



# Task Analysis

# 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.

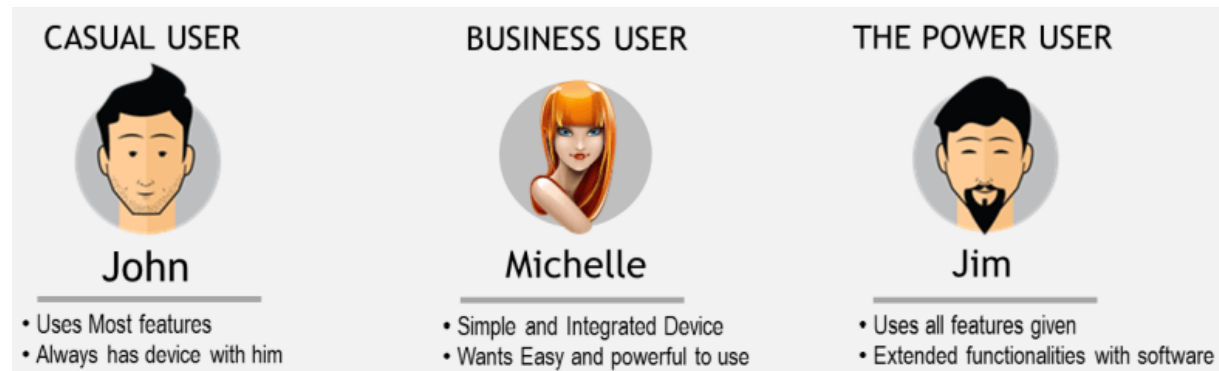


Image: growthpixel.com

# 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



Images: openclipart.org

# 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 famers 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



# 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

# Observing People

What do we "see"?

- Opportunities for new designs
- Breakdowns
- Workarounds
- Mismatches between what users say and do

# Observation

In the user's own environment

Observation of everyday tasks

Why are work-arounds opportunities for new designs?

Why are breakdowns opportunities for new designs?

Why are unexpected uses opportunities for new designs? User customization?

# LOOK at what users really do

- Behavioral Archaeology
- Behavioral Mapping
- Fly on the Wall
- Guided Tours
- Personal Inventory
- Rapid Ethnography
- Shadowing
- Social Network Mapping
- Still-Photo Survey
- Time-Lapse 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

# Relying on what users *say*

Can we rely on what users say about what they want in a new design?

- Very carefully
  - "Henry Ford:" "If I had asked my customers what they wanted, they would have said a faster horse."

It is better to watch what they do than to go only on what they say

- Mismatches may hold keys to new designs



# Users' words are unreliable

People are notoriously bad at predicting what they would use or would prefer when it is only hypothetical

They can much better respond to actual, concrete things, or make comparisons

This highlights the importance of observation and of prototypes

# Users can however...

Tell you what they are doing right now

Tell you how they are feeling right now

Tell you what their goal is right now



# 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
- Tool
  - <https://surbee.io>

# Online questionnaires

## ■ Advantages

- ❑ 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

# 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)

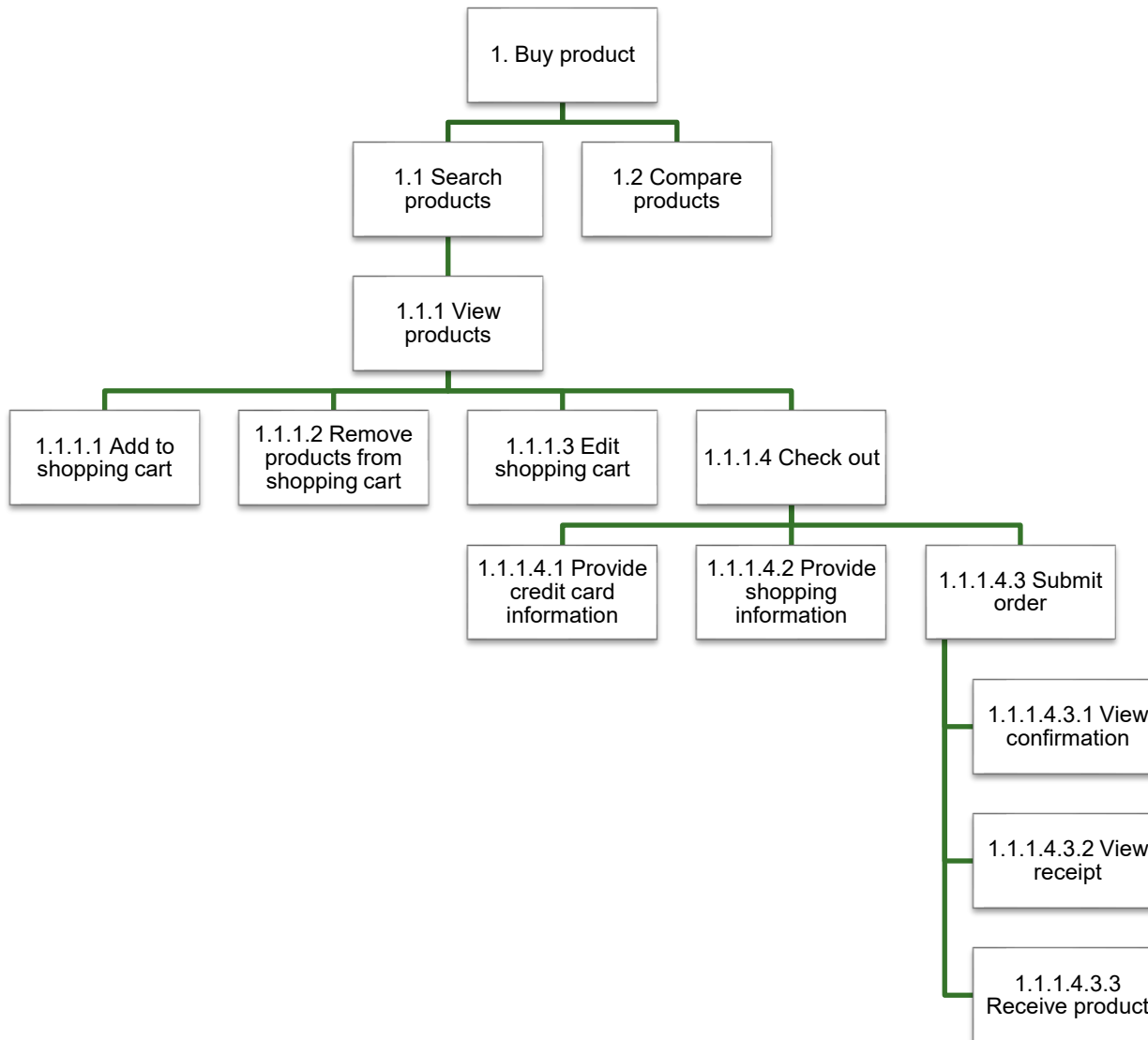
- Breaks tasks into subtasks and operations or actions
  - These components are represented using a structure chart
- Includes
  - identifying and categorizing tasks
  - identifying the subtasks
  - checking the overall accuracy of the model
- Useful for UI design
  - Enabling designers to envision the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

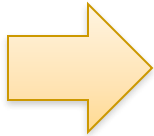


# Task analysis procedure

## ■ 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

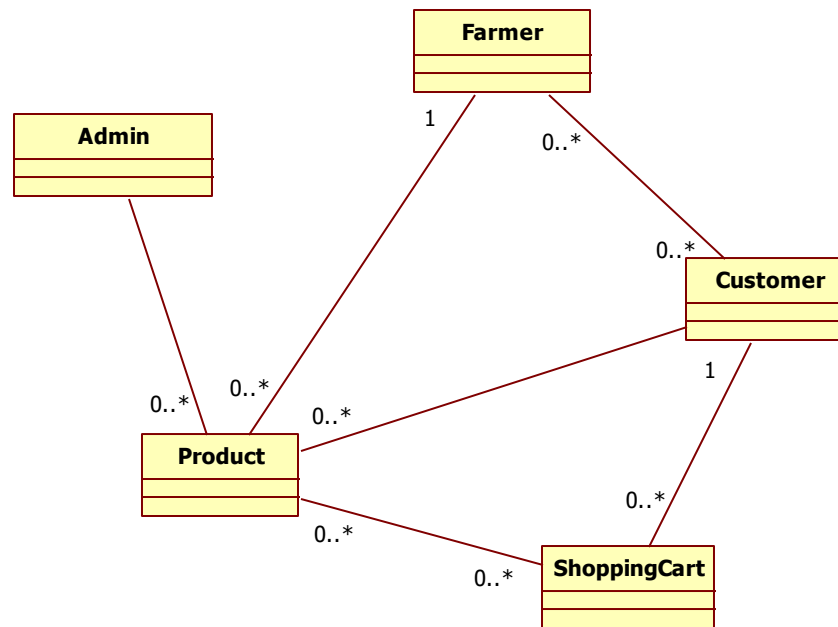
- Evaluate, simplify and fix issues in the task description
- Evaluation techniques
  - Walk-through
  - Formal review/inspection
  - Offline review
  - Online review

# Domain analysis

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

# Domain analysis (cont'd)

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



# Requirements document

## ■ User analysis

- ❑ 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

# 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



# Team work

- Teams in this exercise are the same as those of your projects
- Two team members who are BA go to another team to interview several potential users about BA's product
  - Record and summarize user characteristics and tasks
- Time
  - Interview: 15 minutes
  - Report: 10 minutes (5 minutes x 2 teams)

# PERSONA

a.k.a. Personas

[Chris]



*"I wouldn't be caught dead using moisturiser"*

*"I never buy after shave...I get it for Christmas"*

*"I read men's magazines sometimes, but I'd never buy one"*

*"I only really take vitamin C when I've got a cold"*

*"keeping fit isn't that important to me"*

Learn

Look

Ask


Try

## Character Profiles

**HOW:** Based on observations of real people, develop character profiles to represent archetypes and the details of their behavior or lifestyles.

**WHY:** This is a useful way to bring a typical customer to life and to communicate the value of different concepts to various target groups.

In order to understand different types of customers and how to target them, IDEO developed four characters for a pharmacy wanting to reach the male beauty-product market.



## Wendy

busy budget vegetarian

*I have kept 20 lbs off for over 10 years, mostly by eating vegetarian and watching calories and fat. I wish healthy food, especially organic produce, were less expensive. Plus, it's hard to fit healthy cooking into a busy schedule.*

primary persona

**Personal Details**

Age: 38

Profession: **Fashion Stylist**

Home: **Los Angeles, CA**  
High rise apartment with boyfriend and a cat.

**Goals and Priorities**

Eat great vegetarian food

Maintain healthy weight

Affordable and convenient

**Wendy Facts**

Serving Size: 1  
Amount Per Serving

Age: 38      Los Angeles, CA

Health Facts\*

Total Weight	pounds	155
Height	inches	60
BMI		23
Cholesterol	109 mg/dl	Normal
Sodium	124 mEq/L	Normal
Glucose	122 mg/dL	Normal
Blood press.	121/76 mmHg	Good

Not a significant health risk. Adding healthier daily nutrition and exercise will improve.


\* Recent blood test a part of her yearly physical.

**Wendy's Goals and Priorities**

- Maintain healthy weight
- Learn to be an expert on what's healthy or not
- Cook at home with fresh ingredients, pack lunches
- Healthy microwave or take-out options when in a hurry
- Resist junk food temptations in favor of healthy snacks
- Get the best fresh food value for her money

Wendy is a 38 year old vegetarian living with her boyfriend in an urban Los Angeles neighborhood. She was a "fat kid" growing up, and continues to work hard to maintain healthy habits and stay in shape. She tries to eat right, mostly by limiting calories, fat, and carbohydrates, and by avoiding meat altogether. She used to track her eating with paper and pencil, using the Weight Watchers point system. It was a hassle though, and once she got the feel for portions and types of foods, she stopped tracking. She has a smart phone now, but uses it mostly for social networking and text messaging, and isn't really interested in heavy duty apps. She would like to track food somehow though, to help resist cravings and bad habits.

For exercise, Wendy uses the elliptical trainer in the gym in her building three times a week, but doesn't always find time to stick to that schedule. She almost always cooks at home, and considers cooking a hobby. She consciously avoids fast food, but often gets take-out for lunch when she hasn't had time to pack something, and enjoys eating out with her boyfriend a few times a week. Wendy drives to Ralph's (Safeway-esque) for most of her groceries, but also tries to get fruits and veggies at the farmer's market in her neighborhood. On a limited income in an expensive city though, she finds it challenging to always afford fresh and organic produce.



## Lance

mobile gourmet

*I know it's important to eat well for all the right reasons, and I love delicious food. But in reality, it's really tough to make time for shopping and cooking. Fresh stuff requires more frequent trips to the grocery store, planning, and preparation, which I really just don't have time to do.*

secondary persona

**Personal Details**

Age: 32

Profession: **Architect**

Home: **Nashville, TN**  
Small house, also functions as his studio.

**Goals and Priorities**

Convenience above all

New flavors and experiences

Balanced healthy ingredients

Lance is always juggling 2 (or more likely 5-6) projects at once. He is an architect with a focus on green housing, and he supervises a team of off-site collaborators and on-site contractors. Lance loves to eat healthy and tasty food, but prioritizes his nutrition and health like everything else in his life (deadlines always come first).

His main objective in buying food is convenience and flavor. Lance really loves trying new flavors and new food experiences. He considers himself a sushi expert, sandwich snob, and barbecue aficionado. With his busy work life, he tends to fall back on restaurant meals to feed his needs, but he knows that too much of that really hits the waistline and drags his energy level down. He's also lactose intolerant, and it can be tricky avoiding dairy in restaurant food.

The majority of his groceries come from Amazon Fresh®, and he appreciates the flexible functionality of the site. For example, keeping lists, maintaining a grocery history, and adding alerts for items he frequently buys. Since he's always online, in the studio and in the field, he's really comfortable using technology to get things done.

**Lance's Goals and Priorities**

- Convenient food where and when he needs it
- Stay healthy so he can maintain his high-energy lifestyle
- New flavors that satisfy his adventurous palate
- Mobile solution that keeps up with him
- Easy, so it doesn't take any more valuable time

**Lance Facts**

Serving Size: 1  
Amount Per Serving

Age: 32      Nashville, TN

Health Facts\*

Total Weight	pounds	140
Height	inches	64
BMI		24
Cholesterol	104 mg/dl	Normal
Sodium	148 mEq/L	Elevated
Glucose	116 mg/dL	Normal
Blood press.	120/76 mmHg	Good

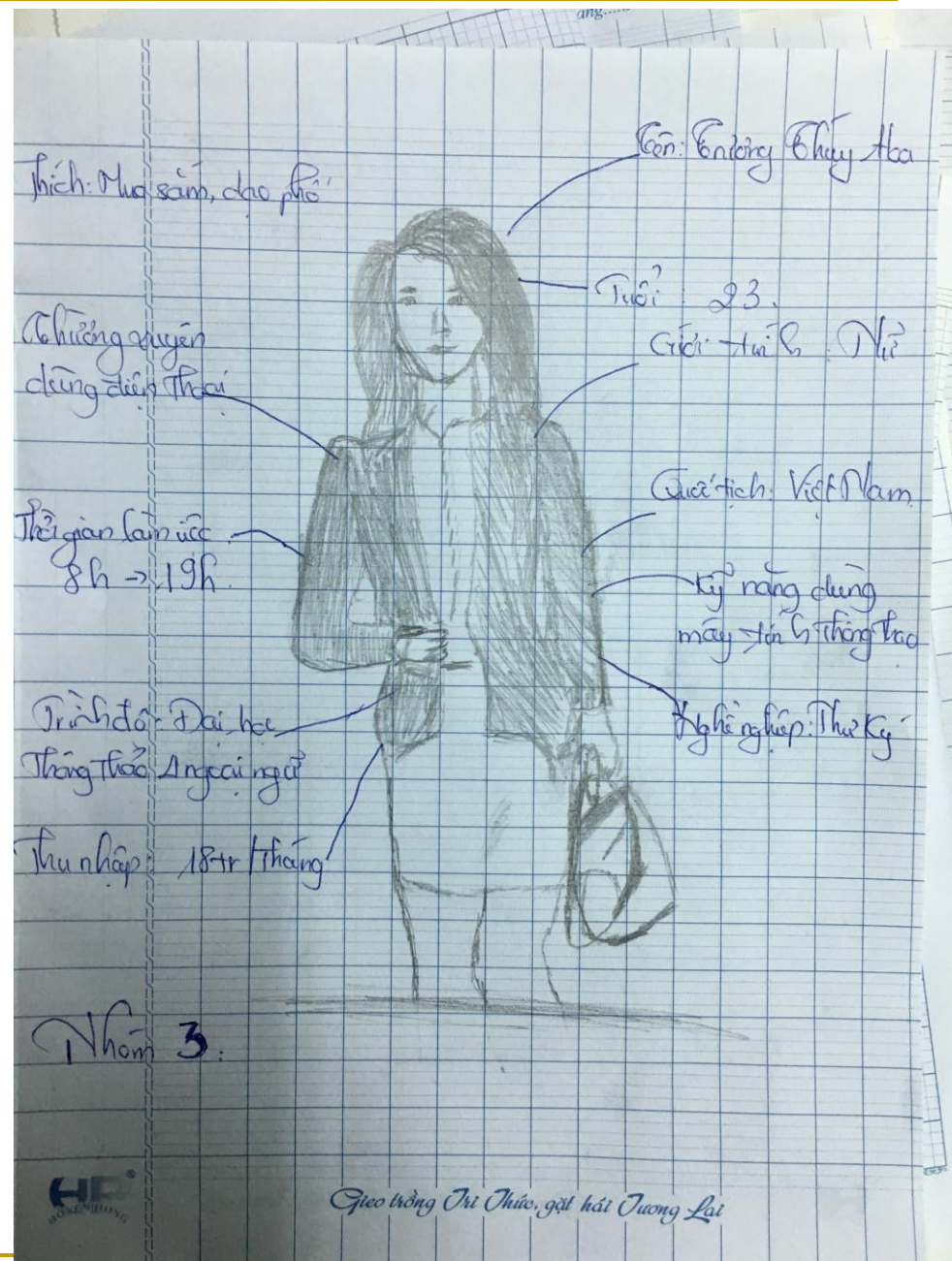
Not a significant health risk. Adding healthier daily nutrition and exercise will improve.

\* Recent blood test a part of his yearly physical.

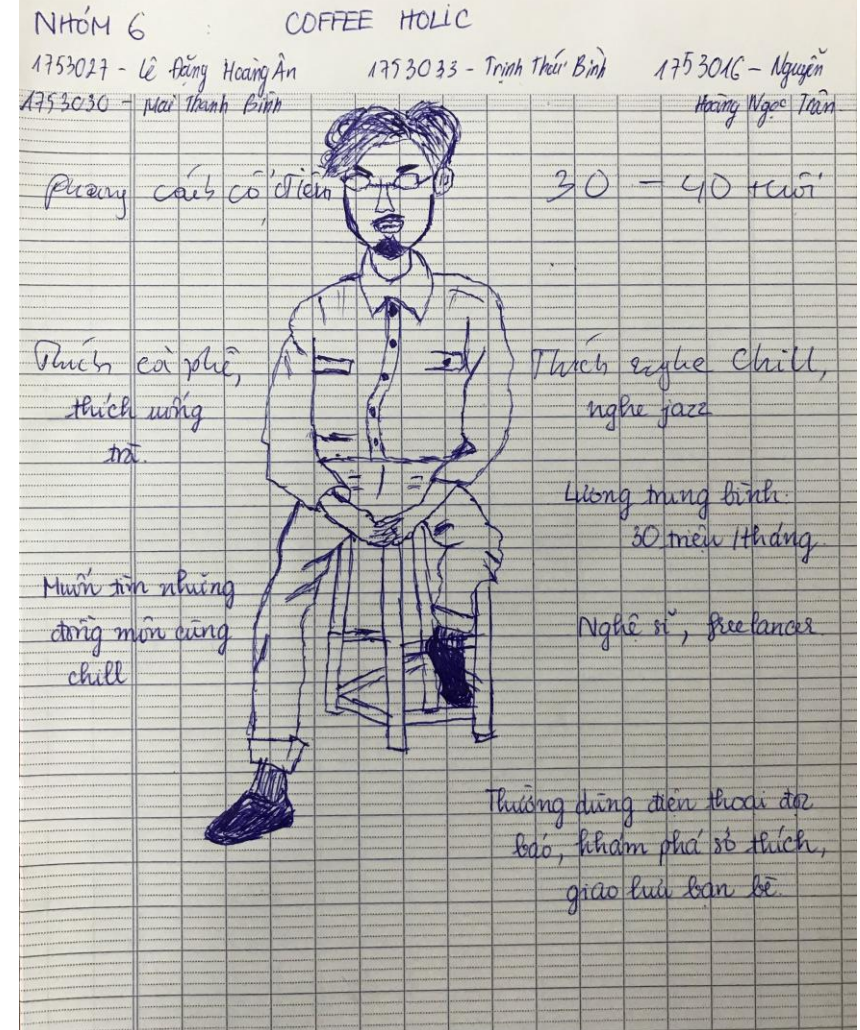
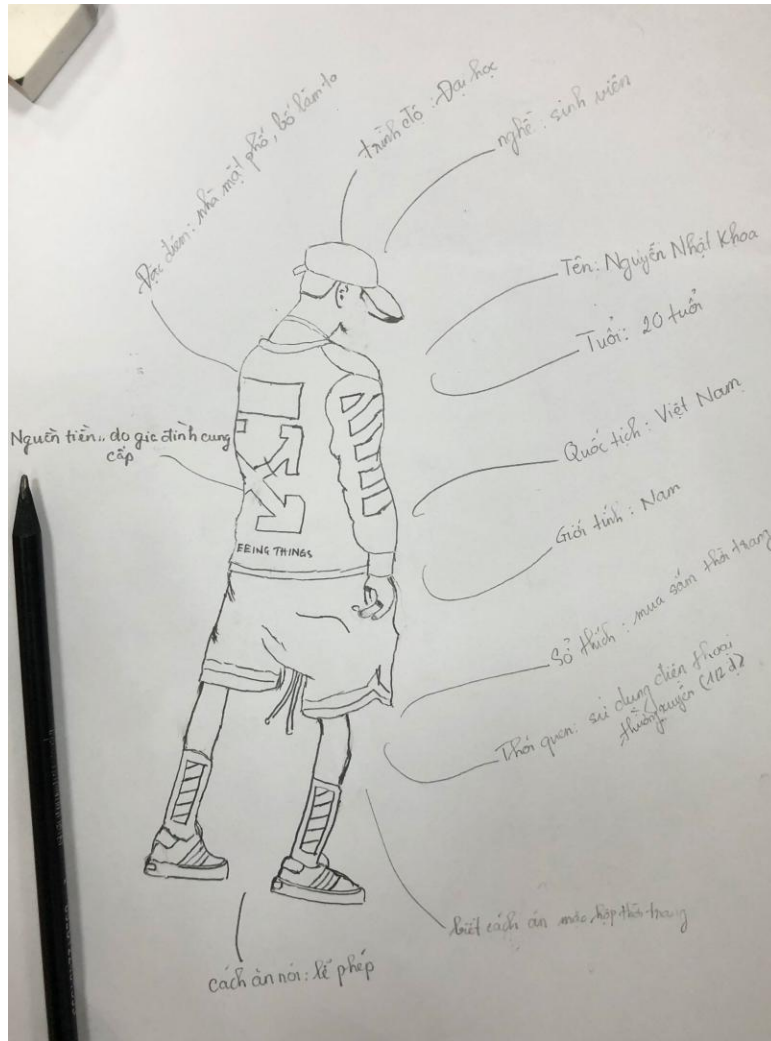
	The researcher	The Sysadmin	The OSS developer	The CS student
				
Name	Alexander Weiß	Donald M. Berry	Kristian Larsson	Eric Neville
Age	30	30	26	24
Location	Germany	US	Sweden	France
Social Life	Alexander lives with his girl-friend in a flat in Hamburg.	Donald lives with his wife and 1-year old daughter in a house in Portland.	Kristian shares an apartment with two friends in Stockholm. His girl-friend lives in Uppsala. They see each other every weekend.	Eric lives with his parents in a small city close to Lyon. He visits the university there. Often, he stays at his friend's apartment for playing PC games and programming.
Work Life	He works at centre for environmental systems research and designs plans for replacable energies in a EU-funded project.	He is a lead system administrator in a huge network solutions company in Portland.	A software developer with a dayjob in a medium-sized software company. Works on KDE in his spare time.	He is a student of computer science. Besides university, he performs small programming jobs for people in his neighbourhood.



# An example of User Persona

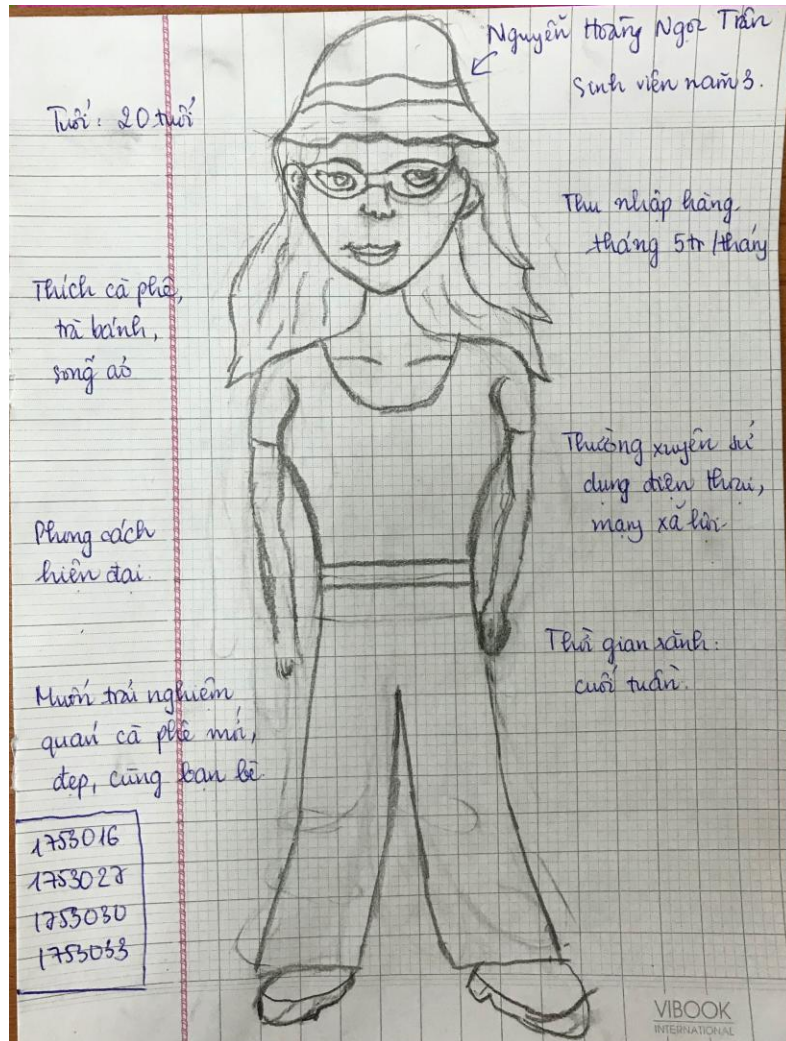


# Personas

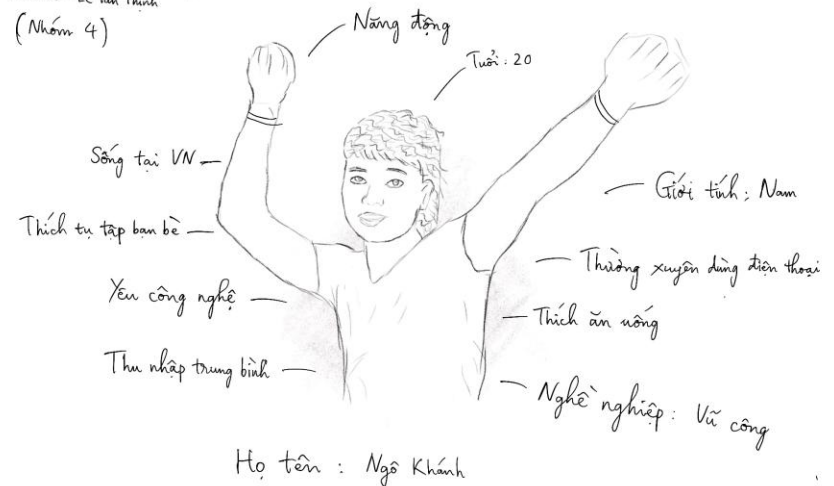




# Personas



1753101 - Lê Hồng Thái  
1753130 - Đoàn Thiên Vĩnh  
1753127 - Cao Đình Vũ  
1753107 - Nguyễn Đức Thông  
1753105 - Lê Tân Thịnh  
(Nhóm 4)





# Personas

Nguyễn Thủy Hoàng - 1753055  
Phạm Vĩnh Hùng - 1753057

Thường xuyên sử dụng smart phone

Thường xuyên dạo  
quanh các trang TMDT

Trình độ Đại học

Nghề nghiệp: Kế toán

Thu nhập: 15 triệu/tháng

Thời gian làm việc: 8h - 17h30


Kỹ năng dùng máy tính: Tin học văn phòng

Giới tính: Nữ

Quốc tịch: Việt Nam

Tuổi: 23

Sở thích: Mua sắm, sưu  
tầm các món  
đồ phụ kiện, quần  
áo



Một trang vở một chương lại

TREBOOK

Date \_\_\_\_\_ No \_\_\_\_\_

Tên: Nguyễn Hạ Lữ

Tuổi 20

Giới tính: Nam

Có sở thích xem phim

Sinh viên

Thời gian học tập  
6 - 8 tiếng/ngày

Có thời  
gian sinh  
củi tuần

Thu nhập  
cá nhân 3 triệu/tháng  
+ gia đình hỗ trợ

Có thời gian truy  
cập internet  
từ 3 - 4 tiếng/ng

Có sử dụng điện thoại  
đó lướt web

Độ tuổi 17 - 25


Mặc đồng phục hoặc trang phục

Nhóm 8

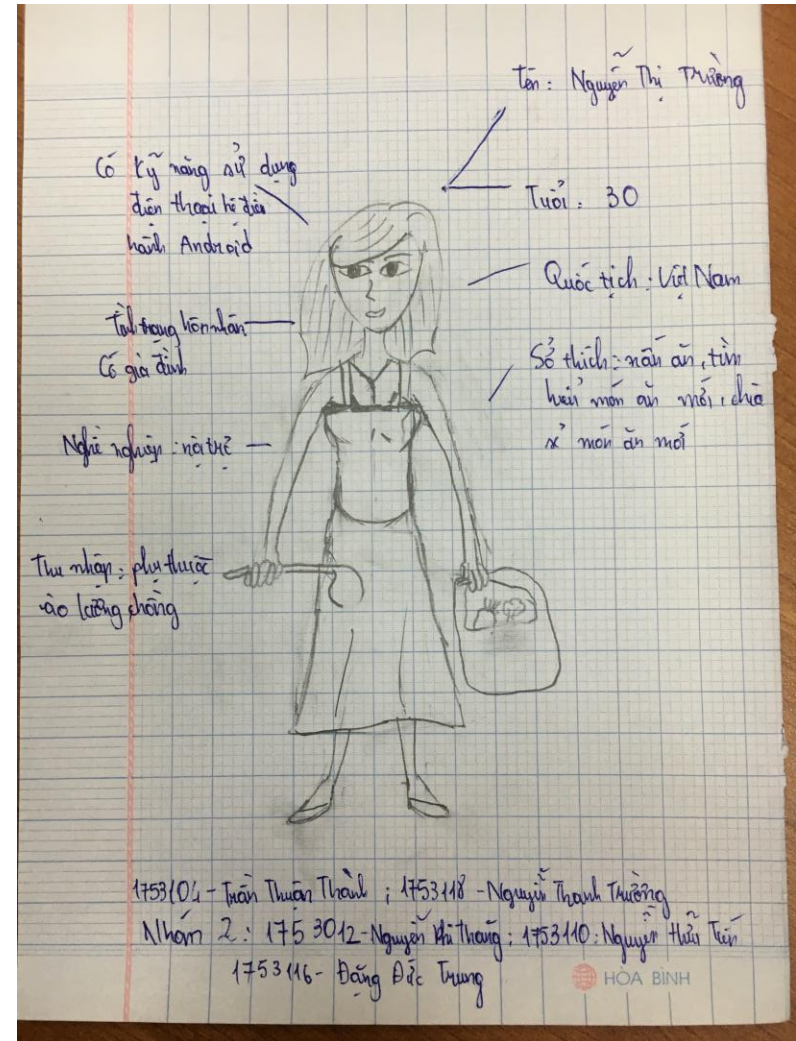
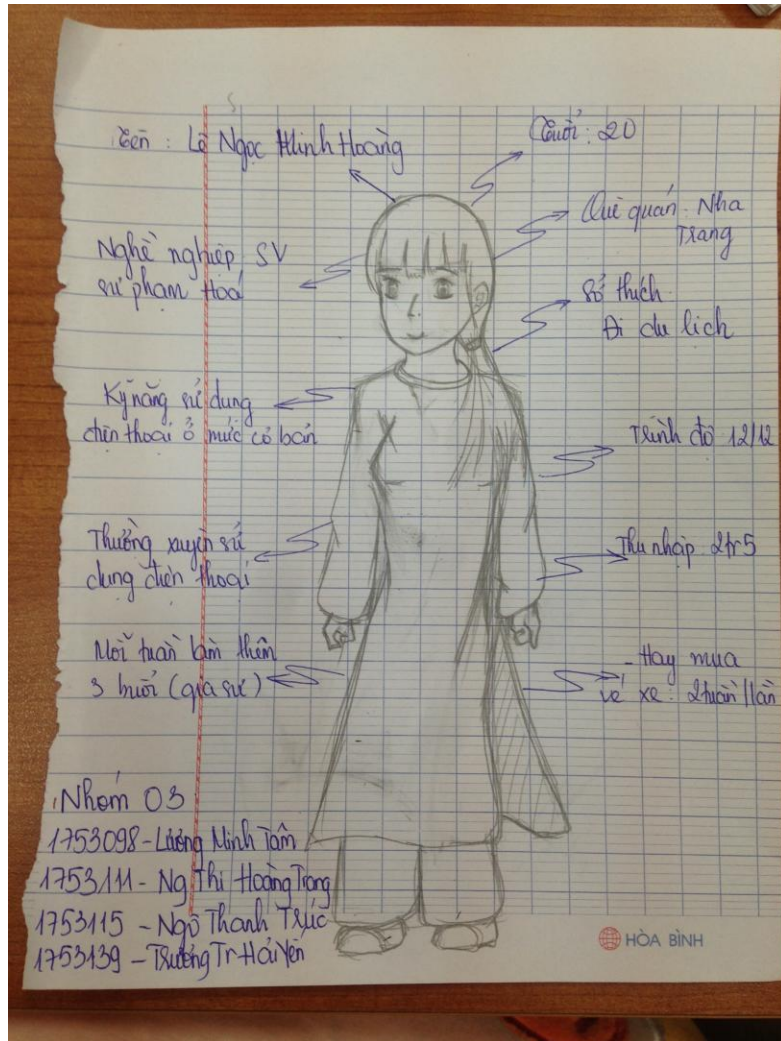
Nguyễn Hữu Tuấn - 1753017

Ngô Việt Thắng - 1753103

Phùng Trần Minh Thường - 1753109



# Personas






# Persona

Quốc An | 22 tuổi

- + Trường HCMUS
- + Đã có ngệ yên
- + User story: Dành quỹ nhiều thời gian để học và làm, đi về trễ tập trung làm việc / học.
- + Sở thích: Uống trà sữa, thư giãn, dành thời gian học cái mới, tập gym.
- + Unlike: làm việc quá sức.
- + Ngủ quá nhiều.

+ Daily routine:

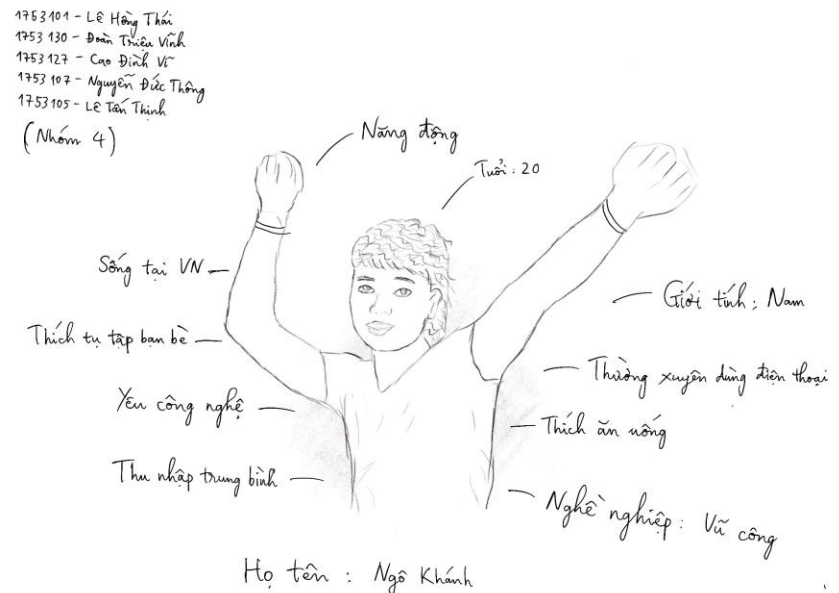
- + Mục tiêu: tối ưu hơn thời gian học tập, quản lý quỹ thời gian hiệu quả
- học / làm việc từ 8h - 5h
- Tối T3 T5 T7 tập luyện.



\*enivo

# Teamwork

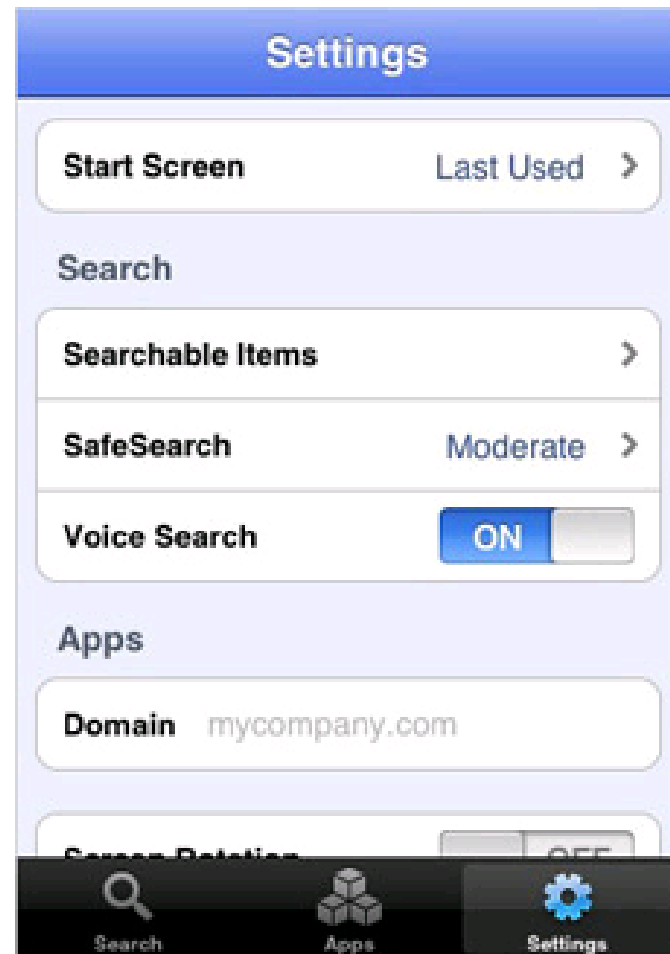
- Work in your team
- Interview the potential user in your team or the person who knows most about your users
- Draw a persona for the user
- Describe the user



# Over-design UI



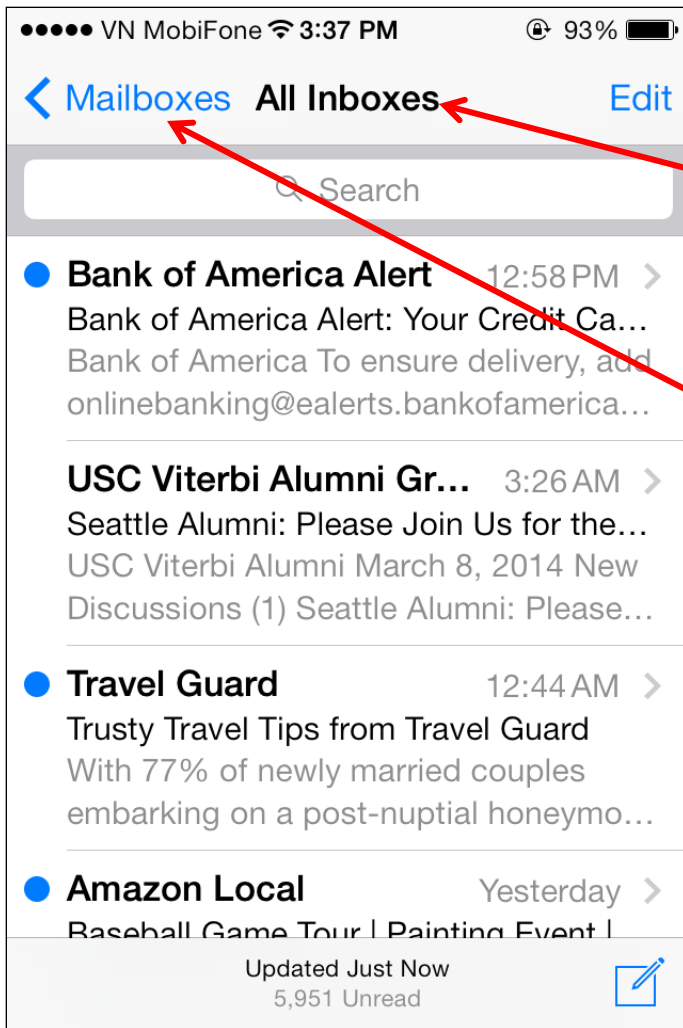
Over-design



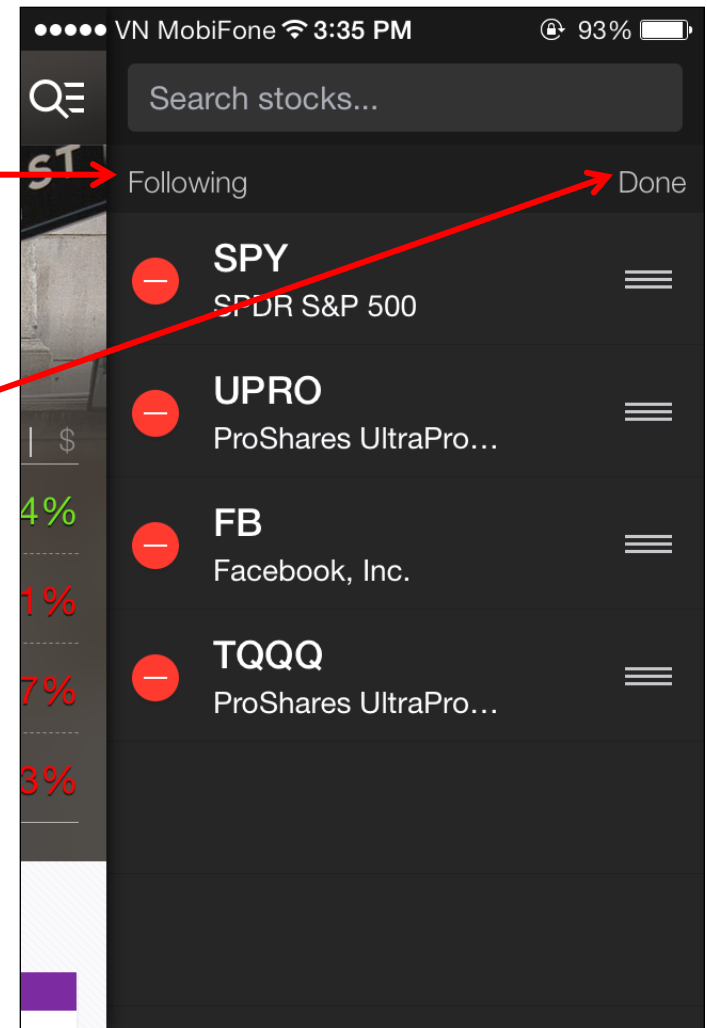
Good design

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

# iPhone Mail vs. Yahoo Finance

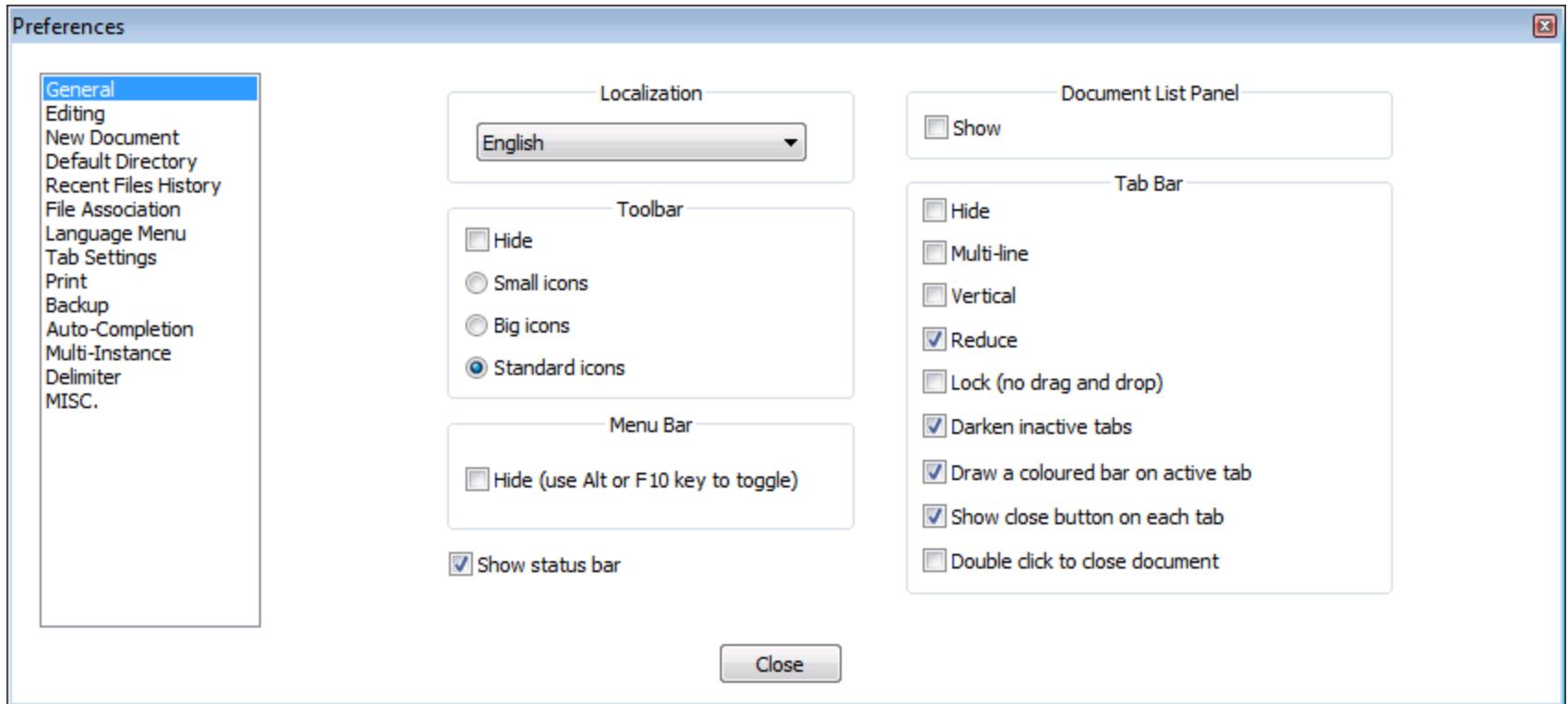


Consistent design



Inconsistent design

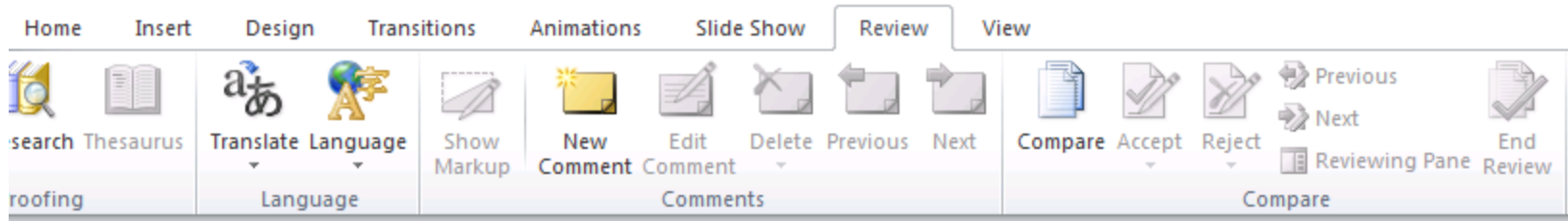
# Notepad++ (Preferences Dialog)



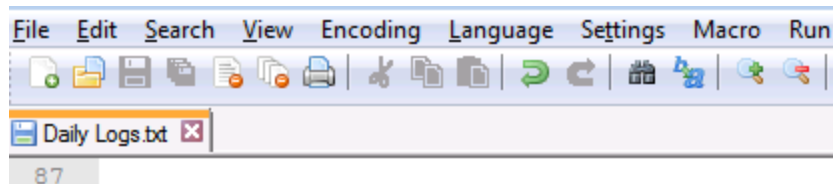
Inconsistent grouping: two top groups have only one item each.  
“Show status bar” does not belong to any group

# 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 "Tháng 8" (August) 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 boxes: "giá shock 340.000đ" for a product, "Chọn máy ảnh GIÁ RẺ - CHỤP ĐẸP" for cameras, "LỄ HỘI HITACHI" with a "TẶNG 600,000đ" offer, and "ĐẶC BIỆT MÁY LẠNH" with a "Tặng 500.000đ vật tư" offer. A sidebar on the right promotes the "Ngày 8-3 ĐÀN ÔNG VÀ PHỤ NỮ" (March 8th - Men and Women's Day) with a "Chương trình đặc biệt dành cho thành viên nguyenkim.com" (Special program for Nguyenkim.com members).

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 Tiễn Tri Bóng Đá 2014 Nguyễn Kim Tài Trợ 20.000 Camera TUYÊN DỤNG KHUYẾN MÃI

Tháng 8

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

Tham gia ngay

Giá thị trường : 430.000 VND  
**giá shock 340.000đ**

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

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

## ■ 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=NKJNxgZyVo0>