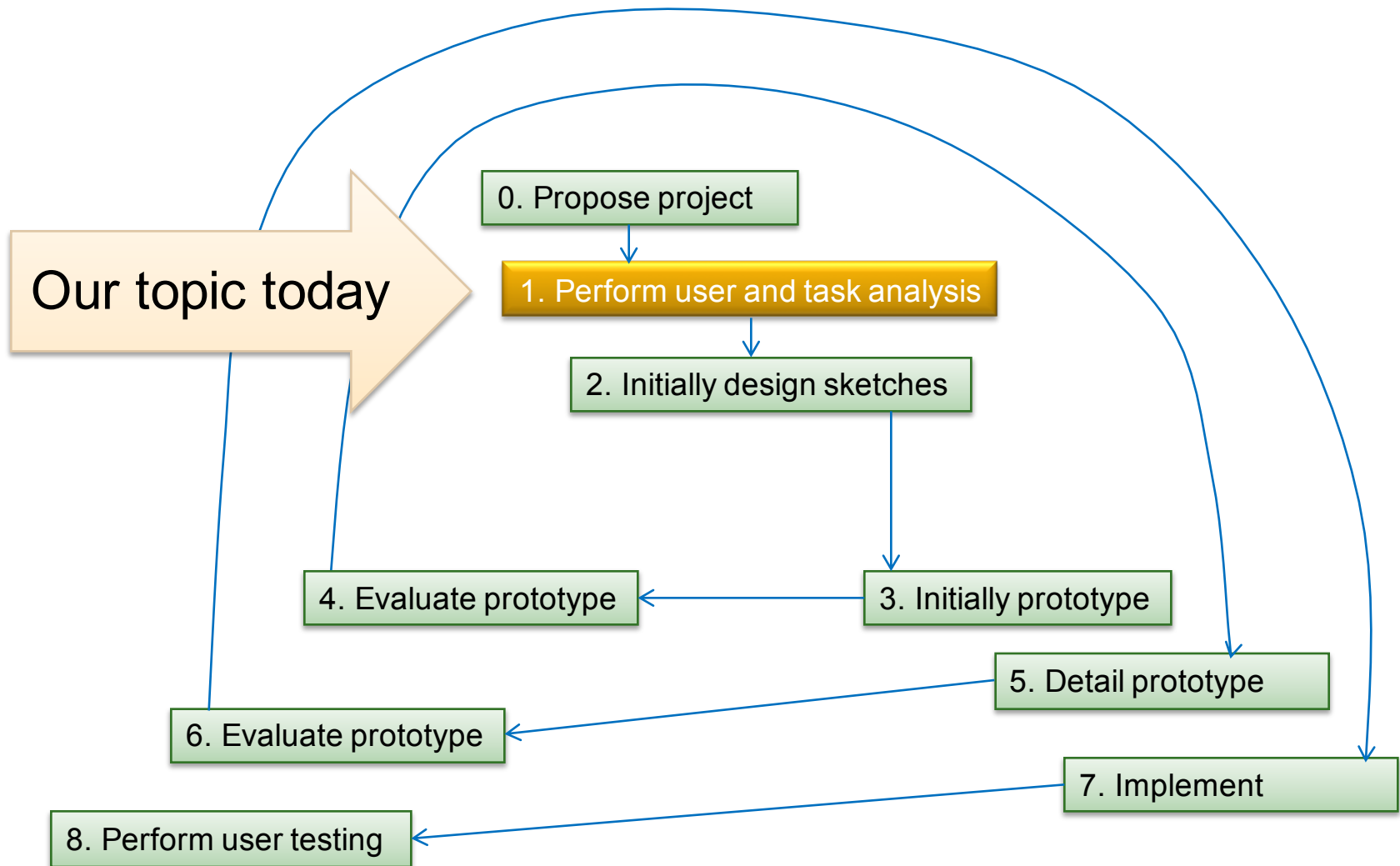


UNIVERSITY OF SCIENCE
HO CHI MINH CITY

Task Analysis

17/3/2016

Process for Projects in This Class



Outline

- User analysis
- Task analysis
- Domain analysis
- Requirements document
- UI Hall of Fame or Shame

User analysis

- The process of identifying and describing the users who use the system
- Characteristics of target users
 - ❑ Age, gender, culture, language
 - ❑ Computer experience
 - ❑ Domain experience, application experience
 - ❑ Usage frequency
 - ❑ Physical limitations
 - ❑ Education
 - ❑ Motivation
 - ❑ Work environment
 - ❑ User relationships
 - ❑ User social status (e.g., role, position)
 - ❑ Etc.

User analysis (cont'd)

- Description of target users
 - General information
 - User characteristics (discussed above)
 - User environment
 - Where the tasks will be performed?
 - Major goals of the job
 - What is the end result?
 - User roles (e.g., buyer, seller)
 - if any
 - User preferences
 - Relationships among users
 - if any

User analysis (cont'd)



- Example system: HaiLua.com.vn
 - A web-based application for users to sell and buy farming products
 - Key features
 - Post products to sell (by farmers and others)
 - Search for products
 - Buy products
 - Compare products' prices and other characteristics
 - Rate sellers and buyers
 - Provide comments or feedback on products or transactions
- User analysis
 - By role
 - Buyers/customers
 - Sellers (farmers and traders)
 - Administrator
 - By language/culture
 - Focusing on Vietnam farming products from Vietnamese farmers



User analysis (cont'd)

■ Techniques to do user analysis

- Recording
- Interviews
- Questionnaires
- Observation
- Combination of the above

■ Obstacles/challenges

- Designers and users are sometimes isolated
- Users may be overlooked by designers
 - Designers may make wrong assumptions about users
- It's expensive and difficult to talk to some users
 - E.g., high-ranking people, doctors, executives

Task analysis

- The process of analyzing and documenting the tasks that the system may provide to users
 - What needs to be done (goal)
 - What conditions to do the task (precondition)
 - What steps to be taken (subtasks)
- Each task is often a goal to achieve by users
- Task analysis is an early step in UI design that provides basis for
 - UI designing
 - UI evaluation and improvement
 - User documentation

Task analysis procedure

■ Two main steps



1. Model tasks

- Gathering information
- Describing tasks into requirements

2. Evaluate and refine

- Review and update requirements

Model tasks

- Create a list of all tasks to be performed by users
- Rank the tasks by frequency of use and importance
- Gather other detailed information about each task
- Model the relationships (e.g., using use-case model)
 - between tasks and users
 - among tasks
- Present/describe tasks in forms of documents, diagram, etc.

Techniques to do task analysis

- Techniques to gather information (same as doing user analysis)
 - Data recording
 - Interviews
 - Questionnaires
 - Observation
 - Combination of the above
- Technique to analyze
 - Task decomposition

Data recording

- Documents, manuals, instructions
- Notes, audio, photographs
- Notes + photographs
- Audio + photographs
- Video



Interviews

■ Structured

- ❑ tightly scripted, often like a questionnaire
- ❑ replicable but may lack richness

■ Unstructured

- ❑ not directed by a script
- ❑ rich but not replicable

■ Semi-structured

- ❑ guided by a script but interesting issues can be explored in more depth
- ❑ can provide a good balance between richness and replicability

Questionnaires

- Paper, email and the web used for dissemination
- Questions can be closed or open
 - closed questions are easier to analyze, and may be done by computer
- Can be administered to large populations
- Sampling can be a problem when the size of a population is unknown
 - common online

Online questionnaires

■ Advantage

- ❑ Responses are usually received quickly
- ❑ Data can be collected directly into database for analysis
- ❑ Time required for data analysis is reduced
- ❑ Errors can be corrected easily
- ❑ Many online survey tools available
 - E.g., survey monkey

■ Problems

- ❑ Sampling is problematic if population size is unknown
- ❑ Preventing individuals from responding more than once
- ❑ Delayed response

Observation

■ Direct observation

- ❑ in the field or in controlled environments
- ❑ Structuring frameworks
- ❑ **Think-aloud** protocol
 - Person talks about what they are doing, while they are doing it (or just before or after)
 - Observer can ask probe questions
- ❑ Probe questions affect performance, as does thinking aloud

■ Indirect observation

- ❑ tracking users' activities
 - Physical location/movement
 - Interaction logging, timers

Task decomposition

■ Aims

- ❑ describe the actions people do
- ❑ describe order of subtasks
- ❑ structure them within task subtask hierarchy

■ Hierarchical Task Analysis (HTA)

- ❑ introduced by Annett and Duncan (1967) to evaluate an organization's training needs
- ❑ very useful for analyzing and representing the behavioral aspects of complex tasks
- ❑ now widely used in interface design

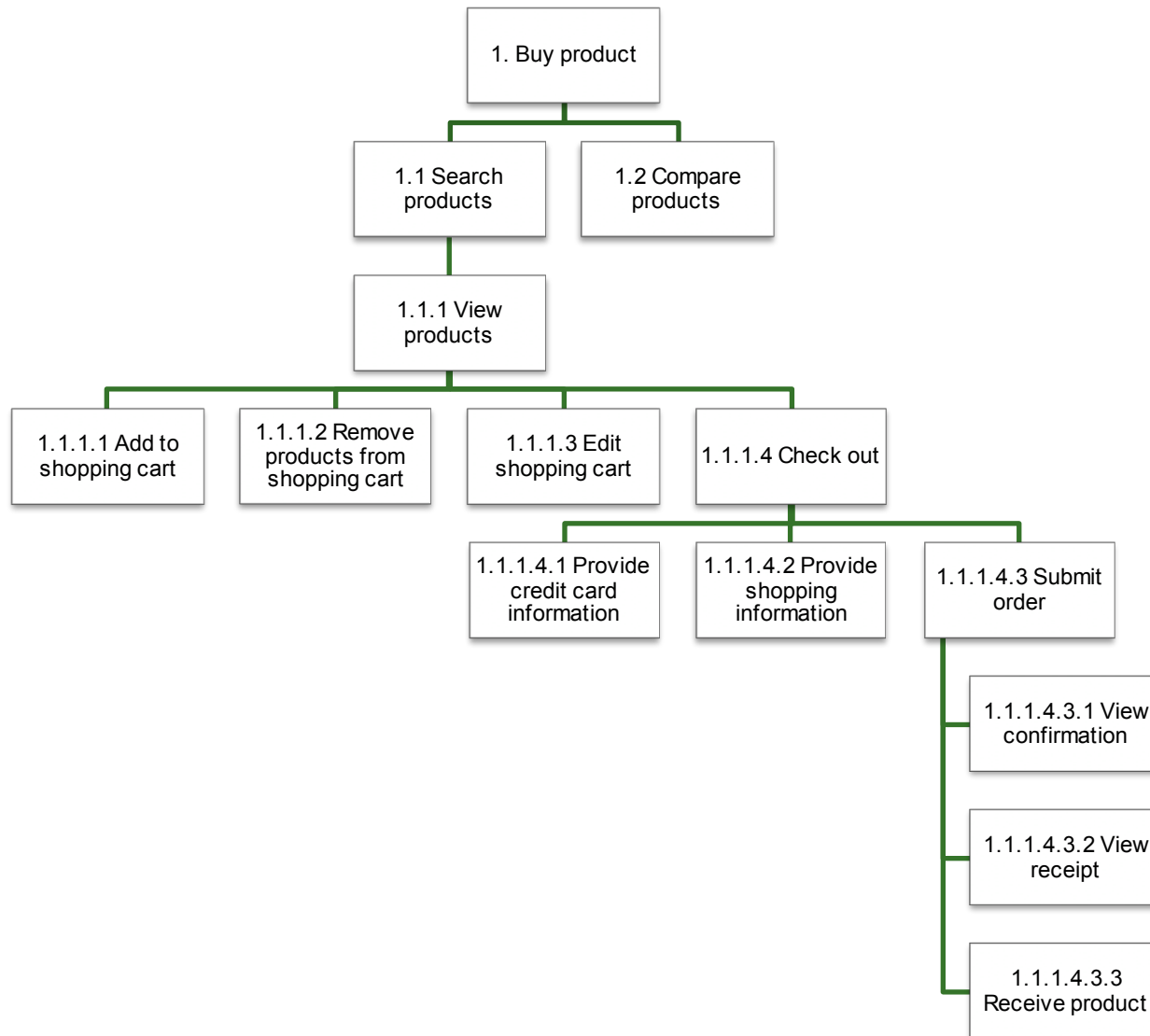
Hierarchical Task Analysis (HTA)

- Breaks tasks into subtasks and operations or actions
 - These components are represented using a structure chart
- Includes
 - identifying and categorizing tasks
 - identifying the subtasks
 - checking the overall accuracy of the model
- Useful for UI design
 - Enabling designers to envision the goals, tasks, subtasks, operations, and plan essential to users' activities

Generating the Hierarchy

1. Start from overall goal, e.g. clean the house
2. Get list of tasks
3. Break down into numbered sub-tasks
 - ❑ Group tasks into higher level tasks
 - ❑ Decompose lowest level tasks further
4. Describe each sub-task
 - ❑ How do we know when to stop?
 - Is “empty the dust bag” simple enough?

HTA for HaiLua.com.vn

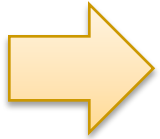


Task analysis procedure

■ Two main steps

1. Model tasks

- Gathering information
- Describing tasks into requirements



2. Evaluate and refine requirements

- Review and update requirements

Evaluate and refine requirements

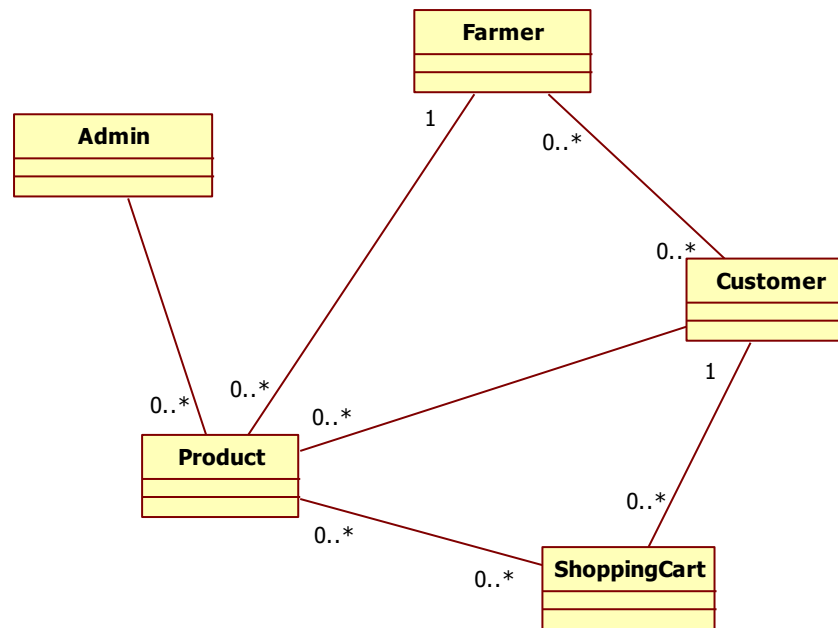
- Evaluate, simplify and fix issues in the task description
- Evaluation techniques
 - Walk-through
 - Formal review/inspection
 - Offline review
 - Online review

Domain analysis

- The process identifying data models for the system domain
 - People and things
 - How they are related
- Outputs
 - Object models (e.g., using UML diagram)
 - Data models (Entity Relationship models)

Domain analysis (cont'd)

- HaiLua.com.vn's object model (high-level)



Requirements document

■ User analysis

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 - General information
 - User characteristics (discussed above)
 - User environment
 - Where the tasks will be performed?
 - Major goals of the job
 - What is the end result?
 - User roles (e.g., buyer, seller)
 - if any
 - User preferences
 - Relationships among users
 - if any

Requirements document (cont'd)

- Task analysis, for each task
 - **Goal, precondition, subtasks**
 - Where the task is performed
 - On Internet, desktop, mobile
 - At a kiosk, a workstation
 - How often is the task performed?
 - every hour, every day
 - once a day, once a month
 - What are resource constraints
 - One second, one minute, or not constrained
 - How the task is learned?
 - Training, install-and-use, by trying, by watching others
 - Task exceptions
 - What are exceptions for the task and how exceptions are handled
 - Who else are involved in the task

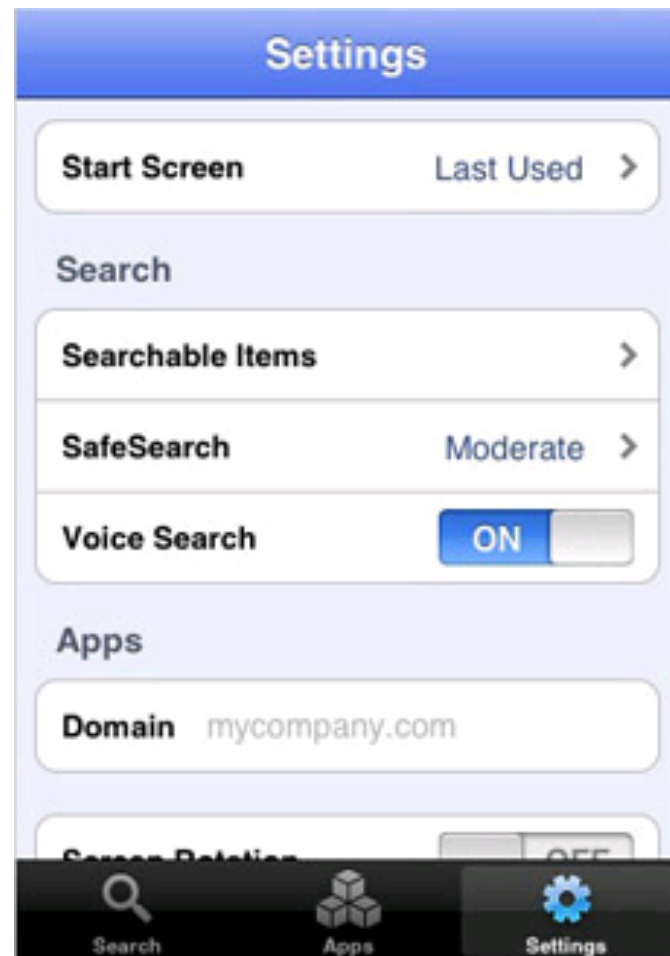
Requirements document (cont'd)

- User and Task analysis
 - Use-case model
- Domain analysis
 - Object model
 - ER model

Over-design UI



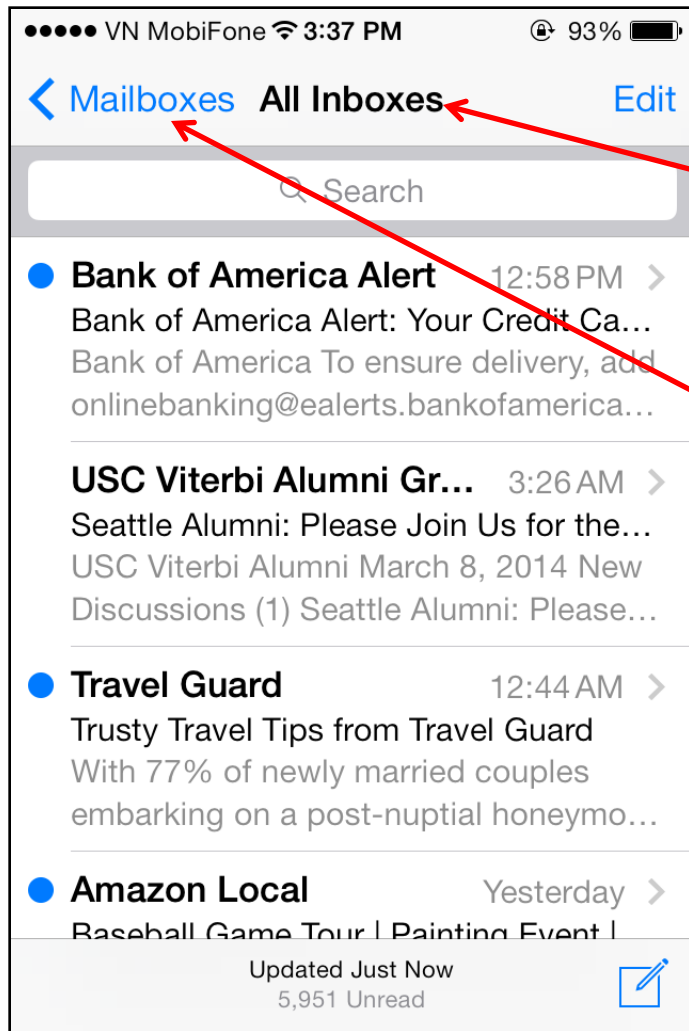
Over-design



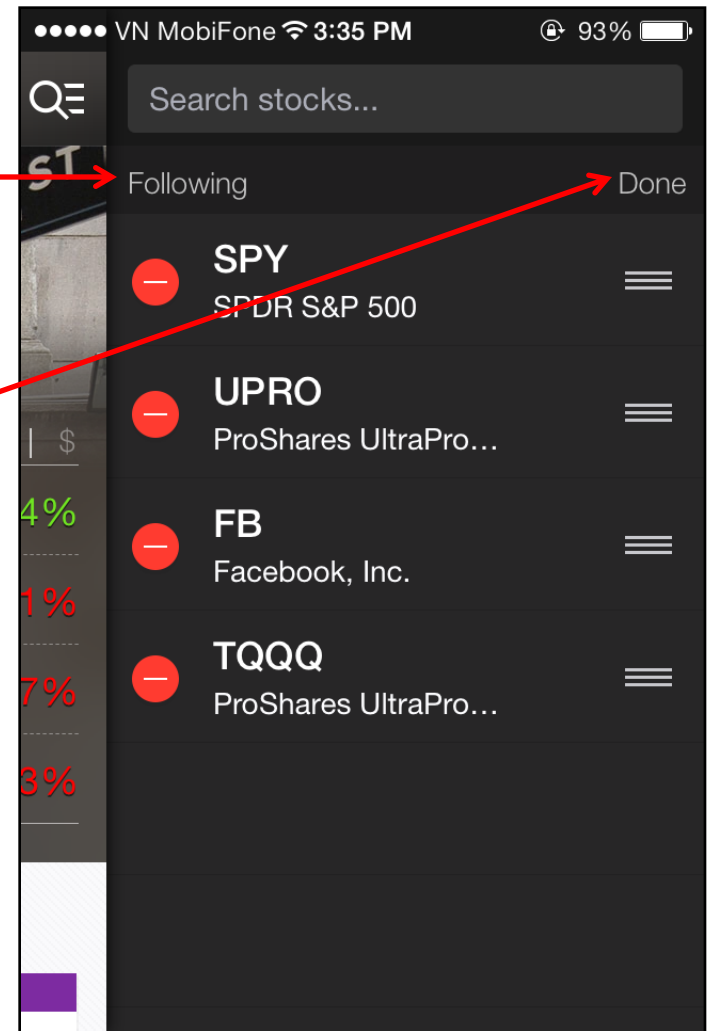
Good design

Source: <http://mobile.smashingmagazine.com/2009/07/21/iphone-apps-design-mistakes-overblown-visuals/>

iPhone Mail vs. Yahoo Finance

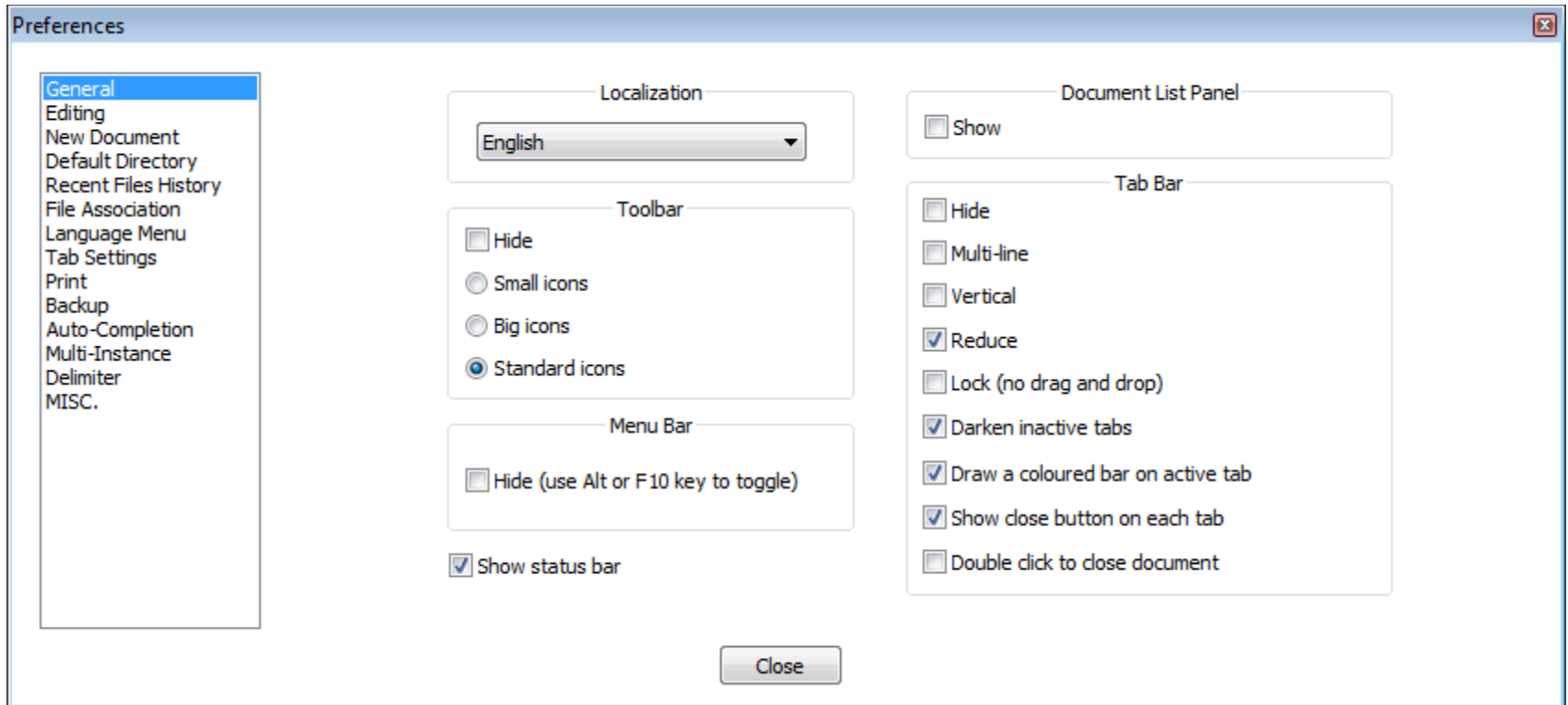


Consistent design



Inconsistent design

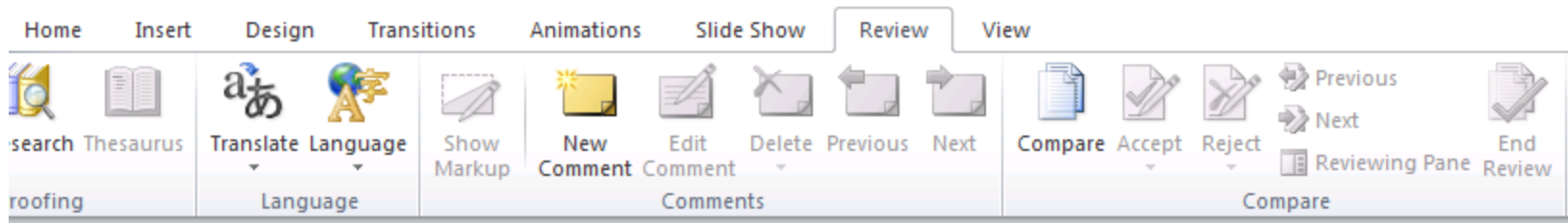
Notepad++ (Preferences Dialog)



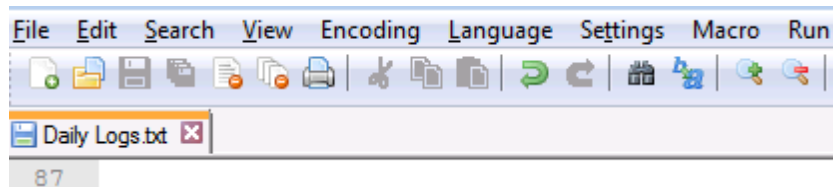
Inconsistent grouping: two top groups have only one item each.
“Show status bar” does not belong to any group

MS PowerPoint vs. Notepad++

- Toolbar buttons are large and with labels



- Toolbar buttons are small and without labels



Nguyenkim.com on 8/3

The screenshot shows the homepage of Nguyenkim.com in a Firefox browser window. The address bar displays "www.nguyenkim.com". The website header includes the "Nguyenkim" logo, a search bar, and contact information: "08 38 211 211" and "mua hàng bấm Số 3". Navigation links for various product categories are listed below the header. A large banner for the "8-3" promotion is the central focus, with the text "Nhận quà 8/3 - Tham gia miễn phí" and "Từ 01/03 đến hết ngày 08/03/2014". Below the banner, there are four promotional tiles: "giá shock 340.000đ" for a product, "Chọn máy ảnh GIÁ RẺ - CHỤP ĐẸP" featuring a Sony camera, "LỄ HỘI HITACHI" with a "TẶNG 600,000đ" offer, and "ĐẶC BIỆT MÁY LẠNH" with a "Tặng 500.000đ vật tư" offer. A vertical banner on the right side of the page reads "Ngày 8-3 ĐÀN ÔNG VÀ PHỤ NỮ Mong muốn điều gì nhất" and "Chương trình đặc biệt dành cho thành viên nguyenkim.com".

Firefox

Siêu Thị Điện Máy Nguyễn Kim - Trung ...

www.nguyenkim.com

Google

Nguyenkim

08 38 211 211
mua hàng bấm Số 3

Đăng ký thành viên Giỏ hàng Tài khoản

Điện Tử Điện Lạnh Viễn Thông Tin Học Kỹ Thuật Số Giải Trí Gia Dụng Nhà Bếp Em Bé Làm Đẹp Công Cụ Điện Cơ Apple

Sản Phẩm Mới Mừng Quốc Tế Phụ Nữ 08/03/2014 Tiên Tri Bóng Đá 2014 Nguyễn Kim Tài Trợ 20.000 Camera TUYÊN DỤNG KHUYẾN MÃI

8-3

Nhận quà 8/3 - Tham gia miễn phí
Từ 01/03 đến hết ngày 08/03/2014

Tham gia ngay

giá shock 340.000đ

Giá thị trường : 430.000 VND

Chọn máy ảnh
GIÁ RẺ - CHỤP ĐẸP

LỄ HỘI HITACHI
TỪ NGÀY 10/03 - 31/03/2014
TẶNG 600,000đ

ĐẶC BIỆT MÁY LẠNH
Tặng 500.000đ vật tư
Miễn phí công giao hàng

Ngày 8-3 ĐÀN ÔNG VÀ PHỤ NỮ
Mong muốn điều gì nhất
Chương trình đặc biệt dành cho thành viên nguyenkim.com

Firefox

Cổng TTĐT Chính phủ

www.chinhphu.vn/portal/page/portal/chinhphu/trangchu

Google bao nhan dan

English 中文 Phiên bản trước

CỔNG THÔNG TIN ĐIỆN TỬ
CHÍNH PHỦ NƯỚC CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Trang chủ Bảo Điện tử Chính phủ MGov.vn Giới thiệu Cổng TTĐT Chính phủ Thư điện tử công vụ Chính phủ Chính phủ với Người ngoài nước

Chủ nhật, 09/03/2014

Tìm kiếm

Nước CHXHCN Việt Nam

Chính phủ

Hệ thống văn bản

Số liệu ngân sách Nhà nước

Chính sách phát triển kinh tế - xã hội

Các chương trình, dự án phát triển KT -XH trọng điểm của quốc gia

Các chương trình Khoa học

Khởi công xây dựng Nhiệt điện Vĩnh Tân 4
(09/03/2014 13:54:00)



(Chinhphu.vn) – Ngày 9/3, Tập đoàn Điện lực Việt Nam đã phát lệnh khởi công Dự án xây dựng Nhà máy nhiệt điện Vĩnh Tân 4 thuộc Trung tâm Điện lực Vĩnh Tân, huyện Tuy Phong, tỉnh Bình Thuận.

Học viện Quân y đón nhận Huân chương Độc lập

Thông tin về máy bay của Malaysia

- Hoạt động đối ngoại nổi bật tháng 2
- Việt Nam nỗ lực phối hợp tìm kiếm máy bay Malaysia mất tích
- Đang tiếp cận khu vực tìm kiếm máy bay Malaysia mất tích
- Chỉ đạo, điều hành của Chính phủ, Thủ tướng Chính phủ nổi bật trong tuần
- Kiên quyết xóa sổ nạn “cát tặc” ở Hà Nội
- Hai nhà nữ khoa học xuất sắc nhận Giải thưởng Kovalevskaia
- Hội thảo khoa học Tổng kết 30 năm Đổi mới

BẢN ĐỒ HÀNH CHÍNH



Videos

- MS Office Future Version 2019

- <http://www.youtube.com/watch?v=a6cNdhOKwi0>

- Others

- <http://www.dump.com/2011/02/12/a-day-made-of-glass-corning-vision-for-the-future-with-specialty-glass-at-the-heart-of-it-video/>

- Starfire

- <http://www.youtube.com/watch?v=NKJNygZyVo0>