1 VISUAL THINKING, DESIGN AND SKETCHING

Design Diaries:

- 可以帮助保存 design ideas 并且比较容易写注解, 每一次写 diary 的时候都应该放上日期
- 不仅需要保存 final product 的 documentation, 在设计中的 design decision 也需要几下
- 可以当作 legal implications

Visual Thinking:

- 草图或图片可以使 participants 得 experience 和 perspective 更加生动形象, 和叙述故事一样
- Speculative 推测 prototyping ⇔ process of generating design sketches and presenting them back to participants
- Sketches helped to provoke 煽动 conversations among community members during design process that does not always incorporate user perspective and reflections

Creative Thinking: part of UCD]

- 想一些新的点子 new ideas, 并准备好替代的方法 alternatives
- Forming new associations – break down cognitive barriers and mental blocks 可以使设计者的想法更加开放而不局限, 可以在不同的点子中找到一些相关联的来建立关系
- 可以是 individual 的也可以是 group activity
- 一般来说人的左脑都是用来思考一些比较理工化的东西, 而右脑是用来思考一些比较文科或艺术的话题
- Brainstorming: 头脑风暴是一个很快的收集大家想法的方法, 在这个 activity 中不论什么答案和点子都部分对错, 可以有 list of words/phrases, 在给出点子是不要带有偏见 (一般来说句子越长, 重复率越少)
    - Words 左脑 -> logic, numbers, sequence, linearity, analysis
- Mind Maps: 是另一种收集想法的方法, 和头脑风暴相似但是是用画画代替单词或句子, 可以有颜色, 可以 show association
    - Drawing 右脑 -> 可以让人使用自己的想象力 imagination 画出有色彩的图片, 并且带有 spatial awareness
- Story Boards 漫画形式的展现: 是一个 paper-based low fidelity 的方法, series of sketches that represent a sequence of steps that user and system go through to achieve a task

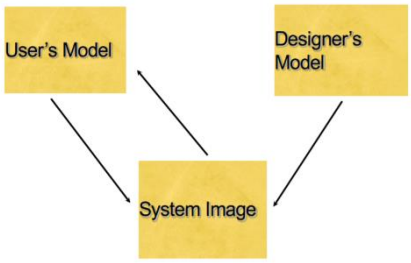
Goals of Interaction Design:

- E.g. email system ⇔ Design interface for organizing, storing and retrieving emails that is fast, efficient, enjoyable to use
- 当你在设计初期就决定了 interaction goals 的时候, 后面就不会造成不必要的开销, 因为大量地改代码是 expensive
- Understand user needs and requirement
    - E.g. 司机不能边开车边看电视
- Don't state something to be TRUE when it is still open to question
- Consider if one thing is reasonable or not reasonable
    - 人们有可能不会介意使用 3D 眼睛来看 3d 电视 – reasonable
    - 人们肯定不会介意画很多钱去买一个 3d 的电视 – not reasonable

Conceptual Models: 概念模型

- 是一个设计者心里的抽象模型, 是他们对一些 object 或者 situation 的看法合集
- It is a high level description of how a system is organized and operates
- 建立这个抽象模型是根据以往的经验和只是来的, helps person understand how something might work, and how they might interact with it
- 是一个 internal 的抽象模型 -> 在心里想的别人看不到
- May or may not reflect the actual way an object works
    - 经典的 conceptual model 的例子 – Spreadsheet
        - 和会计师使用的 ledger sheet 相似冰箱且可以使用电脑来操作, 比较容易理解, 操作简单冰鞋可以使用电脑来进行一些复杂的计算
        - 第一个有 desktop 的电脑 star interface – 和桌面相似 模拟了人们在桌子上完成任务的步骤

- **Three components**
  - (1) designer's mental model
    - Designer wishes to create a system
    - 他们会将他们的 conceptual idea 运用到系统设计中
    - 这个时候还并没有一个设计实体只是设计师的一些想法
  - (2) system created by designer
    - System image is a physical system or object
    - 包含 physical structure, documentation, instruction, labels
    - System has been built
  - (3) user's mental model
    - 由于用户一般来说并不会直接和设计师沟通, 所以他们相当于是在使用这个系统是简介地沟通
  - 所以一个好的设计是设计师可以清晰地在设计中展现出自己地 conceptual model 并且使用户可以 easily correct 他们地 conceptual model



Interface Metaphors:

- 使用用户的 familiar knowledge, 来在电脑上创造软件 例如: calculator
  - 用户在操作电脑的时候可以学的更快, 而却因为他们有自己对事件的 conceptual model 他们也会更好理解
- 但是同时也会局限设计师的想象力, 或者 break conventional rule 例如将垃圾桶放在桌面上

2 Design Process – Form Idea to Scenarios

Think Aloud Protocol (Observation technique):

- Users verbalize their thoughts continuously while interacting with the system 当用户在测试或者使用网页或者程序时, 不停地告知自己地想法(方便的地方或者自己疑惑的地方)
  - 可以帮助收集到很多用户对产品的评价
- Facilitator, observer, tester listens (facilitator with diary listen to the participants, observer takes notes)
  - 由于人们平时并不会自然地一直说话, 所以 facilitator 需要在测试中询问或者鼓励用户 think aloud
- Note are taken, audio may be recorded if have permission (recording equipment needed)
- Process
  - Formal process involving consent form, explanation of objective
  - Give participant task scenario – describes a goal but not explicit tasks
  - Listen, take notes -> connect ideas and find pattern afterwards

Idea to Scenarios:

- Ideas
  - Idea can be generated during brainstorming, mind maps, or story boards
  - Identify the "Problem space" and possibilities in the beginning of the project
  - 当产品不停地发展, 研究的重心就会从 creative 逐渐变成 business -> building a specific service/product
- Paper Prototype
  - A cheaper way to answer the design questions regarding 关于 a design will succeed or fail
  - Prototype can help the design team to find more issues or questions by assess the outcome

Principles:

- Chaos to Order - Make the information organized and categorized, make the visual design orderly and non-clutter.
- Idea to Product – organize the ideas from brainstorm or mind maps, develop it to prototype, testing, and iterate to build a real product
- User centered – We should focus on user centered design, having user involved in the iterated design process
  - Iterative, repeatable, and testable process
- Questionnaire, Interview, Interpret – these methods help us to gain data and information from users in order to evolve
- Iterative – UCD and product design is a iterative process
- Scientific Method: [Hypothesis -> Experiment -> Results/Conclusion]
- Design Method: [Observe/Analyze -> Envisage and Design -> Evaluate and Refine]

  - Observe/analyze ⇔ Identify needs and requirements
  - Envisage/Design ⇔ Develop alternative designs
  - Design -> Evaluation ⇔ Build interactive versions for later evaluation

Product Description: 30 words or less to describe what the product will do to meet the user goals

People (who has involved in the iterative process):

- Direct Users (Primary)
- Indirect Users (Secondary)
  - Who manage the direct users -> IT Support
  - Who receive the output from the product - Developer
- Other Stakeholders (Tertiary)
  - Library, lecturer, support, community, services
- Design Team – Facilitating
  - Interaction Designer – generate, synthesizes 组合 ideas
  - Visual Designer
  - Industrial Designer
  - Team Lead
  - (Design team should understand users' needs and requirement, not guess, and not fall in love with the design)

Data Gathering:

- 在不同的设计阶段使用不同的 data gathering method 例如当你想要设计一个全新的产品时和更新 update 已有铲平时使用的 method 会大不相同
- Questionnaire – Develop set of questions to ask users and stakeholders
- Interview - Structured / Unstructured depends on how you want to analyze the data, might have quantitative and qualitative data
- Focus Group and Workshops
- Naturalistic Observation
- Studying Documentation
- 一个可以用来 organize idea 的方法 – Affinity Diagramming
  - Affinity diagram 可以将大量的想法 idea 整理出 natural relationship, 找出 common themes and patterns
  - 一般实在 brainstorm 之后使用, 只能用来分析 verbal data
  - Often used as a group technique using post-it notes

Persona 使用不同的方法分析了数据过后可以创建 persona 模型:

- Marketing-targeted personas – model purchase motivations
- Interactive personas – model usage behaviors
- Persona 可以包含 age, gender, first name, photo, goals (what they aiming to achieve), feelings, online activity

Scenarios:

- Context Scenario – can be developed after all the analysis and grouping based on the findings of the interviews
  - A day in life of a user -> it is like a narrative form, and it's a story
  - Explains goals and needs
  - Not technology specific, and not mention about system behavior
  - Context Scenario provides snapshot of user interaction, 可以帮助设计者站在用户的角度思考, provide means to envisage workflow
- 由于 persona 是会使用产品的主要人群, 所以可以围绕各个 persona 来编故事
- UCD – create scenario based on personas -> define requirements -< define interaction wireframe -> filling framework with design detail
- Design Process – Analysis based on the knowledge about user -> Design the context for prototype -> evaluate the baseline by compare result

- Use Case Scenarios – include users goals but emphasis 强调 user-computer interaction, not how the system behaves 这这种 scenario 假设了一种 interface design, 有可能会局限设计师的想象力去开发更多的功能

Diagrammatic Techniques to Model Tasks:

- Tasks and Workflow – 当用户在完成 task 的时候可能会将一个大的任务划分成很多 subtasks, 在这里 make decision 就是 workflow 的一部分
- Existing Process – it's easier to model/document existing processes because structure will be inherent
- Task Analysis
  - 一般是用来当做新 system 的预想 envision
  - 可以用来 investigate existing situation
  - Try to understand purpose of what people currently doing
    - What are they trying to achieve/ why they trying to achieve it/ how they going about it
- Technique – Hierarchical Task Analysis (HTA)
  - Break task down into subtasks, then more subtasks …
    - Start with User goal
  - These are grouped as plans which specify how the tasks might be performed in practice
  - Focus on physical & observable actions -> including looking at actions not related to software
  - Limitations: 当 task 很复杂的时候很难做 scale / cannot model parallel or overlapping tasks / cannot model task interruptions
- Flow charts – can be used to model process through interface