



# INFORMATION ARCHITECTURE, SEO/SEM AND CONTENT MANAGEMENT SYSTEM

Bernard Suen  
Center for Entrepreneurship  
Chinese University of Hong Kong



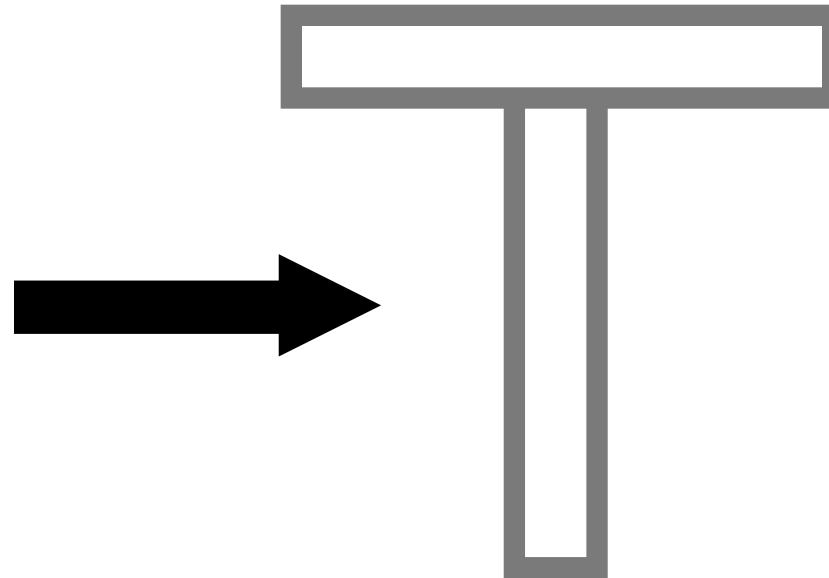
Center for  
Entrepreneurship

# **RECAP**

**I-Shaped Talent of  
the Industrial Age**



**T-Shaped Talent of  
the Network Age**

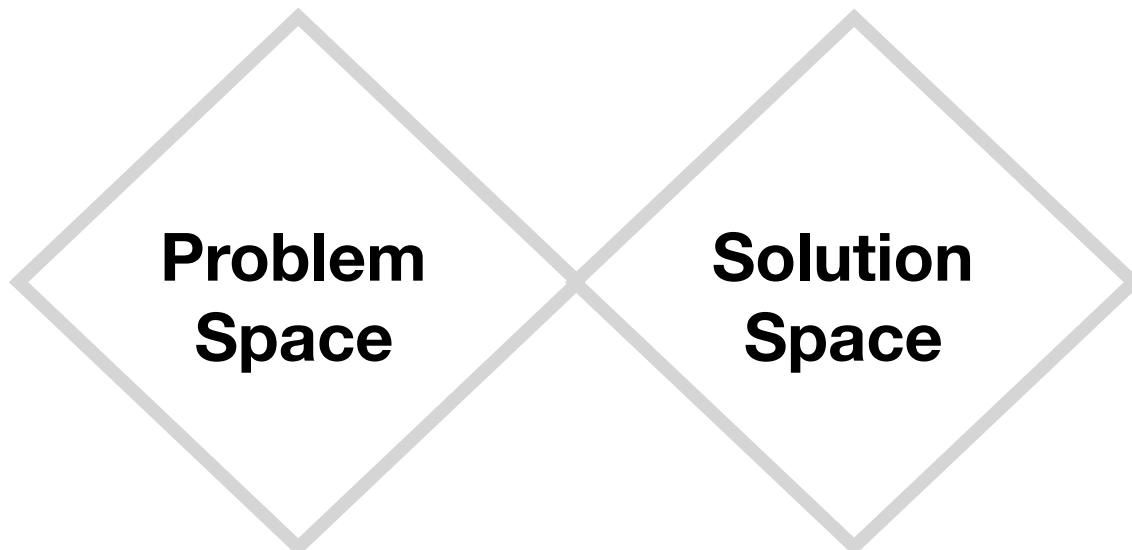


**The Power of an Interdisciplinary Team**

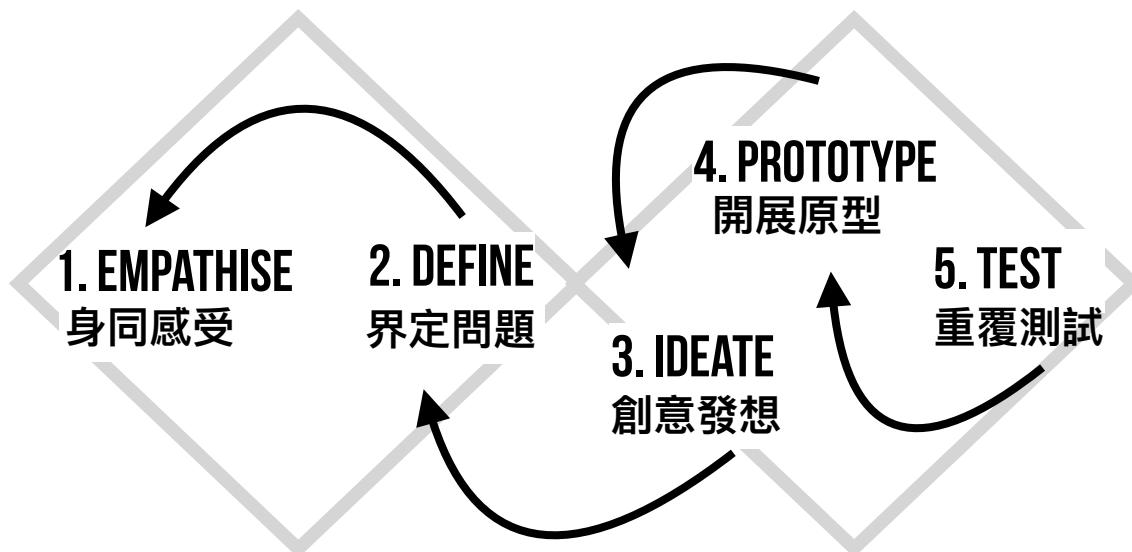
**HOW CAN YOU BECOME T-SHAPED?**

# **Design Thinking & Computational Thinking**

# **Double Diamond Model (雙鑽模式)**



# Double Diamond Model (雙鑽模式)



**EXPERIENCE OF USING**



**DESIGN "X"**

# THE SHOPPING CART EXPERIENCE



**USER EXPERIENCE AS JOURNEY AND STORY**



谁人的问题?谁人的需要?问题情境怎样形成?有那些持份者?用甚么产品或服务去满足需要?去解决问题?为何要满足这需要和解决这问题?当中能创造甚么价值?



怎样去满足需要?有没有关键的技术?如何找资源?如何建立系统把资源启动起来?如何突出解决方案,比其他方案更有竞争力,拿到更多的资源?



如何定价?生产多少?如何平衡成本及增长、创造经济性及非经济性——例如社会和环境的价值?

Adapted from IDEO Design Thinking Toolkit

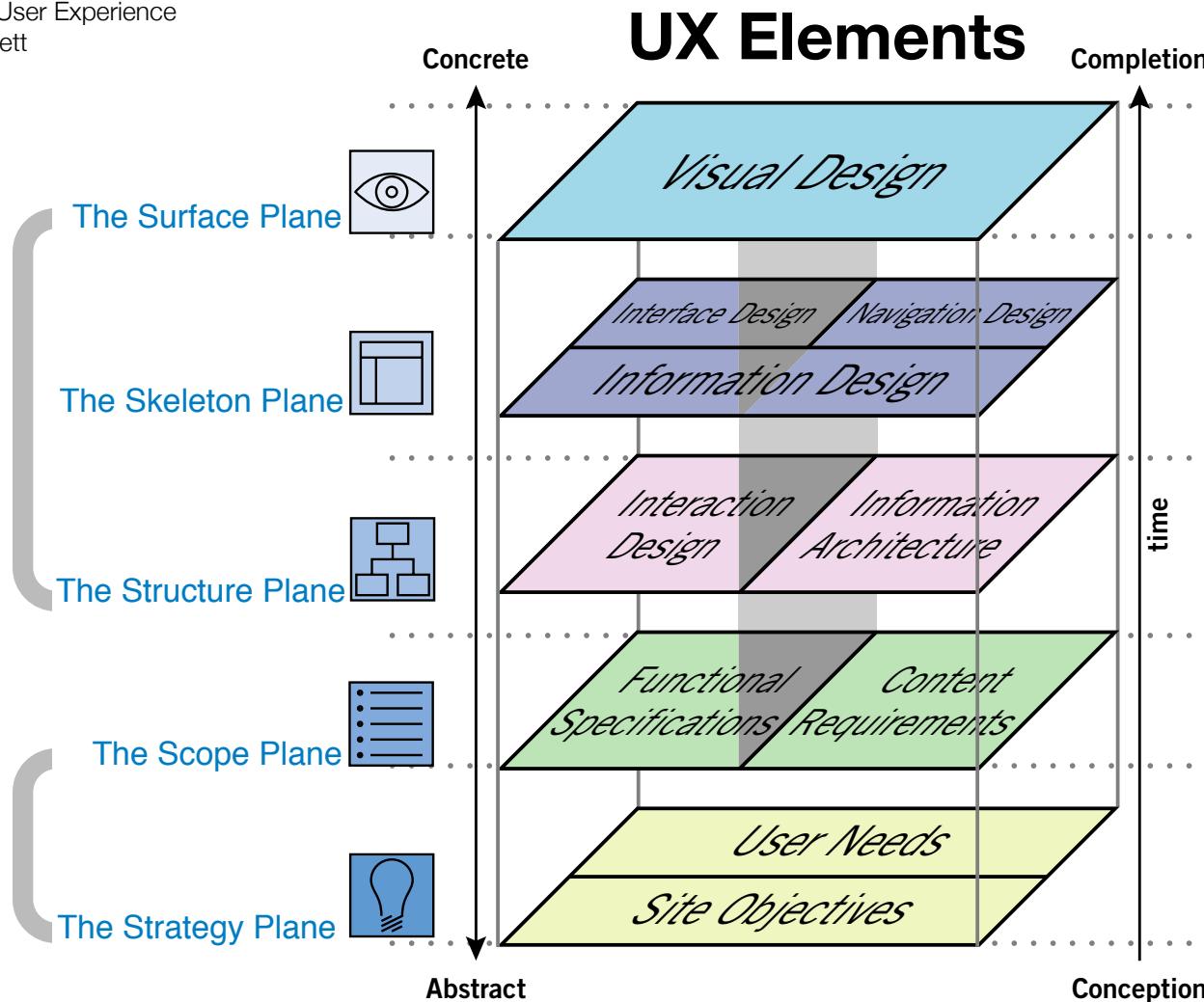
Source: Elements of User Experience  
by Jesse James Garrett

## Solution Space

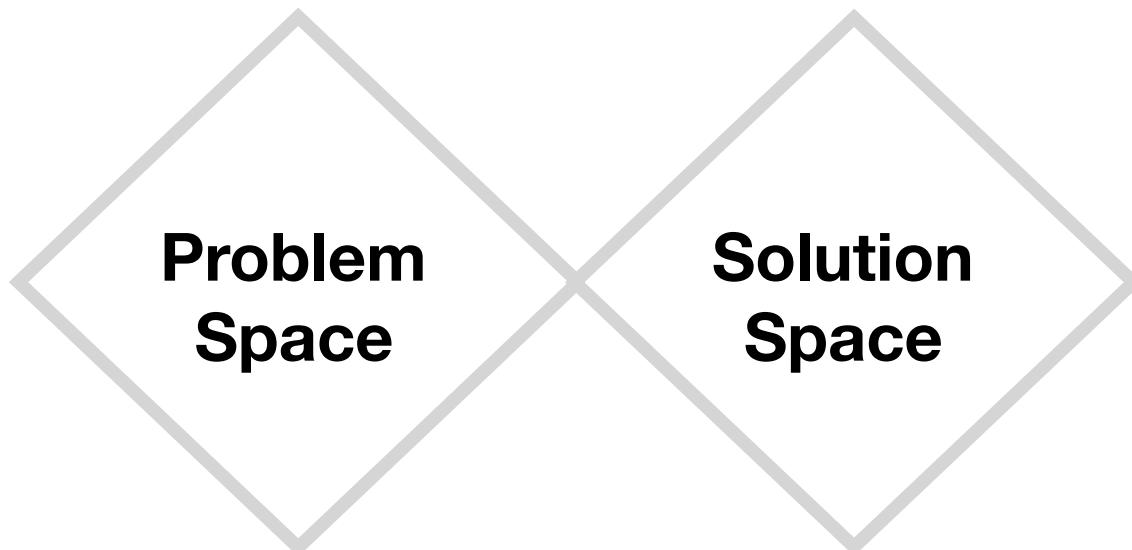
how and  
how much

## Problem Space

who, what,  
and why



# **Double Diamond Model (雙鑽模式)**



Save Money

Maximize  
tax deduc-



# **Integrating Design Thinking and Computational Thinking**

# 為何他們對產品所需的功能存 有不同想法？



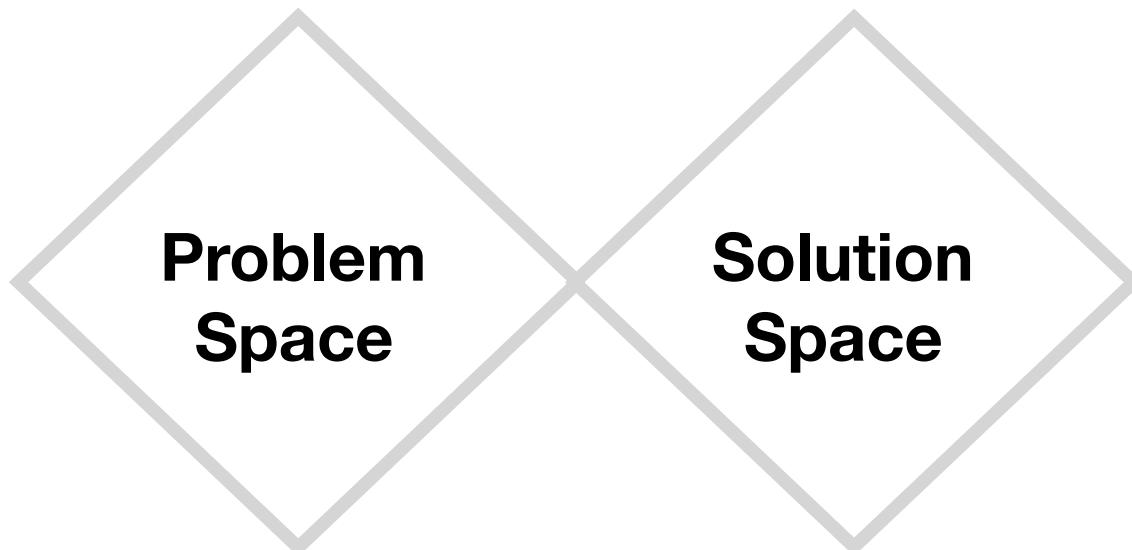
Adapted from Donald Norman, "The Design of Everyday Thing"

**因為他們有不同的心智模式**

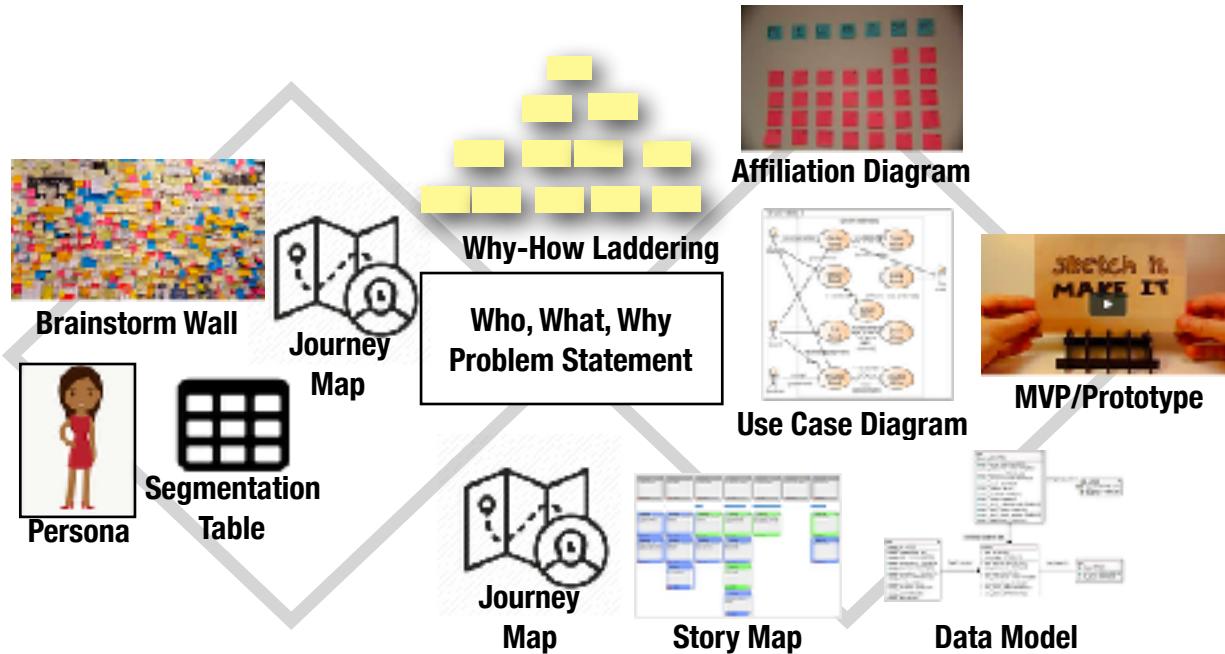
- ✓ 從使用者角色轉換成生產者角色
- ✓ 從人物故事轉化為生產系統
- ✓ 從了解使用者體驗進展至建立系統  
和數據
- ✓ 考慮成本效益

Design Thinking	Computational Thinking	Description
Empathy	Decomposition	Collect and analyse <u>stories and data</u> to understand the stakeholders and discover their needs.
Definition	Patterns	Synthesise recurring <u>persona</u> , <u>contexts</u> , <u>artefacts</u> , and <u>scenario</u> patterns to formulate problem ( <b>who, what, and why</b> ).
Ideation	Abstraction	Develop socio-cultural and technical systems to reshape user stories and data flow.
Prototyping	Algorithm	Build <u>experience prototype</u> and <u>computational models</u> to represent future use cases for validation.
Testing & Implementation	Automation & Evaluation	Continuous testing, improvement and automation to evaluate <u>functional</u> , <u>emotional</u> , <u>social</u> , <u>economic</u> and <u>environmental</u> impacts (how and how much).

# **Double Diamond Model (雙鑽模式)**



# Research Tools Used Throughout the Double Diamond Model (雙鑽模式) for Generating Ideas



Continue

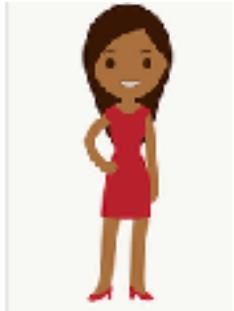


Back

Source: Widipedia!

# Persona (人物輪廓)

參考資料來源: Interaction Design Foundation



**名字:** 李敏

**年齡:** 36歲

**性別:** 女

**教育程度:** 高中

**家庭關係:** 與丈夫共育一子(6歲)

**職業:** 全職家庭主婦

**生活方式偏好:** 喜歡煮菜，佈置家居，為小朋友編排活動。

**購物習慣:** 只會在線下實體店用現金或信用卡購物。

**媒體使用習慣:** 喜歡追劇，不論看電視或上網。也會看新聞。

**生活目標:** 希望孩子能進好學校，學業成績優異。

**對接受新事物的取態:** 比較保守，以安穩致上。

**生活日程:** 照顧小兒上學放學和打理家庭的起居飲食。

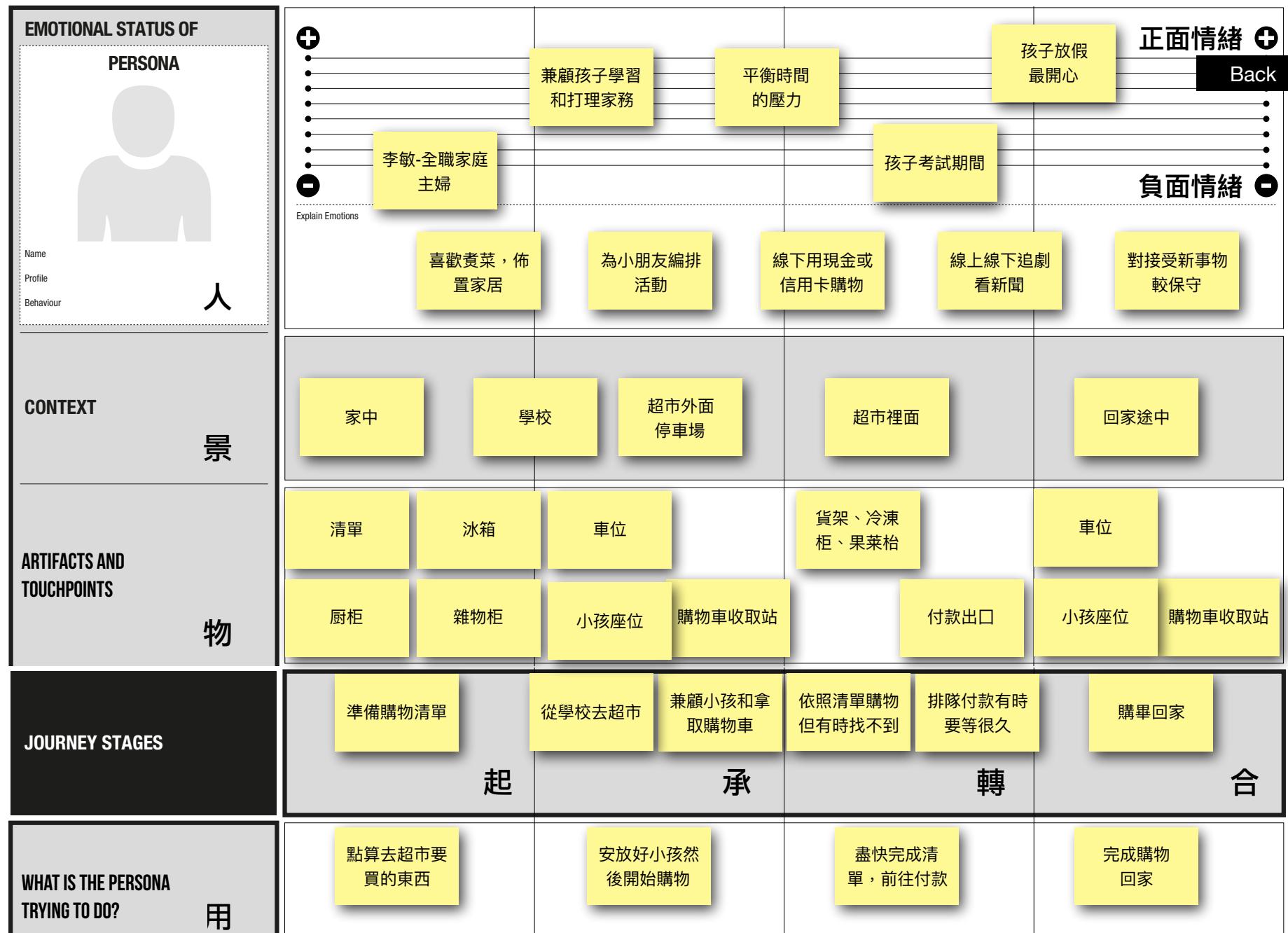
## 方法:訪談及觀察

# Persona Segmentation Table (人物分類表)

	年齡	性別	聘有家傭	家庭人數	居住狀況	教育程度	職業	網購習慣	每週買菜次數
1	18-24	男	有(同住)	1	父母親、兄弟姊妹及其配偶丈夫/妻子兒女	小學	漁農業	只會在線下實體店用現金購物	一週一次
2	25-35	女	有(不同住)	2	父母親、兄弟姊妹及其配偶	中學	製造業	只會在線下實體店用現金或信用卡購物	一週兩次
3	36-45	沒有	3-4		父母親及丈夫或妻子	高專	批發/分銷	在線下實體店用現金、信用卡或支付系統購物	一週三次
4	46-55			5-6	丈夫或妻子/男友或女友	大學	零售業	只會在線上用支付系統購物	一週四次
5	56-65			>7	丈夫或妻子及兒女	研究院	服務業	在線上或線下用支付系統購物	一週五次
6	66-				丈夫或妻子/男友或女友		政府/非政府	在線上或線下用信用卡或支付系統購物	一週六次
					獨住		全職照顧家庭	在線上或線下用現金、信用卡或支付系統購物	一週七次

# Current Journey Mapping (現在歷程圖)

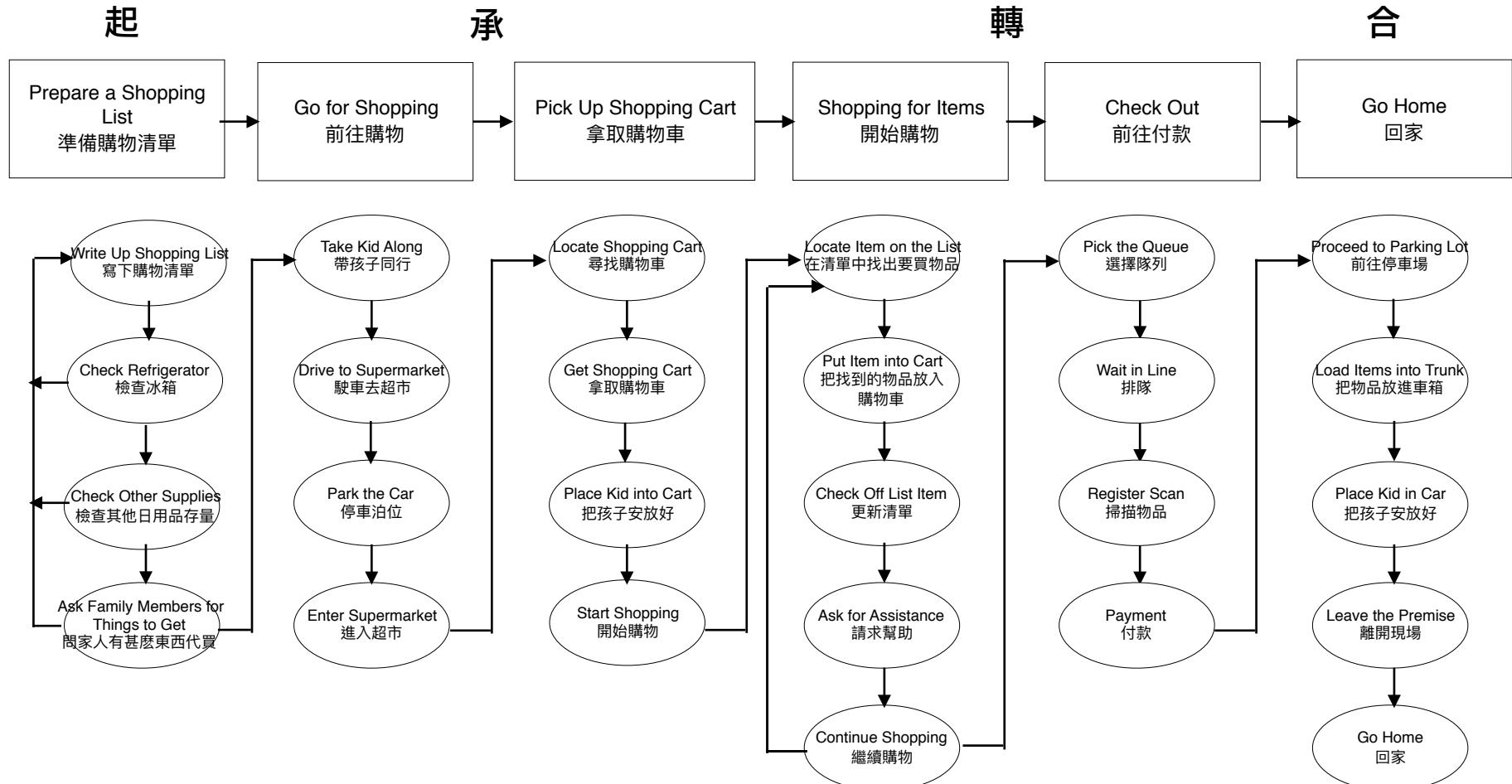
designthinkersacademy



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## Story Map of a House Wife Shopping at a Supermarket

家庭主婦超市購物故事圖

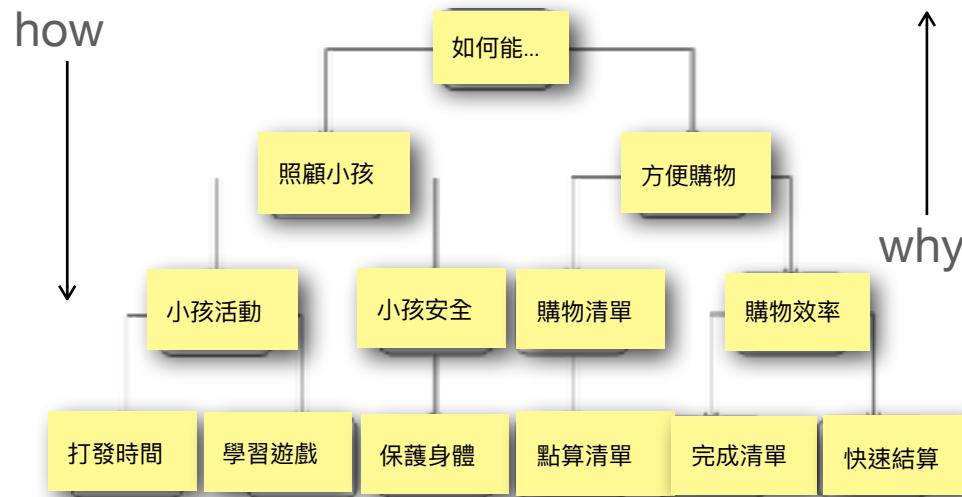


# Why How Laddering 為何如何層級圖

參考資料來源: d.school

我們如何能..

HOW MIGHT WE...

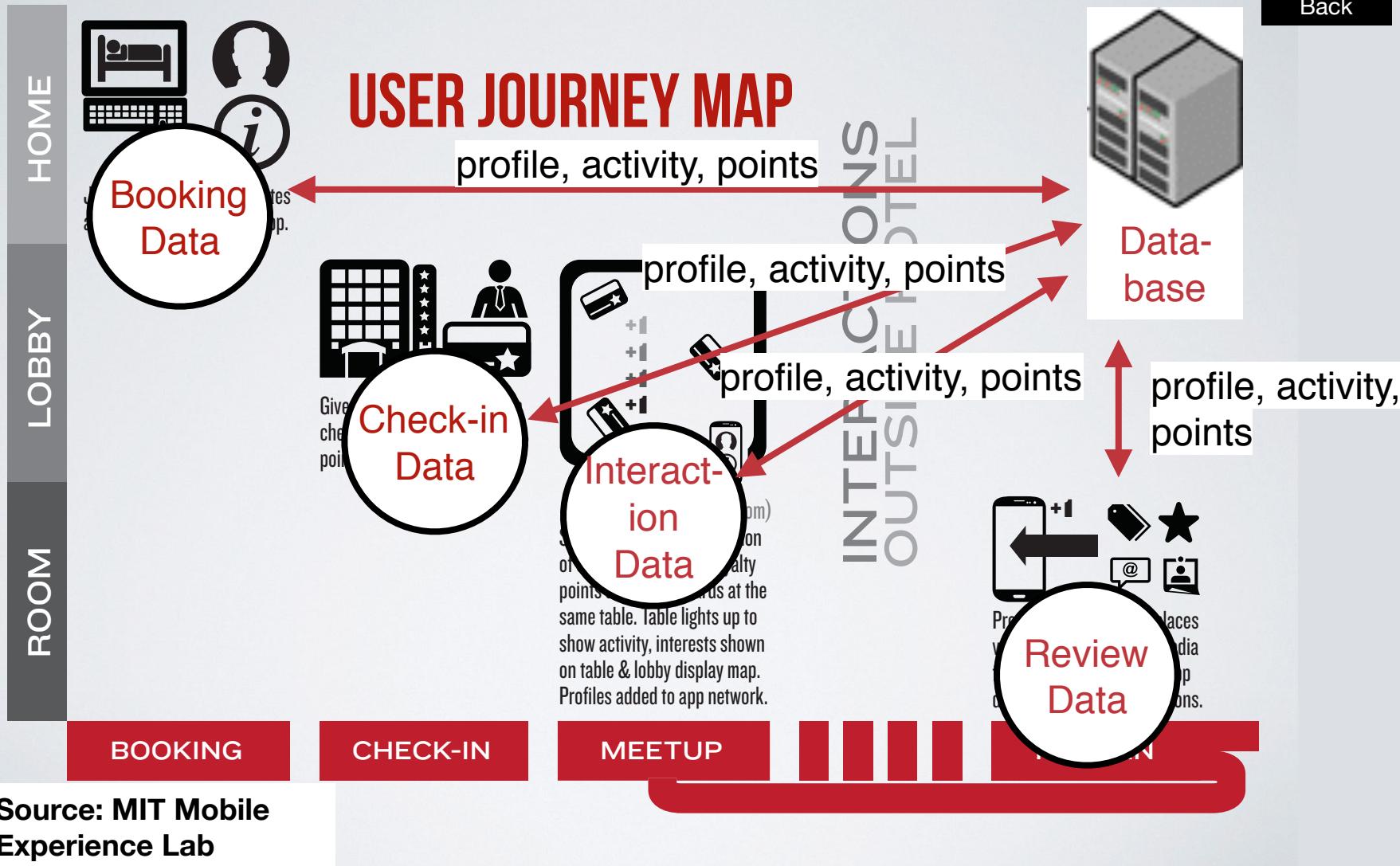


我們如何能使到全職媽媽 (who) 能解決同時照顧小孩和方便  
購得所需物品 (what) 的問題，達到善用時間，提升家庭和自  
我幸福 (why) 的目標。

## 問題陳述 (Problem Statement):

我們怎樣使到全職媽媽 (who) 能解  
決同時照顧小孩和 方便購得  
所需物品 (what) 的問題，達到善用  
時間，提升家庭和自我幸福 (why) 的  
目標。

Back



## Features

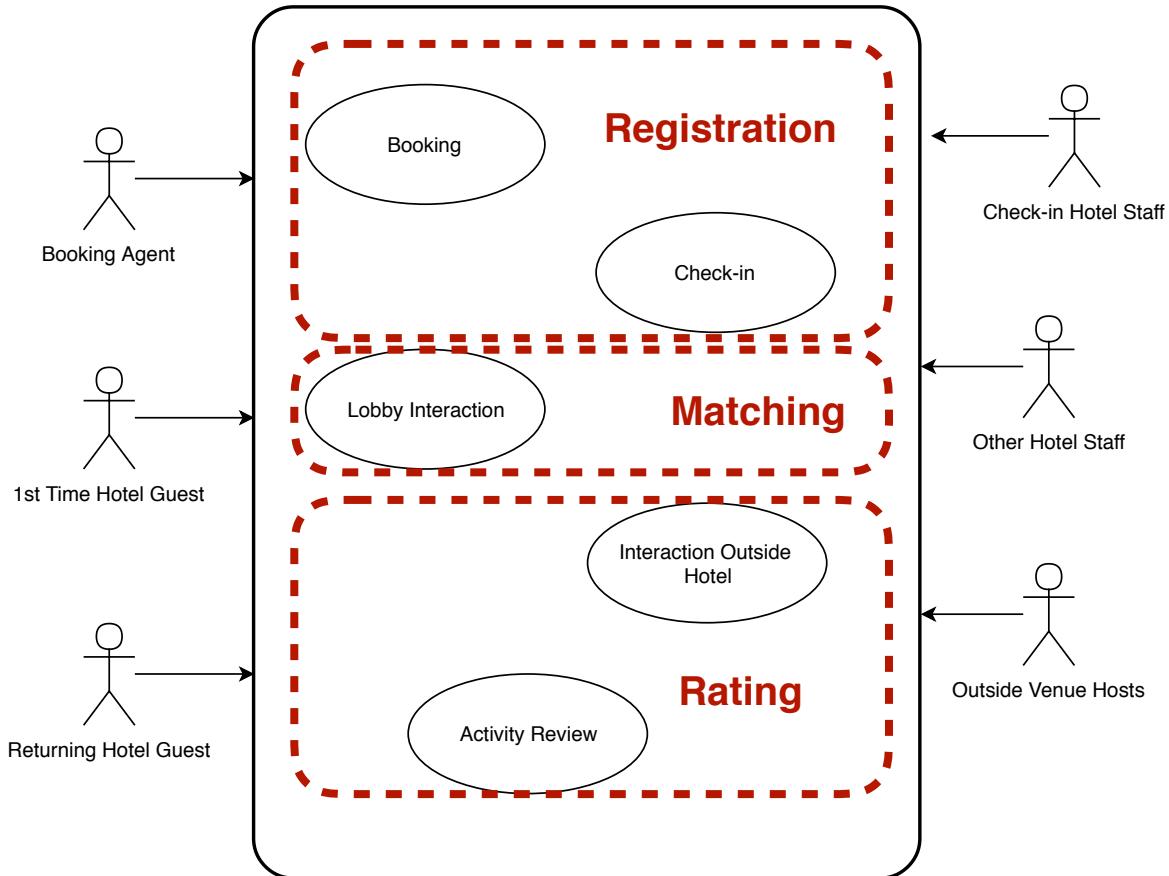
### Affiliation Diagram



### Shopping App

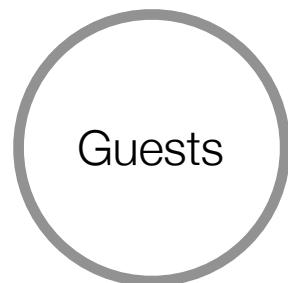
- 建立清單
- 完成清單
- 計算支出費用

# 組合成清單系統(Shopping App)

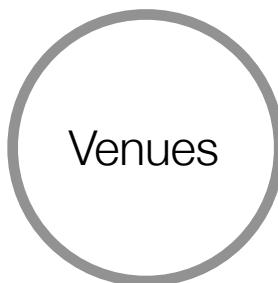


## Use Cases of a Hotel Loyalty App

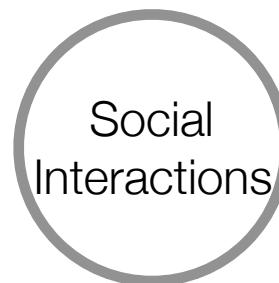
## Data Entities (Model) to be Tracked



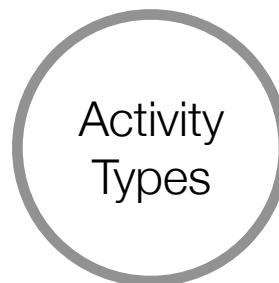
Guests



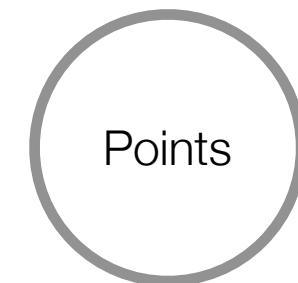
Venues



Social  
Interactions



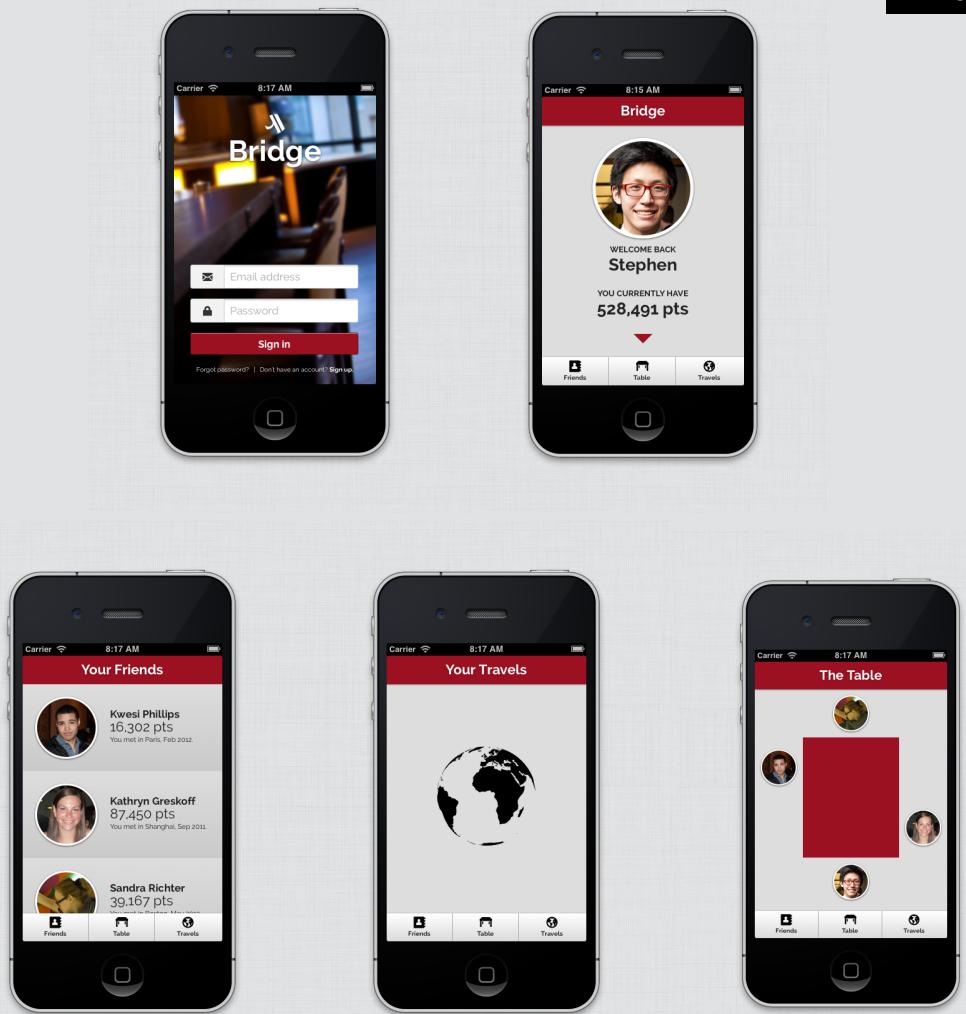
Activity  
Types



Points

- e.g.
  - 1st time guests
  - Returning guests
- e.g.
  - Starbuck
  - Bar inside hotel
  - Boston Metropolitan Museum
- e.g.
  - Add friends
  - Take pictures
  - Share rides
  - Split bills
- e.g.
  - Museum tour
  - Bar hopping
  - Scenic picture taking
  - Business meeting
- e.g.
  - Revisit
  - Dine in hotel
  - Shop in hotel
  - Initiate contact
  - Give reviews

Back



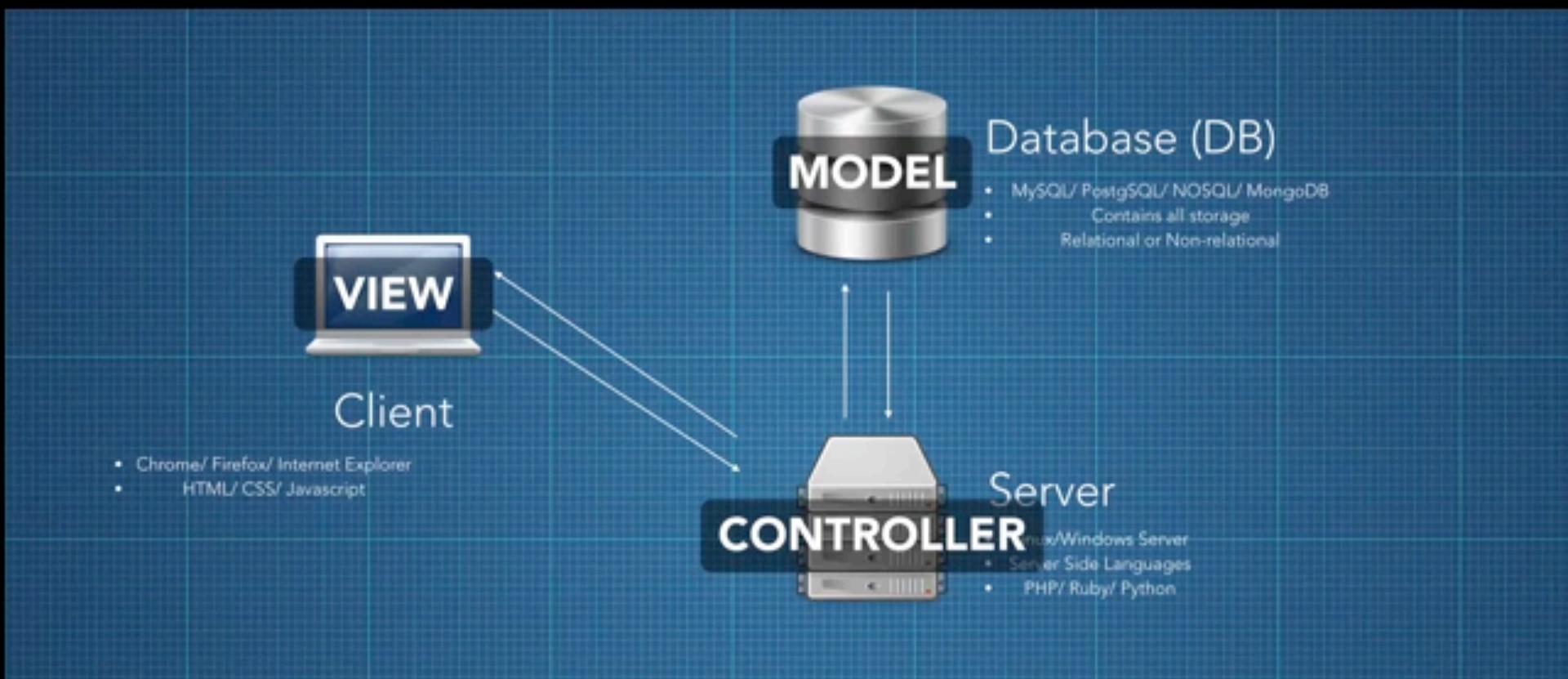
# MOCK-UP DIGITAL EXPERIENCE

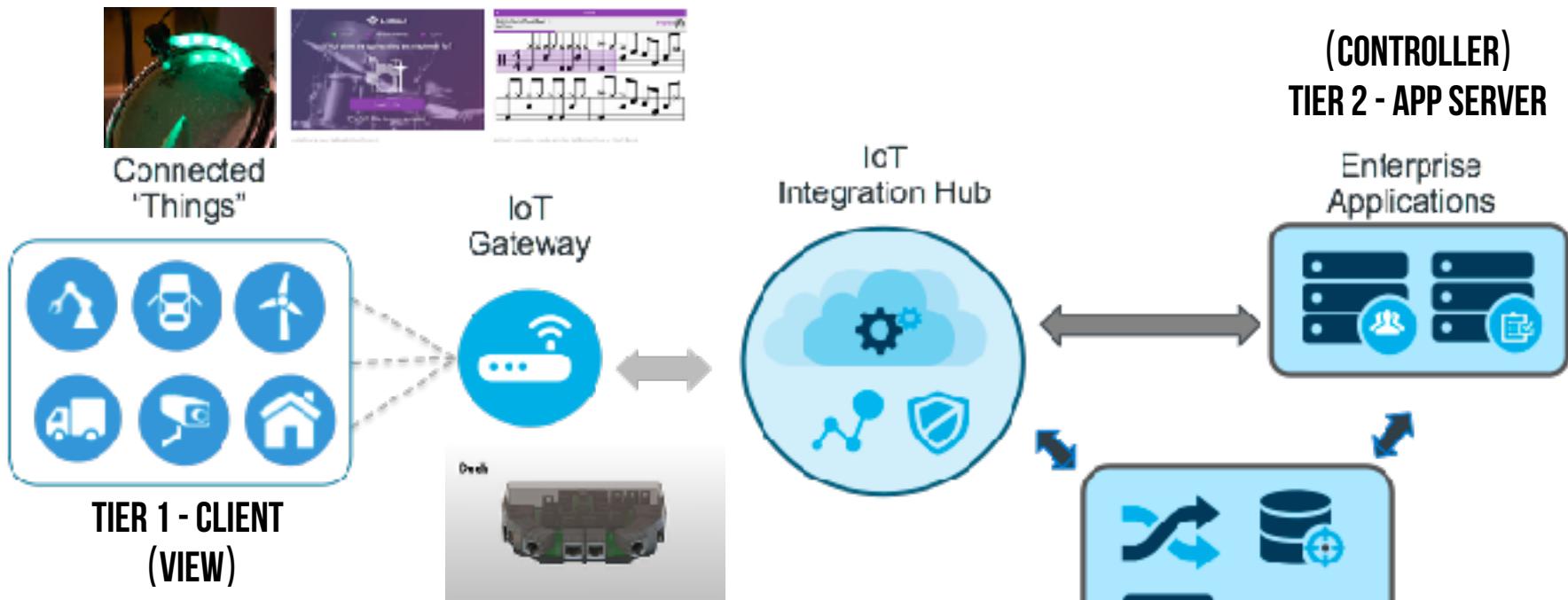
Source: MIT Mobile  
Experience Lab

“Computer Science itself is not really about computers or programming for that matter. It’s really **about information, how you think about it** and how you represent it with what methods or algorithms you can process it.”

David J. Malan , Gordon McKay  
Professor of the Practice of Computer  
Science at Harvard University

## HOW DOES A WEBSITE WORK? THE FLOW



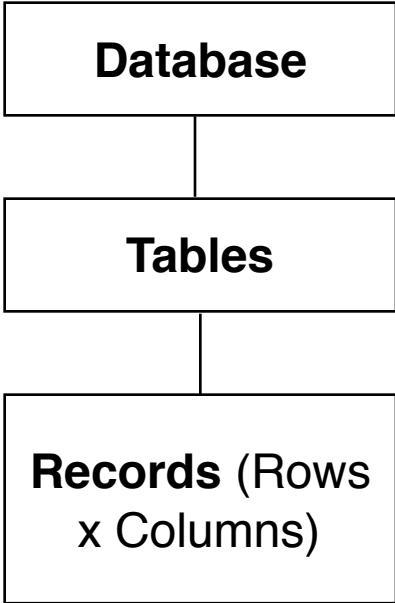


- Modular, secure, and end-to-end architecture
- Streaming analytics and machine learning
- Open, interoperable on Hybrid Cloud
- Modern application agility & integration

Source: <http://cloudera.com>

### 3-TIER CLIENT-SERVER ARCHITECTURE (MVC FRAMEWORK)

**TO UNDERSTAND DATA, WE NEED TO  
UNDERSTAND DATABASE**



“A **database** is a collection of **tables** which relate to each other for storing and processing **records** that are defined by rows and columns (**fields**).”



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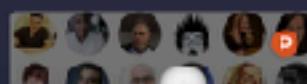


Andrew Coulter Enright



## Twilio's Lightweight CMS

Terry McGehee



## Britannica's Digital Content Management System

Alden Sharpe



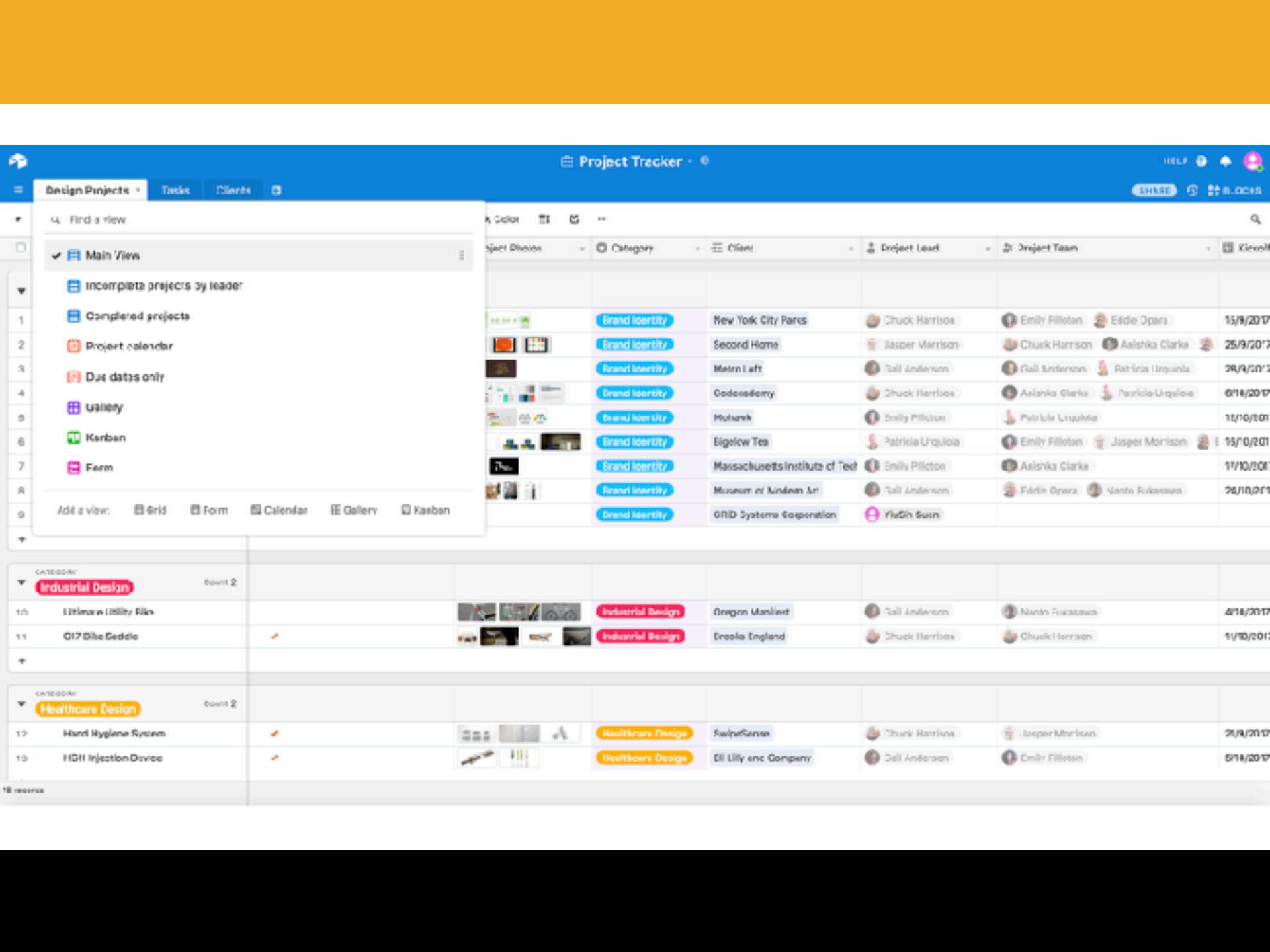
## **Insomniac Events' Staffing Template**

Insomniac Events

Project Tracker • 8

HELP  

SHARE ⌂ 84 BLOCKS



Project Tracker

Design Projects Tasks Clients

Project calendar Using "Kickoff date" field Filter If Sort Color ...

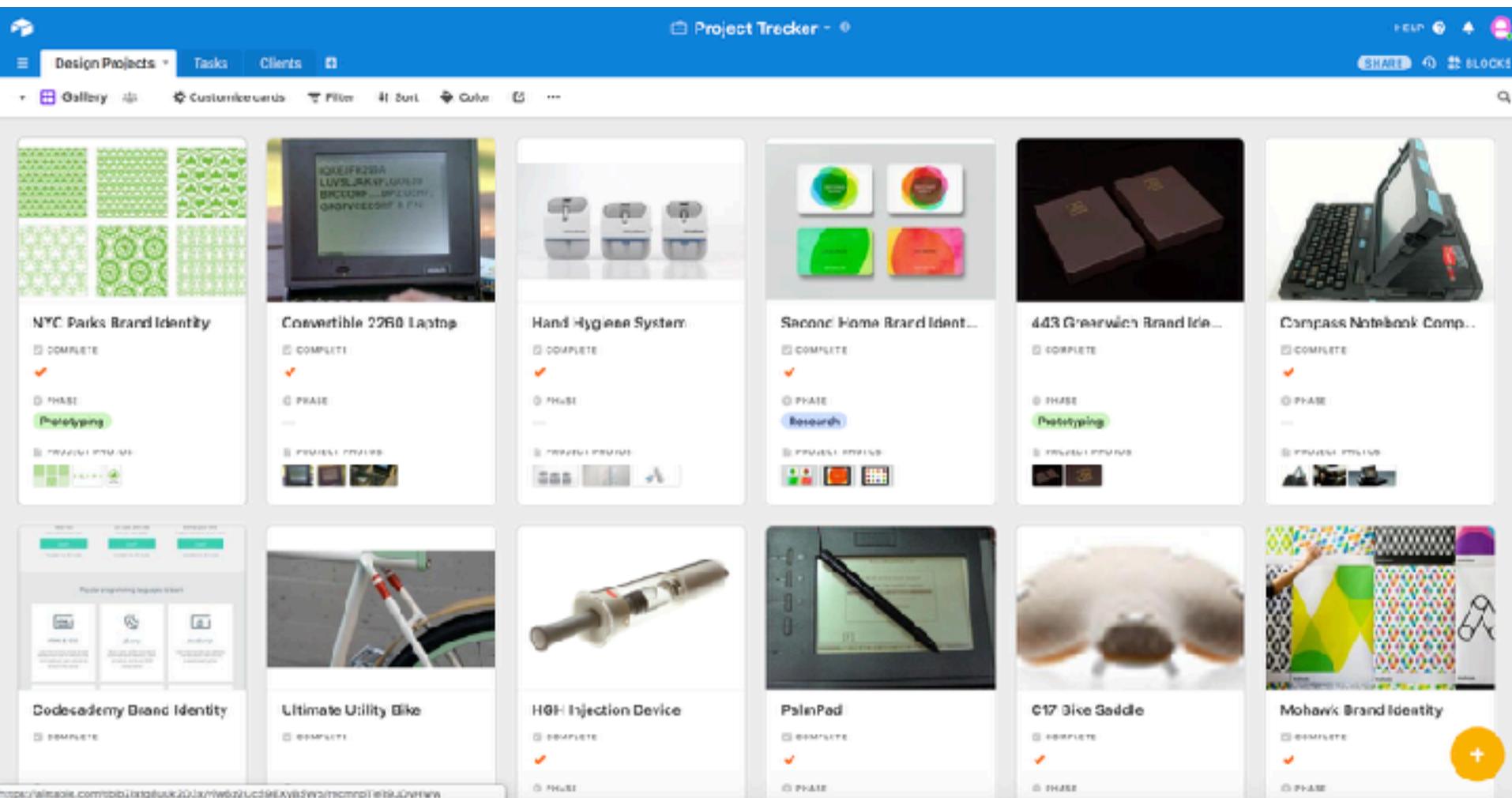
Today < > October 2017

Mon	Tue	Wed	Thu	Fri	Sat	Sun
25 Second Horse Brand Identity	26	27	28 AAC Greenwich Brand Identity	29	30	1
2	3 Compass Notebook Computer	4 Ultimate Utility Bike	5 HGH Injection Device	6 Codecademy Brand Identity	7	8
9	10 C17 Bike Saddle	11 PalmPad	12 Mutantk Brand Identity	13	14	15
16 Tea Packaging	17 MIT Media Lab Logo	18 Nylon Headband	19	20	21	22
23	24 MOMA Brand identity	25	26	27	28	29
30	31	1	2	3	4	5

Find a record All records

- Tea Packaging Oct 16, 2017
- C17 Bike Saddle Oct 11, 2017
- Second Horse Brand Identity Sep 26, 2017
- Ultimate Utility Bike Oct 4, 2017
- Compass Notebook Computer Oct 13, 2017
- MOMA Brand Identity Oct 24, 2017
- PalmPad Oct 11, 2017
- Codecademy Brand Identity Oct 6, 2017
- Convertible 2260 Laptop Sep 28, 2017
- AAC Greenwich Brand Identity

+



Project Tracker - 0

Design Projects Tasks Clients

Number Stacked by Phase Customize cards Filter If Sort Color

Uncategorized

Convertible 2260 Laptop  
COMPLETE ✓

Research

Second Home Brand Ide...  
COMPLETE ✓

Problem Definition

Tea Packaging  
1 record +

Ideation

No records +

Prototyping

443 Greenwich Brand Id...  
COMPLETE ✓

NYC Parks Brand Identity  
COMPLETE ✓

MOMA Brand Identity  
COMPLETE ✓

Testing

mit media lab  
MIT Media Lab Logo  
COMPLETE ✓

Mohawk Brand Identity  
COMPLETE ✓

Records +

Records +

Records +

Design Projects Tasks Clients

SHARE 🔍

Fields remove all  
Drag and drop fields here to hide  
Add a field to this table

Add a cover image

Add a logo

## Form

Add a description for this form

Name

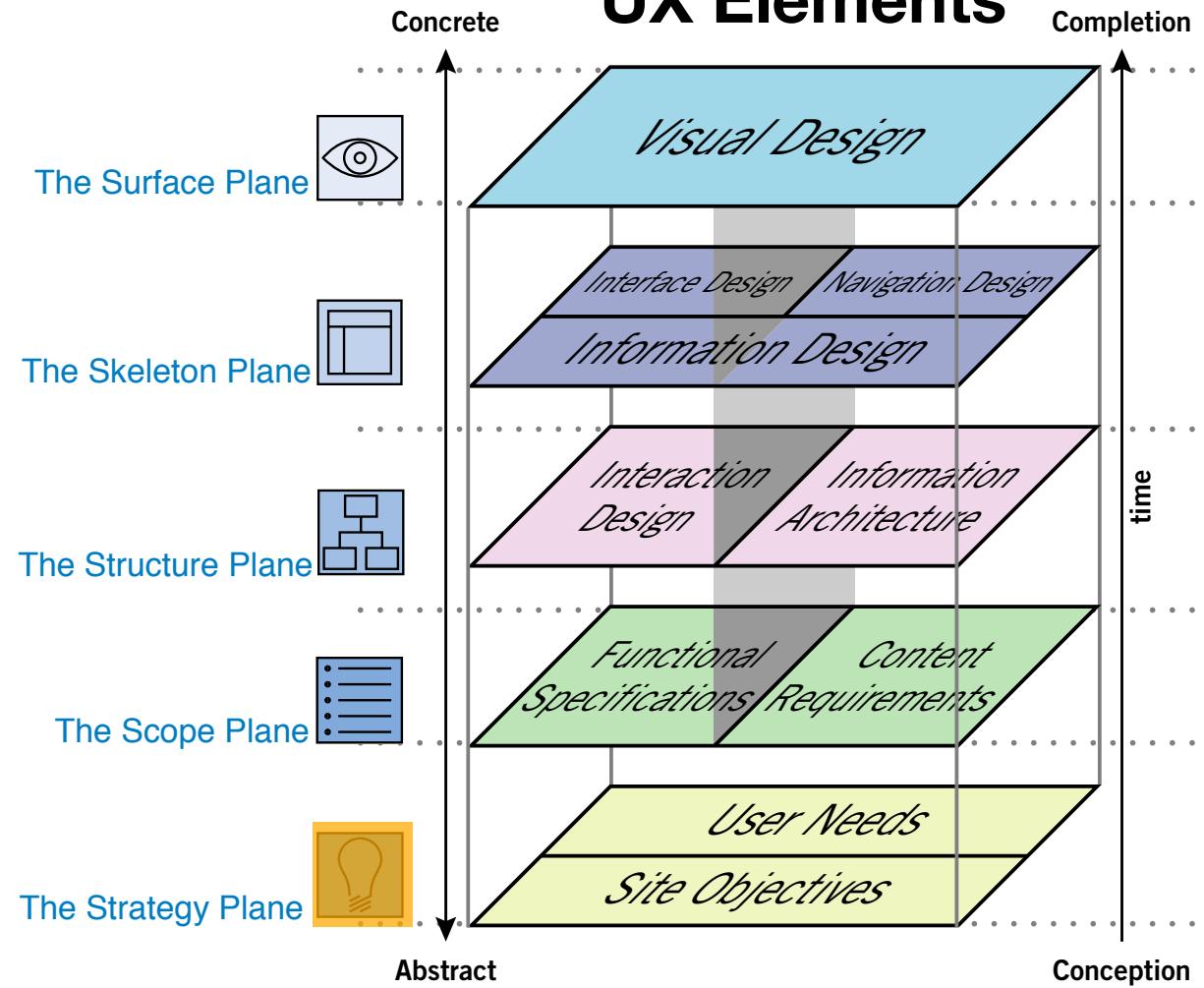
Complete

Phase

# **IN-CLASS CODING LAB ON AIRTABLE**

# **CASE STUDY: THE JOURNEY OF A NEW CUHK APPLICANT**

# UX Elements



Source: Elements of User Experience  
by Jesse James Garrett



## About CUHK



### Welcome Message

I am delighted that you are considering The Chinese University of Hong Kong for your undergraduate studies.

Founded in 1963 with a mission "to combine tradition with modernity, and to bring together China and the West", the University has, since its founding, developed into an academic institution of international standing, well-known for its excellence in both teaching and research.

#### Welcome Message

#### Explore CUHK

- [Explore CUHK](#)
- [Distinguished Scholars](#)
- [Facts & Figures](#)
- [Virtual Campus Tour](#)

#### Student Life

- [Campus & Accommodation](#)
- [Student Exchange Programme](#)
- [HCARE Programme](#)
- [Student Support](#)
- [Voices of Students](#)

#### Colleges

- [A Unique College System](#)
- [College Assignment](#)

#### CUHK Through the Lens

**Empathise**  
身同感受

**Define**  
界定问题

**Ideate**  
創意發想

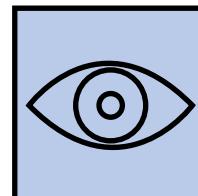
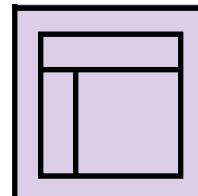
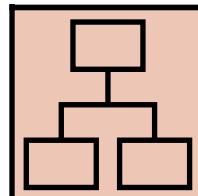
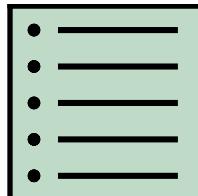
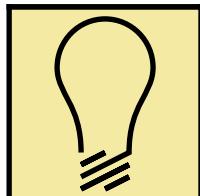
**Prototype**  
開展原型

**Test &  
Implement**  
測試執行

# THE 5 STEP DESIGN THINKING JOURNEY

Source: Stanford D.School

SITE OBJECTIVES		TARGET USERS		USER NEEDS
Primary goal	Become top tier university in the world.	Primary User	Top local students and world-class academics	Apply for degree enrollment and job vacancies.
Additional goal	Increase research output.	Secondary User	Chinese students interested in the west	Interested to come to CUHK to study.
Additional goal	Build strong alumni network.	Secondary User	Foreign students interested in PRC	Will consider CUHK for full-degree and exchange program.



**STRATEGY PLANE**

**Empathise**  
身同感受

**Define**  
界定问题

**Ideate**  
創意發想

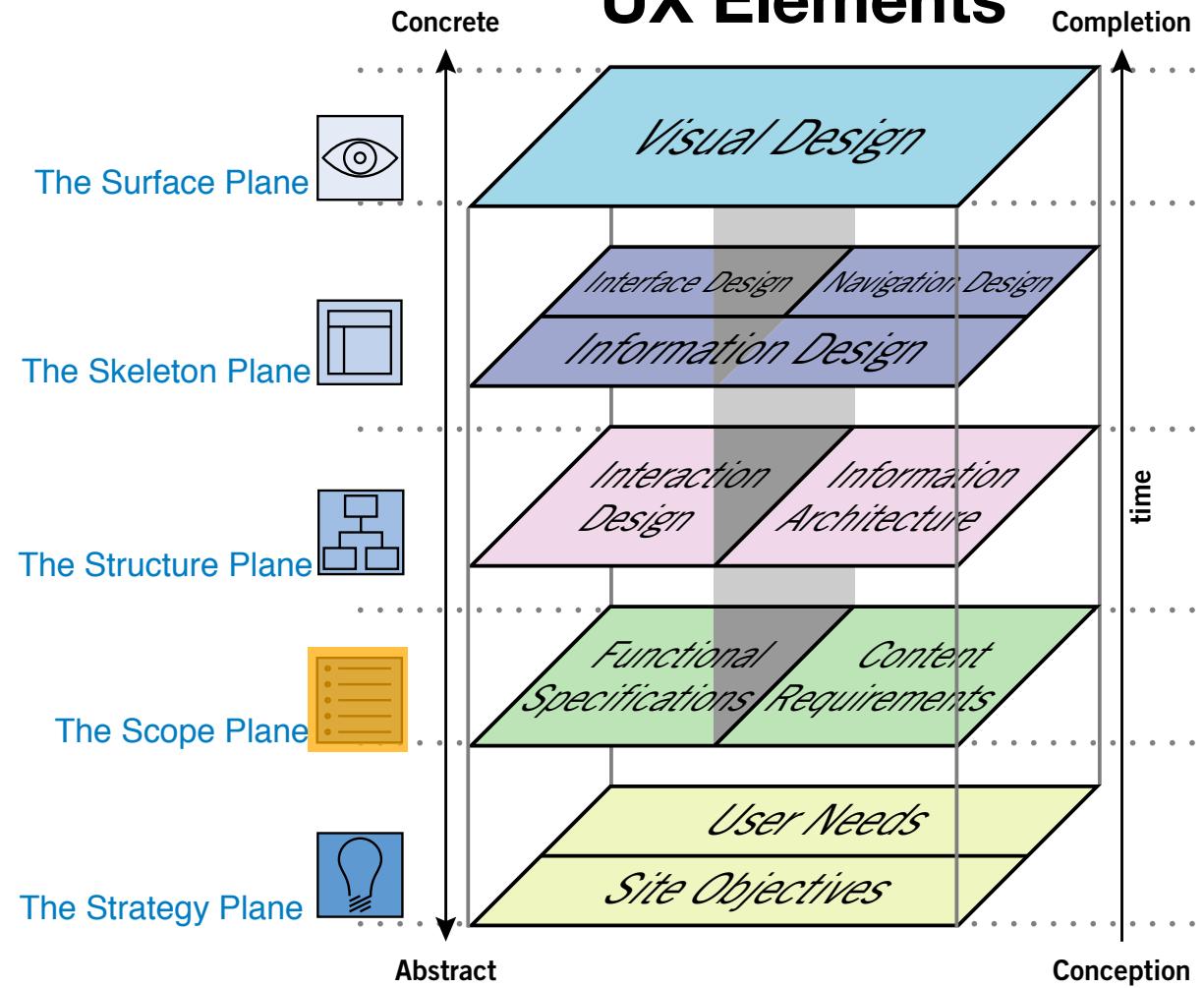
**Prototype**  
開展原型

**Test &  
Implement**  
測試執行

# THE 5 STEP DESIGN THINKING JOURNEY

Source: Stanford D.School

# UX Elements



Source: Elements of User Experience  
by Jesse James Garrett

# THE JOURNEY AS A STORY

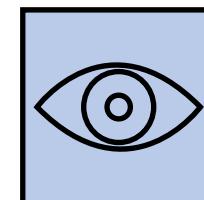
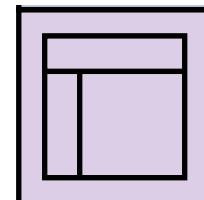
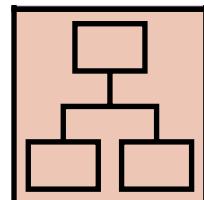
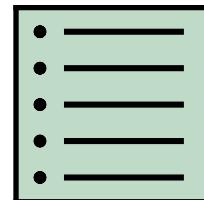
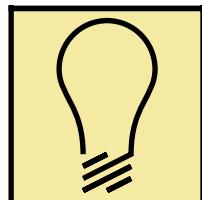
## ELEMENTS

1. 人 (人物) PERSONA
2. 景 (場景) CONTEXT
3. 物 (物件) ARTIFACTS
4. 用 (用例) USE CASE

## STRUCTURE

1. 起 (人物背景) BEGINNING
2. 承 (問題) CHALLENGE
3. 轉 (發展方案) RESPONSE
4. 合 (完成狀況) END

資料來源---劇本導引：  
資訊時代產品與服務設計新法  
作者余德彰，林文綺，王介丘



SCOPE PLANE

# Journey Map (歷程图)

参考资料来源: Designthinker Academy

功用: 有助收集和分类用户的故事。

	起	承	转	合
人物				
场景				
物件				
用例				

	起	承	转	合	
人物	- Local - PRC/ International	Curious about the school and program	Getting serious and anxious	Excitement	
场景	online promotion	school recruitment	CUHK	online/email	
物件	website	brochure/ presentation	- campus map - hk map - application form	letter of acceptance	
用例	online research  Persona wants to filter program	staff roadshow  Persona meets professor and CUHK staff	school visit  Check out the school	application  Finalize options  Accept offer	admission

例子

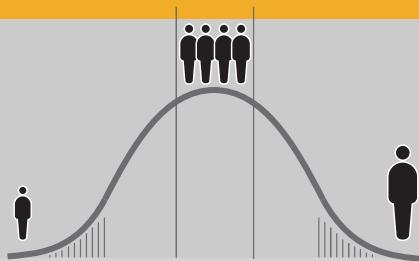
**TYPES OF PERSONA (e.g. STUDENT & STAFF)**

# Persona (人物轮廓)

参考资料来源: Interaction Design Foundation

功用: 有助分类不同人物的轮廓。

	生活方式偏好:
名字:	购物习惯:
年龄:	媒体使用习惯:
性别:	人生目标:
教育程度:	生活日程:
家庭关係:	
职业:	



## PERSONA SEGMENTATION



**LOCAL APPLICANTS**



**FOREIGN APPLICANTS**

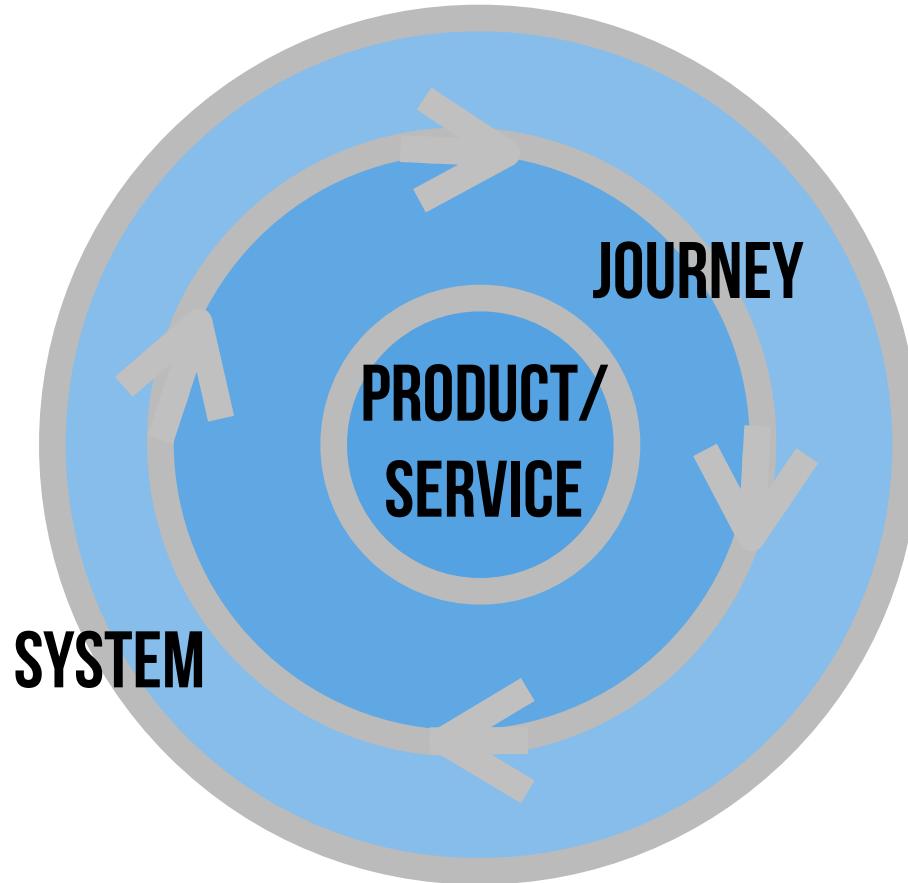


**MAINLAND APPLICANTS**

## **PROBLEM STATEMENT:**

How can CUHK's website help new student and staff applicants **pursue their career objectives** over the alternatives out there while at the same time **communicate** the school's brand to continue attracting the best?

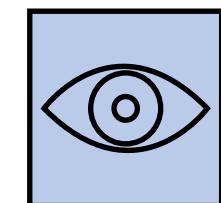
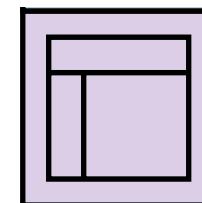
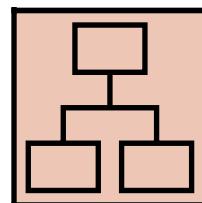
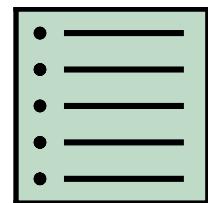
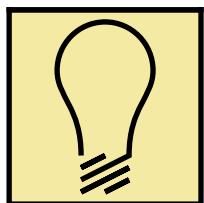
# THE BIGGER PICTURE



- Product/Service: the offering (e.g. enrollment at CUHK) which is designed to address a need (e.g. world-class education).
- Journey: the process between a start and end point through which the user can have one's needs satisfied by accepting the offering (e.g. from gathering school info to final admission).
- System: the technical and social systems (e.g. school/faculty administration/research/teaching/student life) existing in an environment where competitive alternatives (e.g. other schools/programs) exist to address the same need. The question is: what are the compelling reasons for the persona to choose one offering over the others?

# Data Collection & Content Production Plan

Level	Section	Description	Status	Deadline	Handled by
1.0	About Us	An overview of the organization	Current	NA	Peter
1.1	History	Historical background & timeline	In progress	15/10/11	Mary
1.2	Contact Us	Telephone no., address, and contact	New	22/10/11	John
2.0	Product	Listing of current products and services	In progress	25/10/11	Henry



**SCOPE PLANE**

**Empathise**  
身同感受

**Define**  
界定问题

**Ideate**  
創意發想

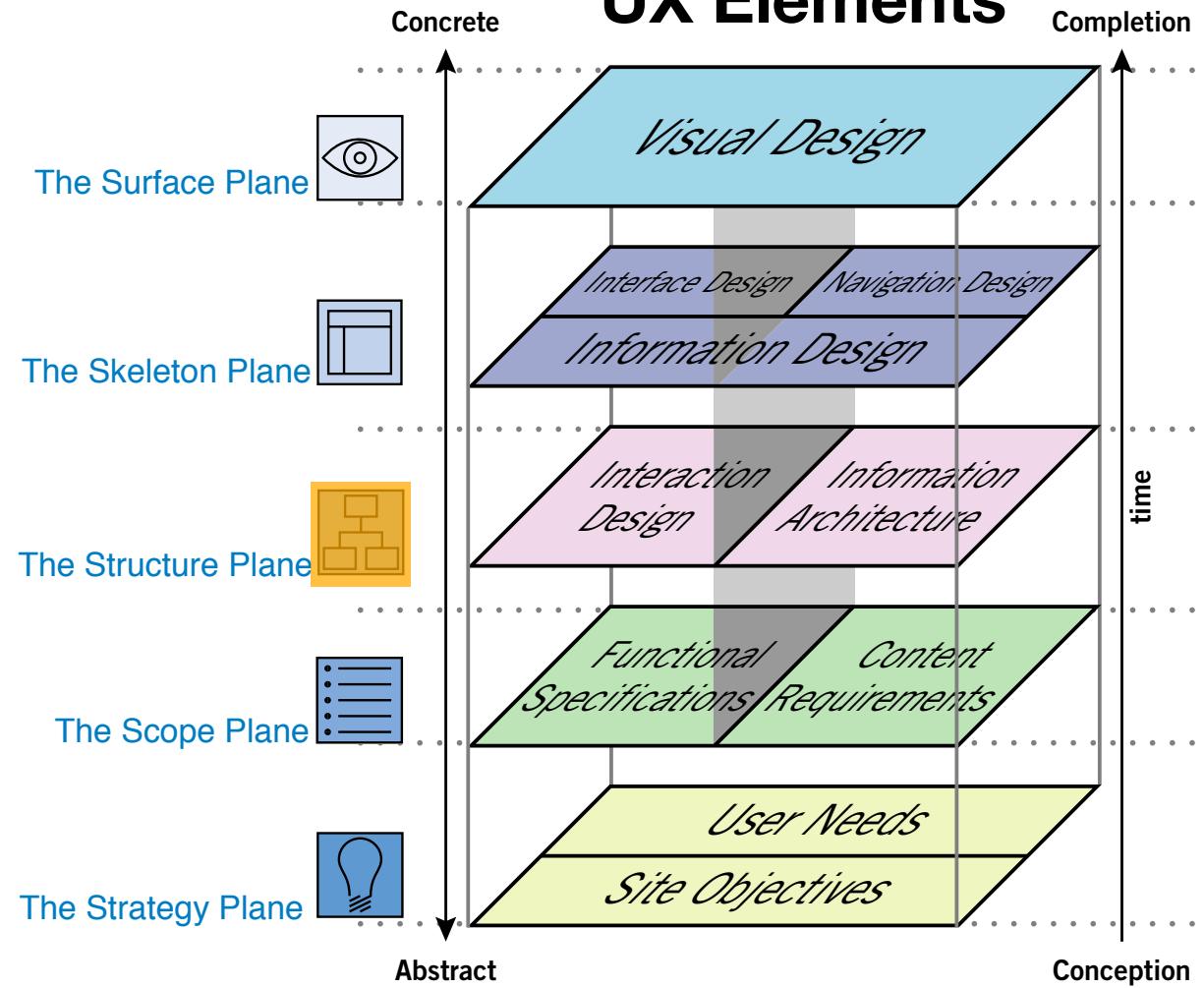
**Prototype**  
開展原型

**Test &  
Implement**  
測試執行

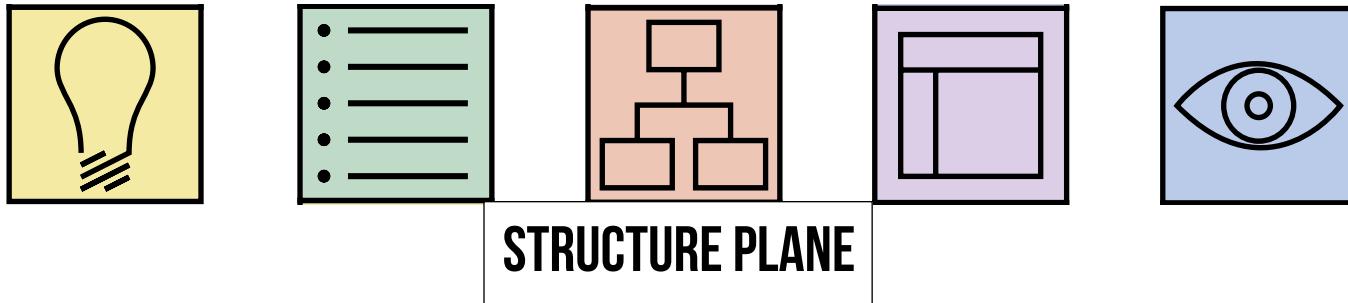
## THE 5 STEP DESIGN THINKING JOURNEY

Source: Stanford D.School

# UX Elements



Source: Elements of User Experience  
by Jesse James Garrett



Source: Elements of User Experience  
by Jesse James Garrett

**Information architecture** combines the art and science of structuring, organizing, labeling, navigating, and searching information space.

# How do you organize this?



# Content Organization Scheme

## *Logical Grouping*

- **Alphabet**
- **Time**
- **Place**
- **Hierarchy**
- **Category**

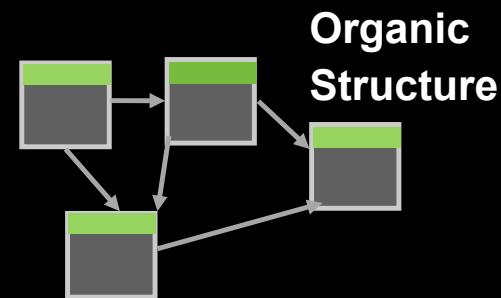
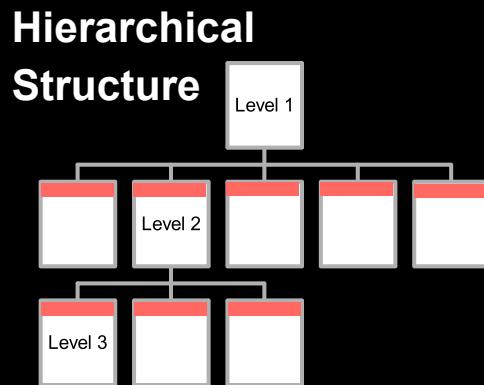
Source: Richard Wurman, “Information Anxiety”

## *Visual Grouping*

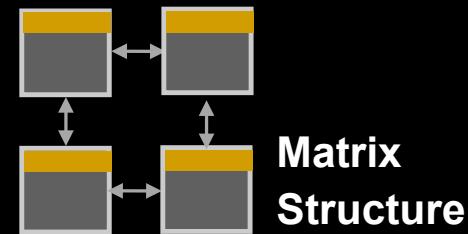
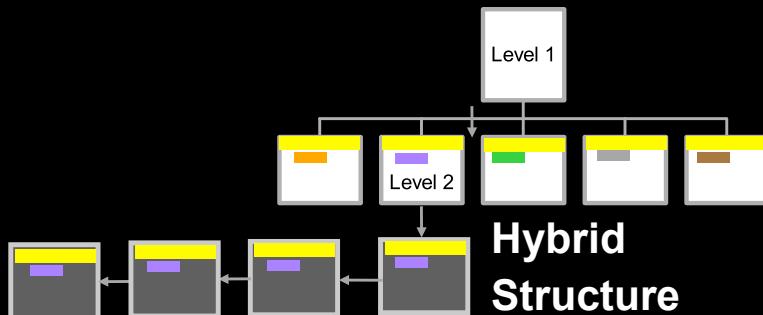
- **Linear**
- **Parallel**
- **Web**
- **Matrix**
- **Hierarchical**
- **Spatial Zoom**
- **Overlay**

Source: Clement Mok, “Designing Business”

# Information Architecture

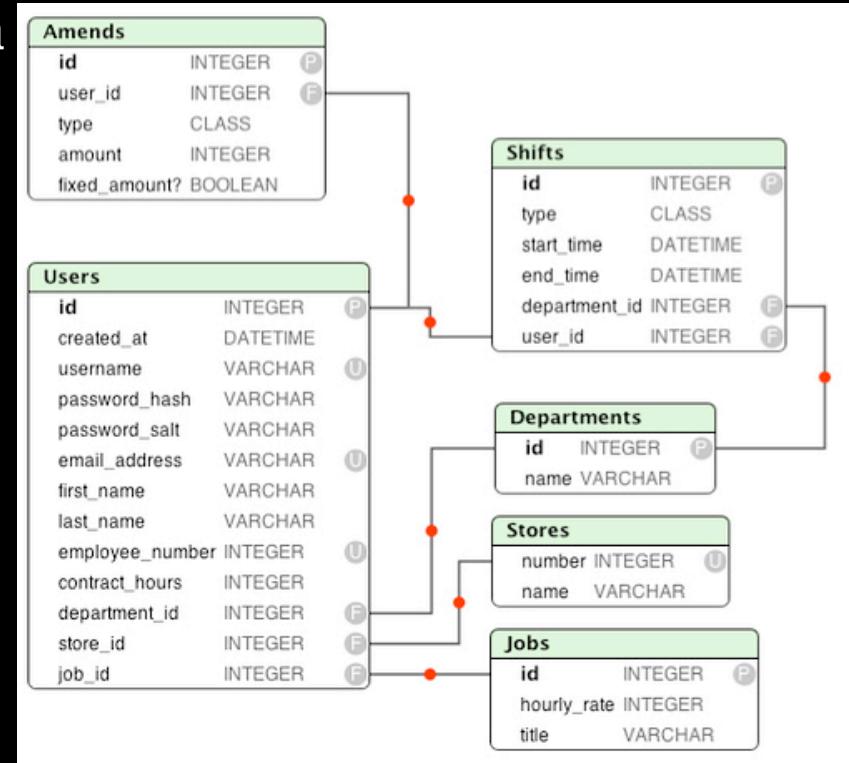


# Sequential Structure



Database can be defined as a collection of tables and table can be defined as collection of records. Each record is an unique entry of an object or event, which is made up of attributes:

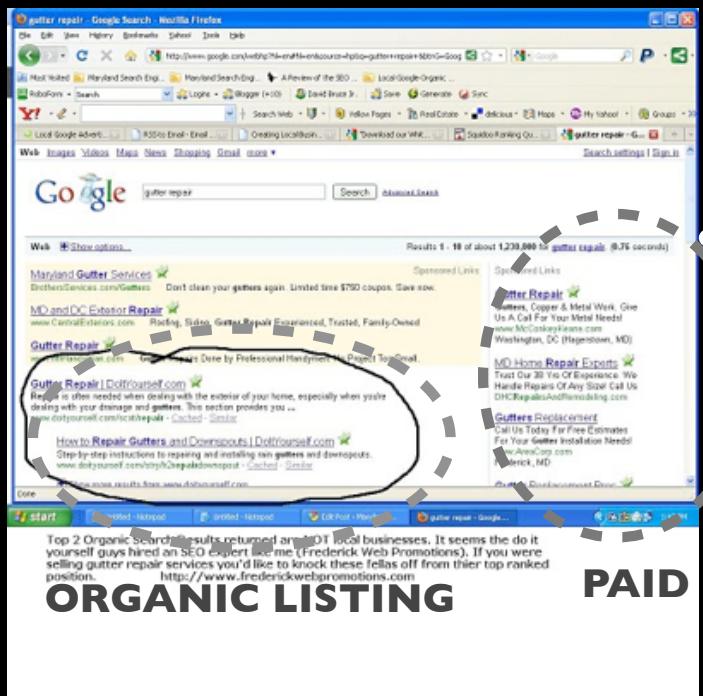
- ✓ Most important attribute is a key identifier.
- ✓ There are primary key and secondary key.
- ✓ Information between tables are related by keys.
- ✓ Data about data is called meta-data (e.g. Thesaurus, glossary, controlled vocabulary which can cross-referenced the database)



Source:Flickr

4

## SEARCH INTERFACE



CRAWLER/SPIDER/WEB BOT

1



QUERY  
ENGINE  
SEARCH  
INDEX

5

Meta-Data Defined



2

CRAW  
THE WEB

RESULT  
LISTINGS

6

INDEXER  
BUILD UP  
WEB PAGE  
INDEX  
DATABASE



# What is Web Analytics?

Web-based Tool Used for Analyzing Traffic to Your Site:

- What pages have been visited? How many times?
- Where your site visitors come from? Who are they?
- When do they visit? How frequent?
- How long do they stay? What do they buy?
- Where do they stop ? How frequent ?

# Organic and Paid Listings

## SEO

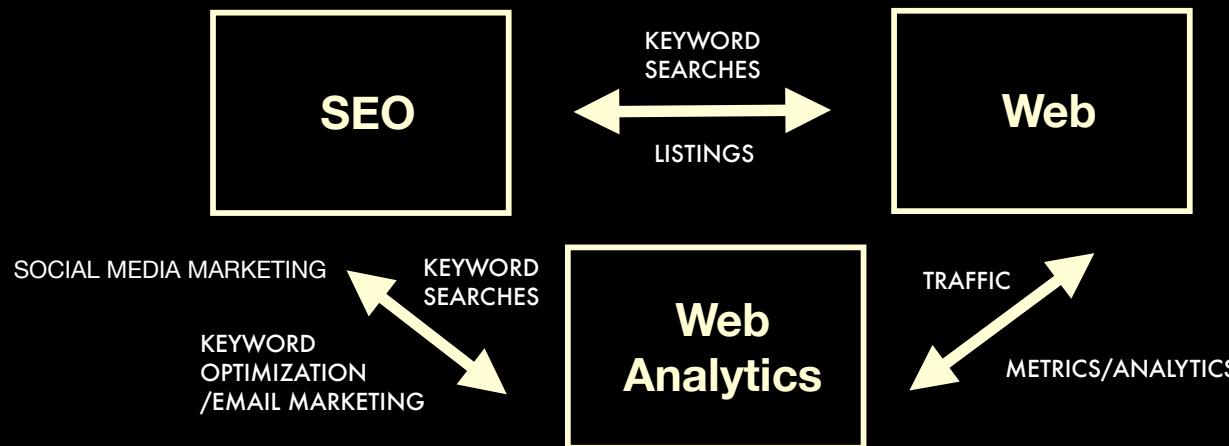
## SEM

- Organic (Natural) Listing (Content Driven - Page Rank Algorithm)
  - Tags (Meta, Title)
  - Body content
  - Links to you (negotiate partnership, build numerous websites, blogs linking to yourself)
- Paid Listing (Pay Per Click:view-->click-->transaction)
  - Sponsored ads
  - Conversion rates (browser->member->customer)

# Why Web Analytics?

- Feedback to improve web design
- Know whether the content is enticing
- Has the user experience been captured?
- Who are the real users?
- What do they really care?
- How to make them come back for more?
  - conversion ratio (visitor-->member-->customer)

# SEO and Web Analytics



- Web analytics tell you whether your web pages attract traffic (eye balls) or not.
- With feedbacks provided by web analytics, you make changes to your web pages, site structure, title, meta-tag, key word, and link strategies.

## **CASE STUDY USING UNLEASHHK.ORG AS AN EXAMPLE**

# EMPOWERED BY DESIGN THINKING

## DESIGN THINKING IN HONG KONG

Unleash! is a programme organized by the Hong Kong Design Centre to build the city's design thinking capabilities across all sectors, from business and civil service

## 為何需要 設計思維？

### WHY DESIGN THINKING MATTERS



<https://www.unleashhk.org/>

# **KEYWORD RESEARCH**

Keyword	Search Popularity	Relevance	Competition	Landing Page/Section

Source: Search Engine Optimization An Hour a Day by  
Jennifer Grappone and Gradiva Couzin

1. Keyword Sheeter - <https://keywordsheeter.com/> (for ideas)
2. Answer the Public - <https://answerthepublic.com/> (for ideas)
3. Google Trends - <https://trends.google.com/trends/?geo=US> (for topic trend)
4. Keyword Everywhere - <https://keywordseverywhere.com/> (for search volume)
5. REM Rush - <https://www.semrush.com> (for competitive analysis)
6. Mozbar - <https://chrome.google.com/webstore/search/mozbar> (for domain and page authority)
7. Google Search Console - <https://search.google.com/search-console/about> (for actual figures)

- 1. Use “Keyword Sheeter” to generate possibilites and “KeywordsEverywhere” to check out volume of searches.**
- 2. Then conduct trend research using “Google Trends” and study questions to ask using “Answer the Public”.**
- 3. Study the competition with “SEMRush” (to see what keywords they use) and “Mozbar” (check their DA and PA)**
- 4. Come up with keywords for experimentation.**
- 5. Make sure title tag and meta description contain keywords.**
- 6. Embed keywords into contents (e.g. posts)**
- 7. Google Search Console to track search outcome (check search terms to pages, external links)**
- 8. Impressions, Clicks, Click-through rate (CTR) to inform refinement of content.**

# **KEYWORD RESEARCH USING AIRABLE**


[Copy base](#)

Updated a year ago  
Created 609 times



# Content planning and delivery toolkit

#PRODUCT, DESIGN, AND UX   #MARKETING AND SALES   #CREATIVE PRODUCTION



Avoca Web Design

7 Followers

Avoca Web Design is a small team based in Nelson, New Zealand. We love working with passionate people who help others, encourage innovation and believe in the progress of the Common Good.

Follow

The very base that we use internally with website clients to plan and deliver great website content and incorporate SEO keywords from the get go.

It's designed to let you enter existing content and review how well it's serving your message. You can copy keyword data directly from KWinder or get the metrics from other keyword tools and then rank and matches your SEO keywords to your content. If you've decided you need to

## Pages

- [Page overview](#)
- [Page SEO & Conte...](#)
- [Content Review Sta...](#)
- [301 Redirect List](#)
- [Blog Posts / Content ...](#)
- [Content Overview](#)
- [Unpublished Content](#)
- [Published Content](#)
- [Content Review](#)

Explore the base →

## SEO Keywords

- [Alphabetical List](#)
- [Sorted By Monthly...](#)
- [Sorted by Keyword ...](#)
- [Unassigned Keywor...](#)

6 results

## Templates

Use these starter bases to get a jump start on your project. For inspiration from community-published bases, check out Universe.



Search templates

### CATEGORIES

Featured

Content production

Creative

Event Planning

Everyday Life

Groups, Clubs & Hobbies

HR & Recruiting

Legal

Local Business

Marketing

Nonprofit

Personal

PR & Communications



# Content Marketing Management

#CONTENT PRODUCTION #MARKETING

Use template

Streamline your content marketing strategy with this content marketing management template! Ideal for content writers and marketing managers, this content marketing template can help you brainstorm new content, align your content with your product's key audience personas, manage the marketing campaigns you implement to support your content, and track your content's success.

This template lets you easily track all of your content ideas in one place so you can just focus on creating great content. And because it's built from the ground up to be collaborative, content curation with your team for social media campaigns and blog content has never been easier.

This template is flexible enough to be the single source of truth for your marketing team's entire content strategy. Track the best keywords to optimize your content for search engine results, create an editorial calendar to track assignments and deadlines, and once

<https://airtable.com/templates/marketing/expbu4X6qxpt0WVkE/content-marketing-pipeline>

# **WHY DO WE NEED CONTENT MANAGEMENT SYSTEM?**

**Data entities and taxonomy help build the information architecture of the website while the menu items, buttons, and links set the structure for navigation and interaction.**

**SEO relies on the architecture to build the right content (with proper keywords found in the content Title, Body, Links, etc) to increase web traffic and user engagement!**

**Web analytics provides the feedback to track the results to see if the content and design is working or not.**

## **PROBLEM SET #2**

- **Refine your base to ensure you have a plan to evolve your project based on your research findings.**
- **Build another table to be added to your base for tracking keywords.**
- **Refer to the examples demonstrated in class for reference.**
- **Share your Airtable base with me:  
[bernard@cuhk.edu.hk](mailto:bernard@cuhk.edu.hk)**

**THANK YOU FOR YOUR TIME!**