



DATABASE, CLOUD BASED SERVICES AND COMPUTATIONAL THINKING

Bernard Suen
Center for Entrepreneurship
Chinese University of Hong Kong



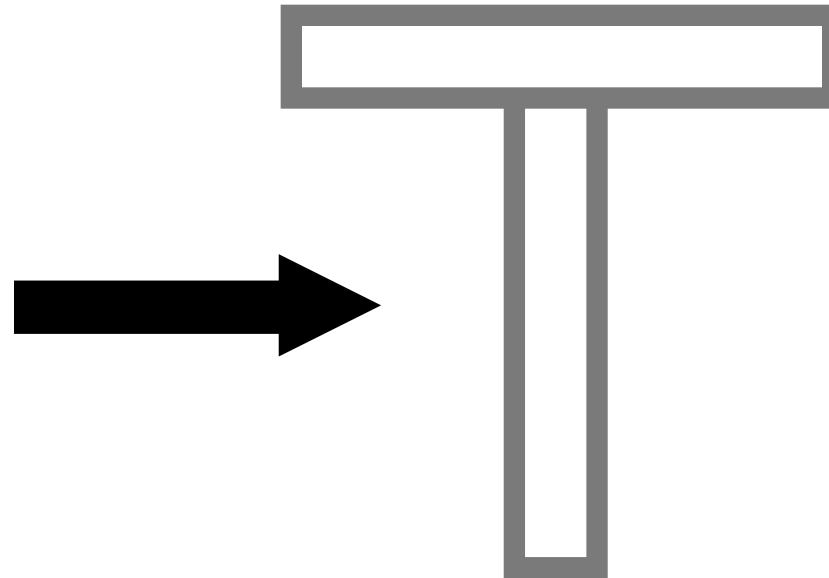
Center for
Entrepreneurship



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



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



The Power of an Interdisciplinary Team



CS50, Harvard's Largest Class Expands Its Line Up of Courses

A place for explorers & experimenters at Stanford University.

[What We Do](#)[How We Do It](#)[Our Impact](#)[The Home Team](#)[How to start a d.school](#)



Minor in Entrepreneurship and Innovation (EPIN)

is coming in September 2017!

EPIN (pronounced as “\e-pin\”, sounds similar to “epic”) is a university-wide minor programme in entrepreneurship and innovation. CUHK students dare to be different. You are passionate to create and break new grounds. This is a platform to learn, practice and make things happen.



Maker Bubble

Bring Design Concepts into Everyday Life





BASc
Bachelor of
Arts & Sciences



BASc AppliedAI Design+ FinTech GHD SDS

ENTREPRENEURSHIP

INNOVATION



Bachelor of Arts & Sciences

The University of Hong Kong



The new Bachelor of Arts & Sciences degrees, involving all ten faculties, are aimed at nurturing globally-minded thinkers and leaders able to leverage their interdisciplinary knowledge and skills to address the contemporary and future challenges of our increasingly complex world.



Bachelor of Arts & Sciences



AppliedAI



Design +



FinTech



Global Health & Development



Social Data Science

HOW CAN YOU BECOME T-SHAPED?

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Turn STEM to STEAM with the Design Thinking Process

 METHODS/APPROACHES

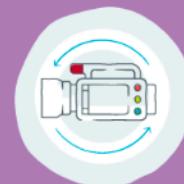
2 years ago

Tracy Hare

2 Comments

As I gear up to team-teach a STEAM course for the first time next semester, I've been thinking about what it really means to integrate all of these disciplines together. What does it really look like to teach in a collaborative environment where the focus is process, not product? How do I encourage the use of the 4 Cs while maintaining the integrity of my art curriculum?

Trying to find some answers, I've stumbled upon too many articles and resources arguing that the arts should be a "small a" in STEAM. Or, even worse, that exclude the arts because the authors feel they don't hold the same weight as the other subjects. This conundrum not only pops up in the STEM/STEAM conversation, but also with initiatives like Project-Based Learning and Makerspaces. Art can be a powerful tool in these collaborative frameworks. As art teachers, we should take



Flipping the Art Room

Flipped teaching allows you to spend class time doing what you do best: teaching!

LEARN TO FLIP TODAY!

A wire shopping cart filled with fresh vegetables like a zucchini, yellow squash, and tomatoes.

Case Study: Redesigning the Shopping Cart

Source: IDEO

EXPERIENCE OF USING



DESIGN "X"

THE EXPERIENCE IS A JOURNEY



THE JOURNEY AS A STORY

Elements (元素)

1. PERSONA - 人 (人物)
2. CONTEXT - 景 (場景)
3. ARTEFACTS - 物 (文物)
4. SCENARIOS - 用 (情況)

Structure(結構)

1. BEGINNING - 起 (背景)
2. CHALLENGE - 承 (問題)
3. RESPONSE - 轉 (回應)
4. RETURN - 合 (收成)

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

The Design Thinking Process

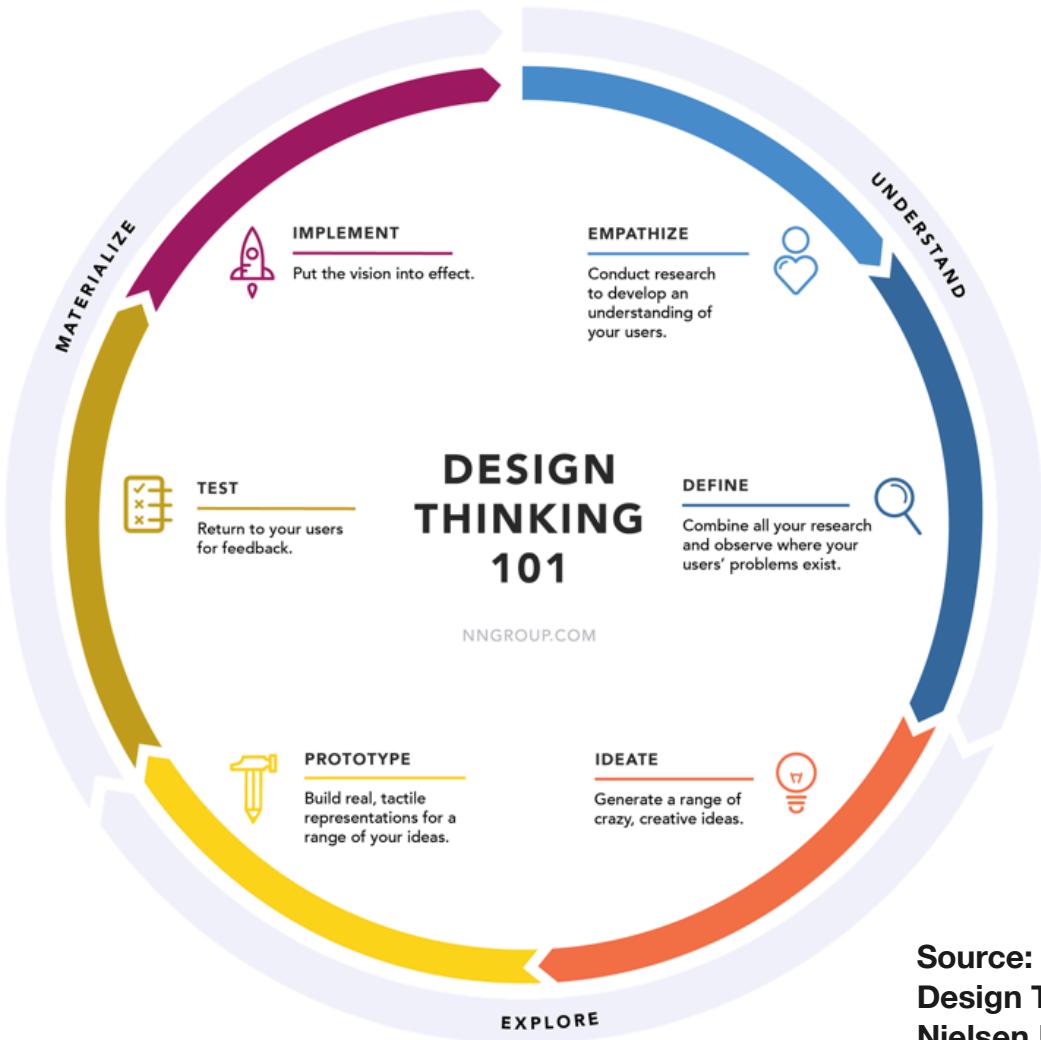
Empathise
身同感受

Define
界定问题

Ideate
創意發想

Prototype
開展原型

Test &
Implement
測試執行



Source: Sarah Gibbons,
Design Thinking 101
Nielsen Norman Group



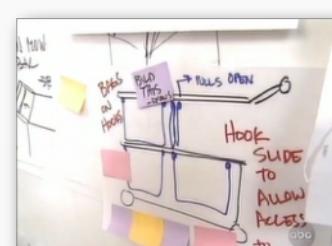
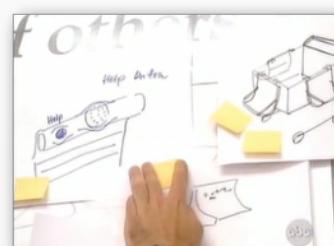
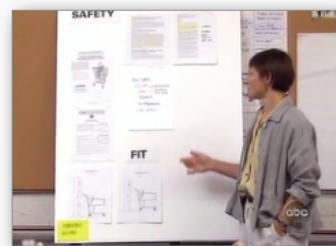
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Define
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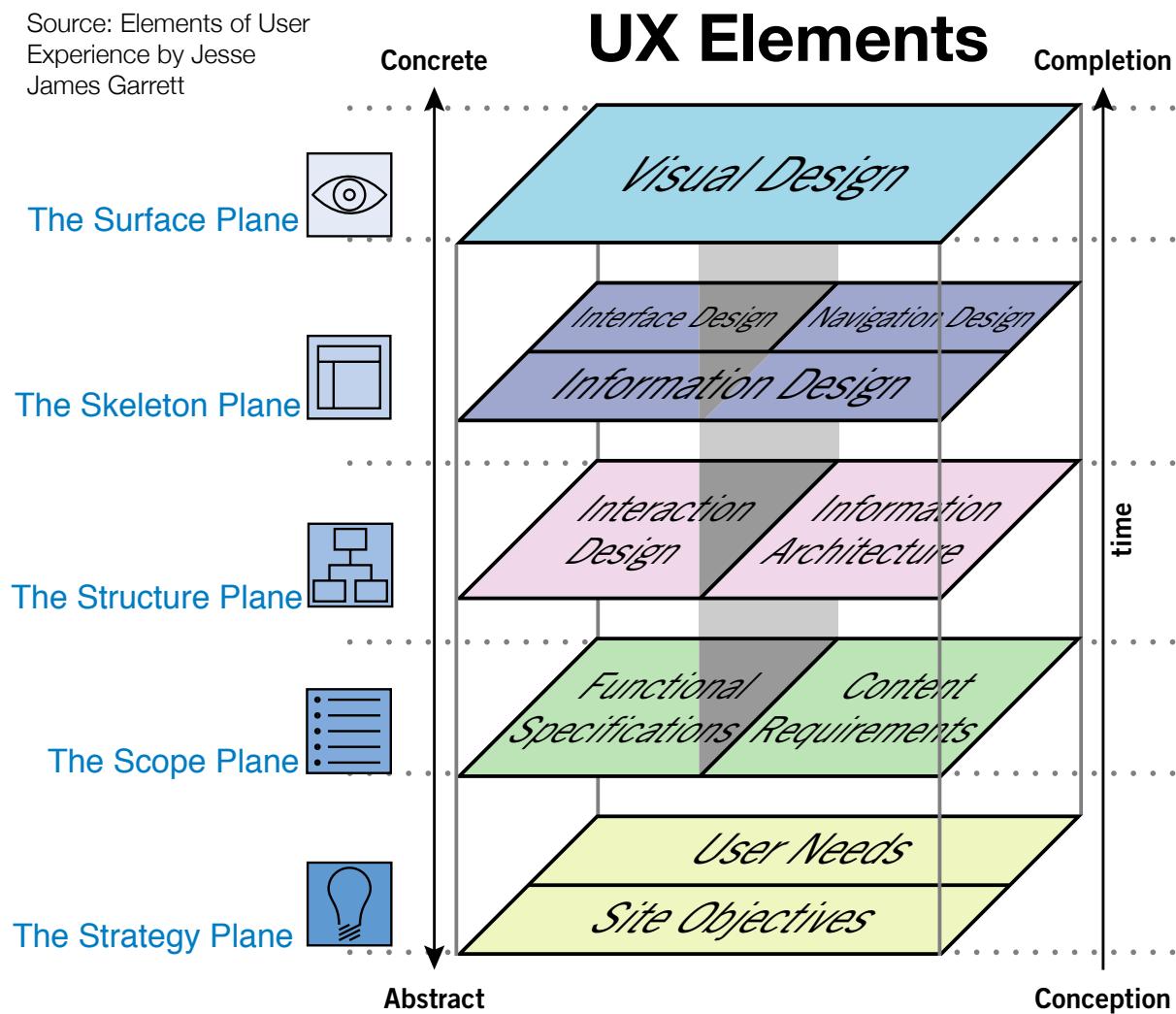
Ideate
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Test & Implement
測試執行



Source: Elements of User Experience by Jesse James Garrett



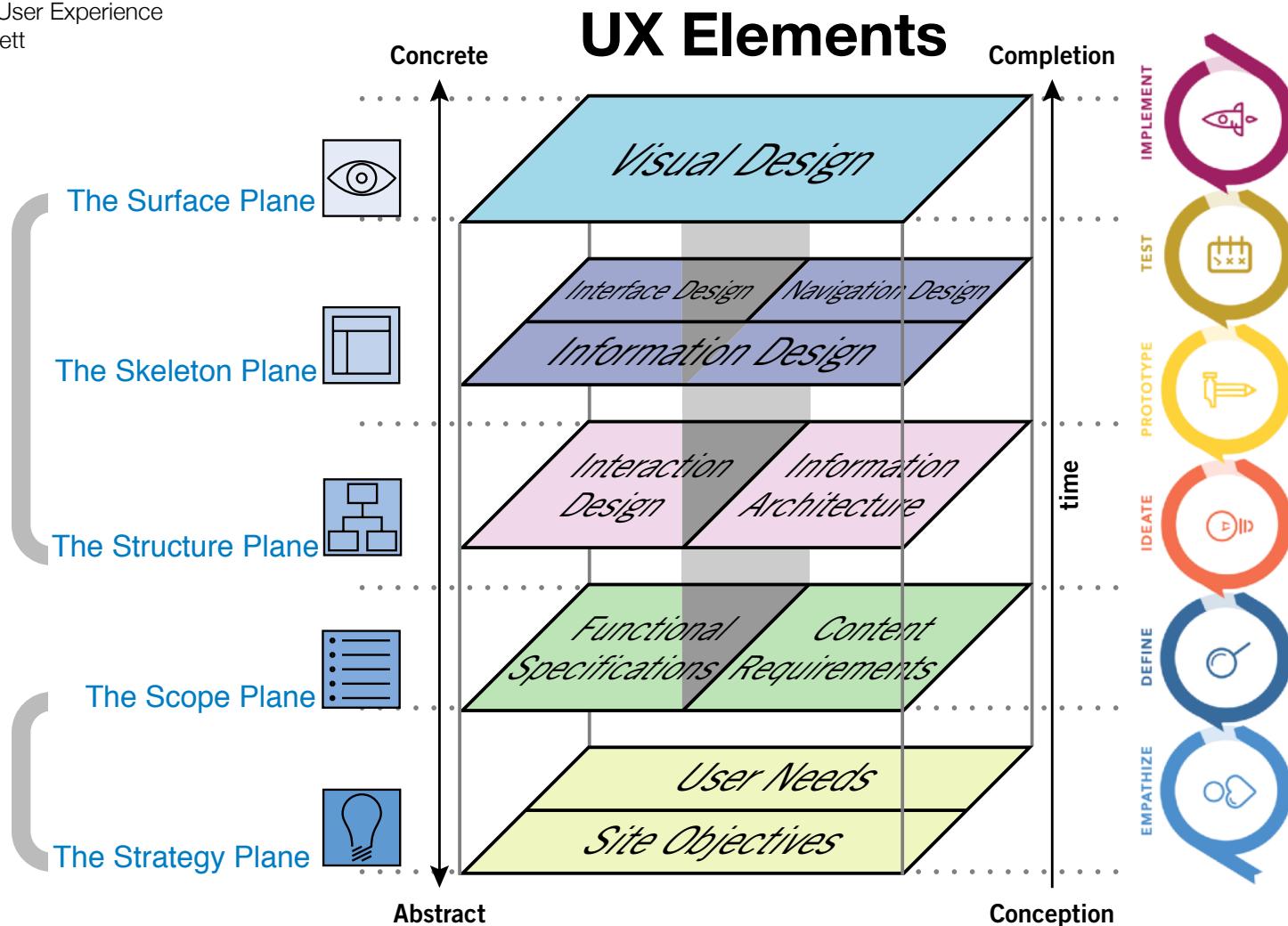
Source: Elements of User Experience
by Jesse James Garrett

Problem Solution

how and
how much

Problem Definition

who, what,
and why





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

What is “Computational Thinking”?

Bitesize

[Home](#) > [KS3](#) > [Computer Science](#) > [Computational thinking](#)

Introduction to computational thinking

Before computers can be used to solve a problem, the problem itself and the ways in which it could be resolved must be understood. Computational thinking techniques help with these tasks.

Revise
Test

< 1 2 >

What is computational thinking?

Computers can be used to help us solve problems. However, before a problem can be tackled, the problem itself and the ways in which it could be solved need to be understood.

Computational thinking allows us to do this.

More Guides

[Introduction to computational thinking](#)

[Decomposition](#) >

[Pattern recognition](#) >

[Abstraction](#) >

[Algorithms](#) >

[Evaluating solutions](#) >

Decomposition

Pattern

Abstraction

Algorithm

Automation &
Testing

Decomposition

Break a problem down into smaller parts.

Pattern

Discover similarities between things.

Abstraction

Ignore irrelevant details to focus on essential features to come up with one solution or classification that works for multiple situations.

Algorithm

Specify a sequence of steps that someone or computer can follow to complete a task.

Automation & Testing

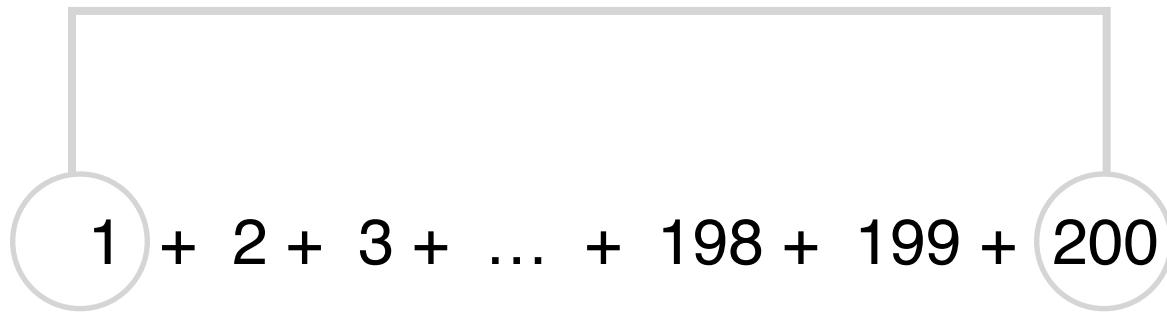
Codify and test the algorithm for automated execution by the computer.

First warm up problem for computational thinking.

Summing up all the integers from 1 to 200
in your head in 30 seconds.

$$1 + 2 + 3 + \dots + 198 + 199 + 200$$

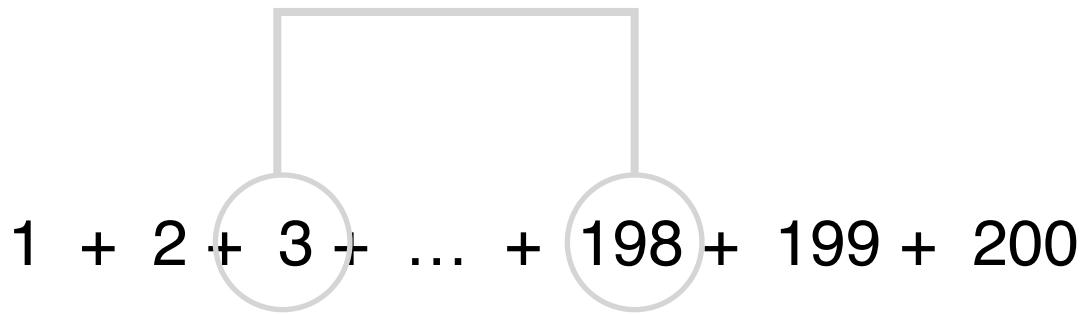
Decomposition

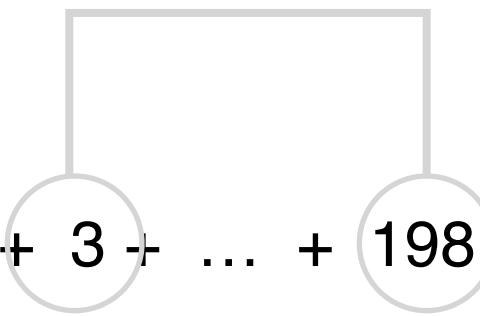


$$1 + \overset{\text{---}}{2} + 3 + \dots + 198 + \overset{\text{---}}{199} + 200$$

The diagram consists of a horizontal line with two vertical lines extending upwards from the numbers 2 and 199. The number 2 is circled in grey, and the number 199 is also circled in grey. The other numbers in the sequence are not circled.

Pattern

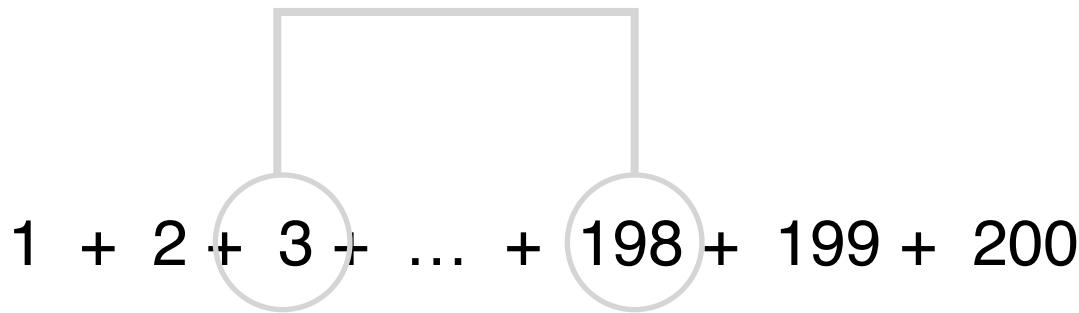


$$1 + 2 + 3 + \dots + 198 + 199 + 200$$
A diagram illustrating the sum of integers from 1 to 200. The terms 3, 4, 5, ..., 198 are grouped together by a bracket, visually representing the concept of abstraction or generalization in mathematics.

$$\frac{200 \times (201)}{2}$$

Abstraction

- Can we do it easily with 2,000?
- How about 20,000?
- What stays the same? What is different?



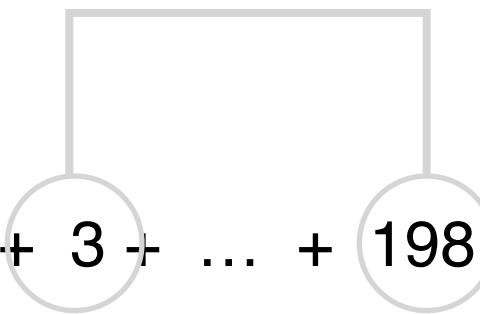
$$\underline{200 \times (201)}$$

2

Abstraction

- Work through the problem we ultimately get ? = ("blank"/2) * ("blank"+1)

- Can we do it easily with 2,000?
- How about 20,000?
- What stays the same? What is different?

$$1 + 2 + \textcircled{3} + \dots + \textcircled{198} + 199 + 200$$


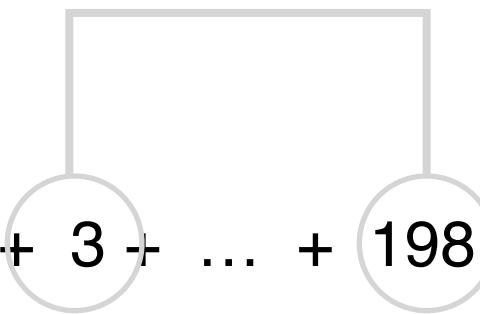
$$\frac{200 \times (201)}{2}$$

Abstraction

$$\frac{X \times (X+1)}{2}$$

Algorithm

- Can we do it easily with 2,000?
- How about 20,000?
- What stays the same? What is different?

$$1 + 2 + \textcircled{3} + \dots + \textcircled{198} + 199 + 200$$


$$\frac{200 \times (201)}{2}$$

Abstraction

$$\frac{X \times (X+1)}{2}$$

Algorithm

Algorithm = function

$$Y = f(X) \quad 20,100 = \frac{X}{2} \times (X+1)$$

variable

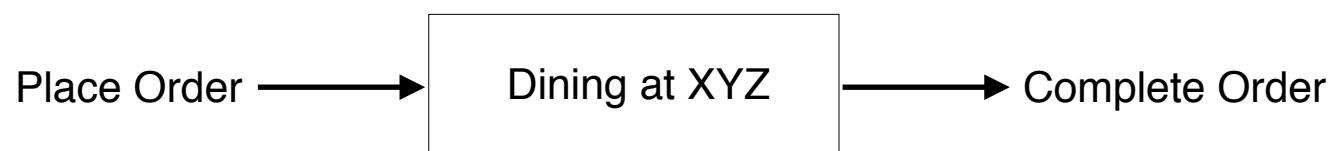
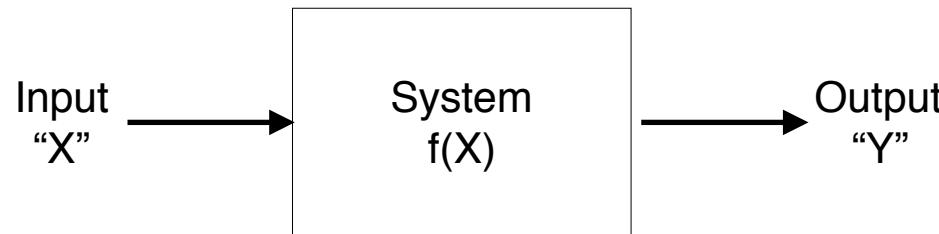
Table 1

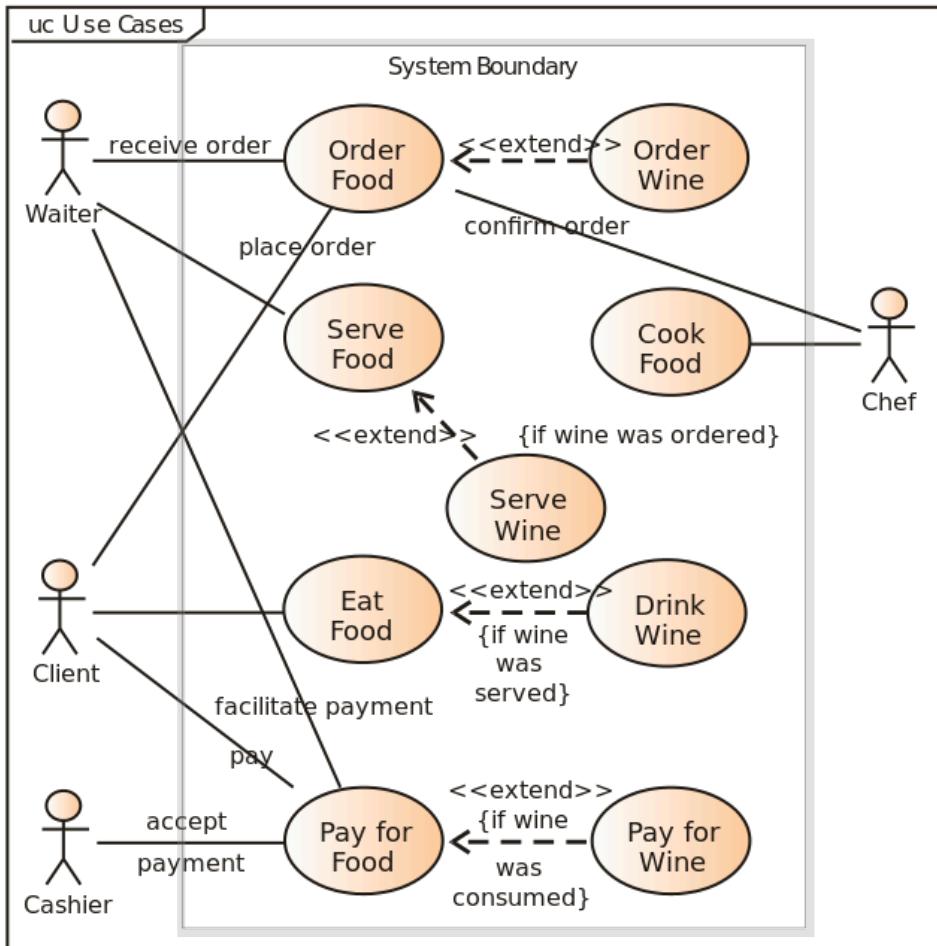
	X	200	
	X+1	201	
	X/2	100	
	(X+1)x(X/2)	20,100	

Automate & Test in a Spreadsheet

**Computational thinking is about
system and data.**

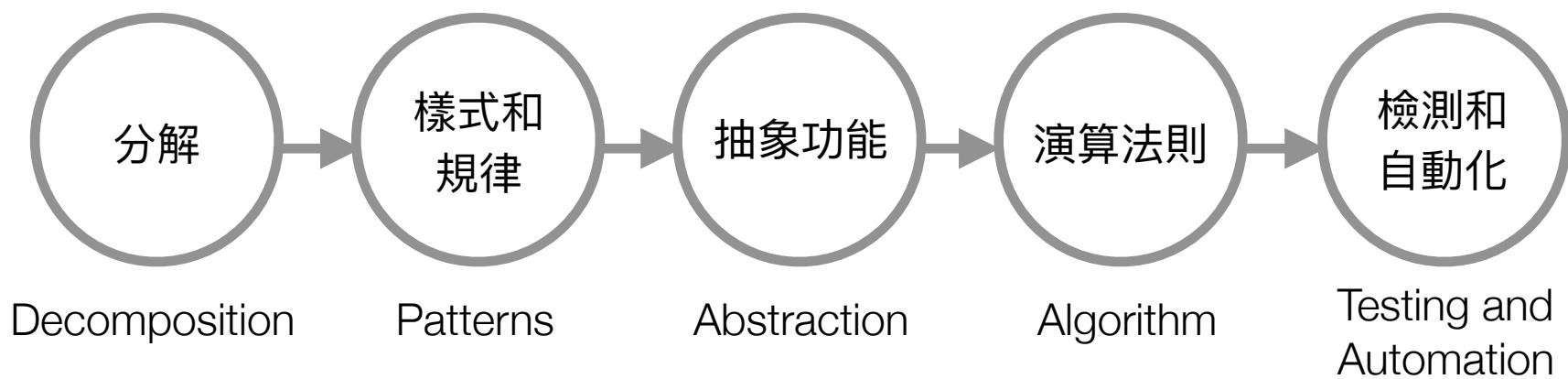
$$Y = f(X)$$





Use Case of a Restaurant System

Source: Wikipedia



That's is still too abstract - we want cases!

How Google used computational thinking to develop Google Earth

[Mac](#)[iPad](#)[iPhone](#)[Watch](#)[TV](#)[Music](#)[Support](#)

Apple Watch Series 4

[Overview](#)[Design](#)[Health](#)[Workout](#)[Activity](#)[Connect](#)[Order](#)

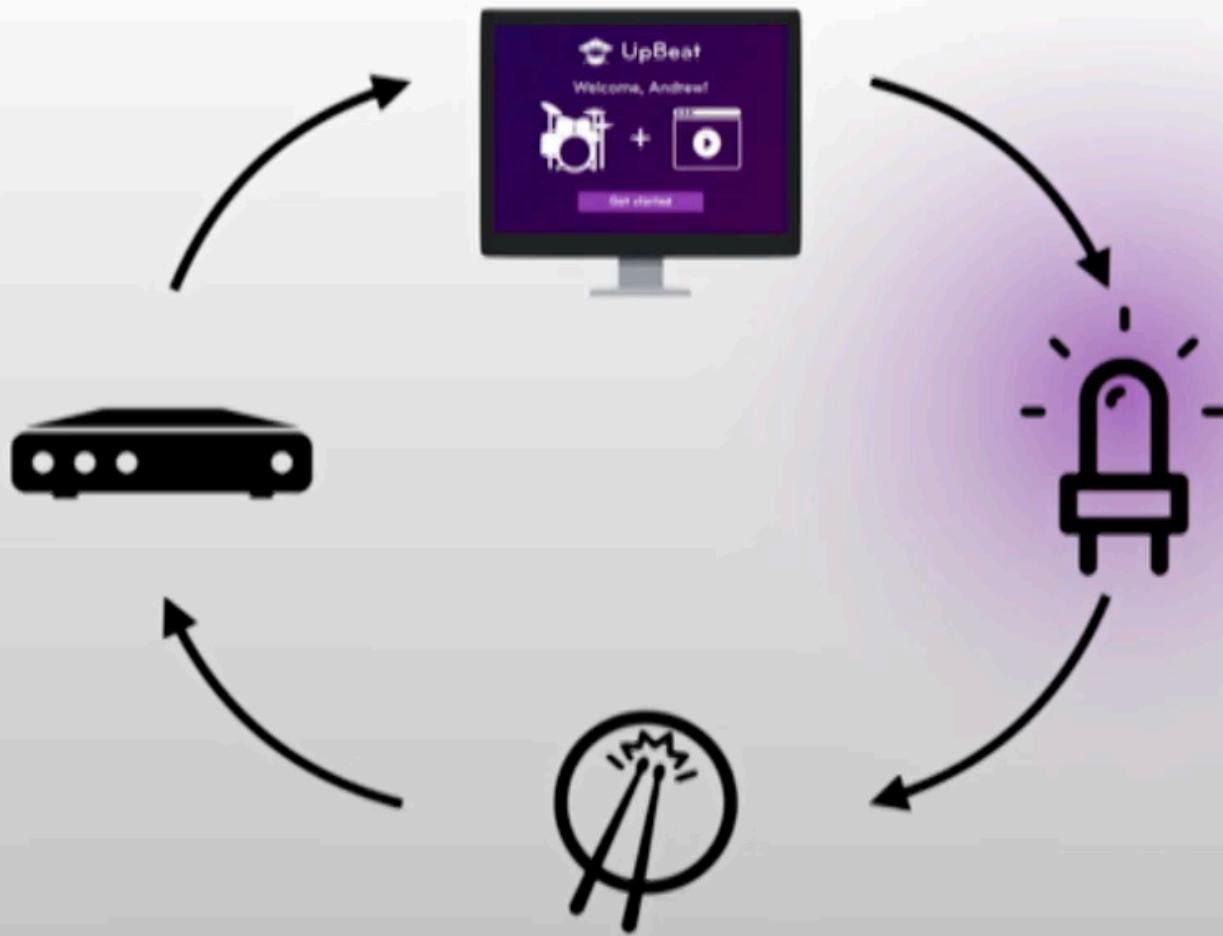
SOURCE: apple.com

INFRASTRUCTURE FOR NEW MEDIA APPLICATIONS

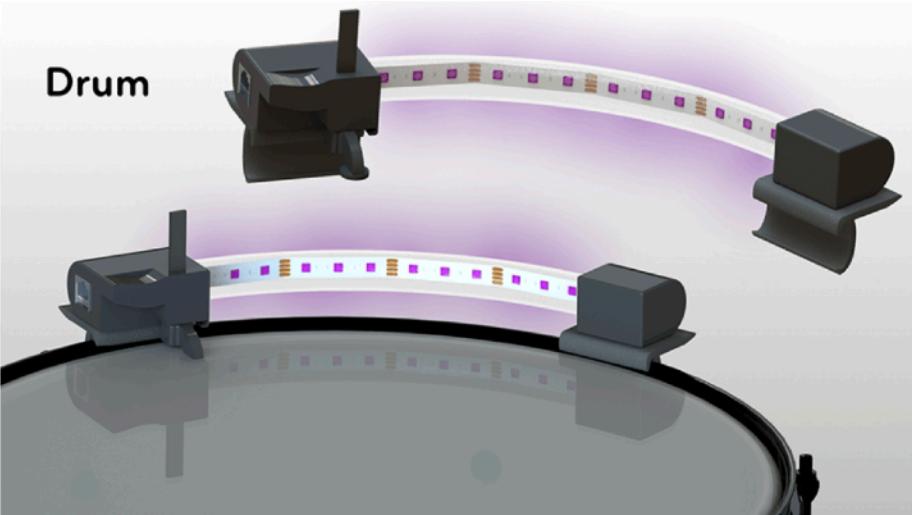
Case Study: Upbeat



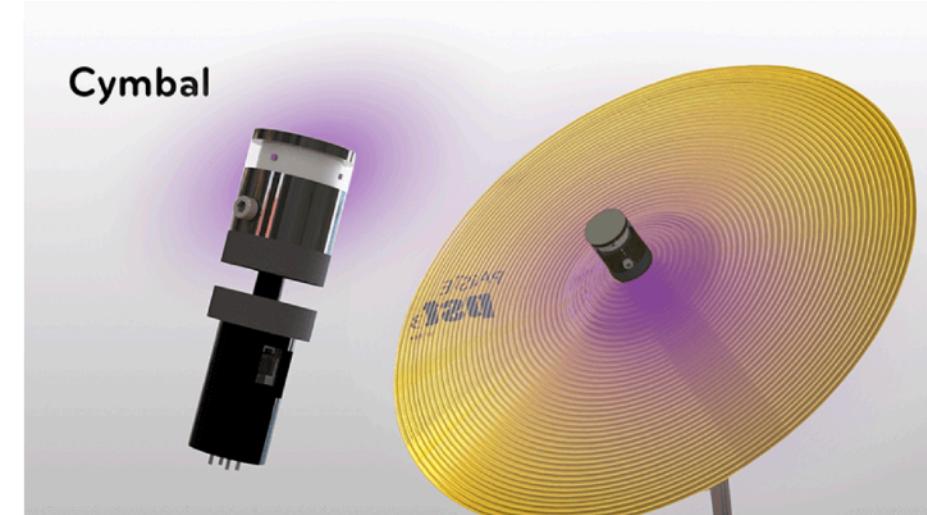
<https://vimeo.com/114149570>



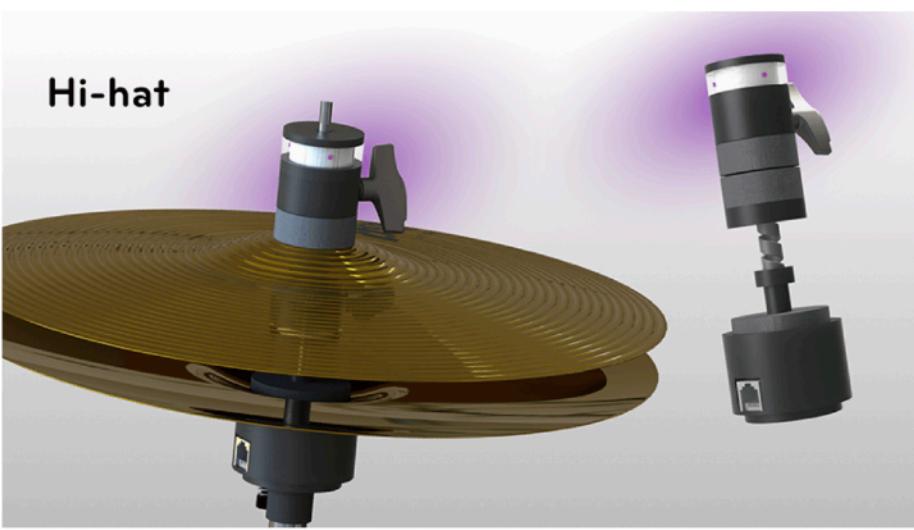
Drum



Cymbal

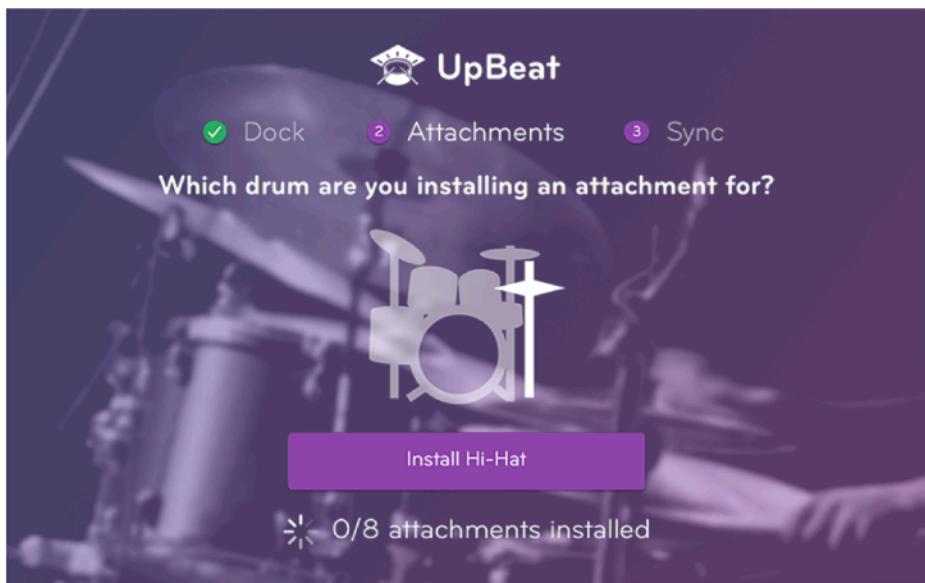


Hi-hat



Dock





Installing a new UpBeat attachment

A screenshot of UpBeat's practice mode. The top bar is purple with the word "Practice" on the right. Below it, the title "Eighth Note Rock Beat 1" and the author "Jim Chapin" are shown. On the far right, a "GOOD!" button with a circular arrow is visible. The main area contains two staves of musical notation. The top staff is highlighted with a purple glow. Both staves show eighth notes and sixteenth notes, some of which have an 'X' over them, indicating they need to be played correctly. The time signature "4/4" is indicated at the beginning of both staves.

UpBeat's practice mode, similar to Guitar Hero or Rock Band

Library

SORT BY DATE ADDED ▾

Drum Rudiments
Terence Fletcher

Amen, Brother 2:32 135 BPM 87% RECORD

The Winstons

Seven Nation Army

The White Stripes

Brianstorm

The Arctic Monkeys

+ ⌂

Learn
Amen, Brother

Closed Hi-Hat + Snare

II

Practice
Amen, Brother

PERFECT!

II

Record

BAR 0005 BEAT 3

II

Settings

SENSORS

Snare Drum
Connected, 54% battery

Bass Drum
Connected, 48% battery

Hi-Hat
Not connected

Tom-Tom

☰

Settings
Sync New Drum

Drum Type Snare Drum ▾

Drum Name optional

Calibrating...

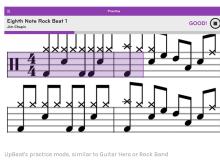
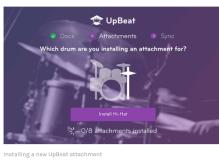
Done

Hit your drum now.

☰

User flows and early wireframes for the three modes of the UpBeat app

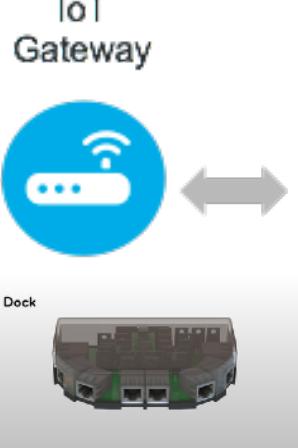
CONCEPTUAL FRAMEWORKS FOR UNDERSTANDING THE SIGNAL/DATA FLOW



Connected
"Things"



TIER 1 - CLIENT
(VIEW)



IoT
Integration Hub



(CONTROLLER)
TIER 2 - APP SERVER

Enterprise
Applications



Centralized Data Mgmt. &
Analytics Platform

TIER 3 - DATABASE SERVER
(MODEL)

3-TIER CLIENT-SERVER ARCHITECTURE (MVC FRAMEWORK)

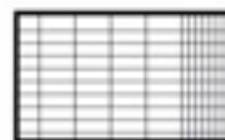
- Modular, secure, and end-to-end architecture
- Streaming analytics and machine learning
- Open, interoperable on Hybrid Cloud
- Modern application agility & integration

Source: <http://cloudera.com>

CONTROLLER

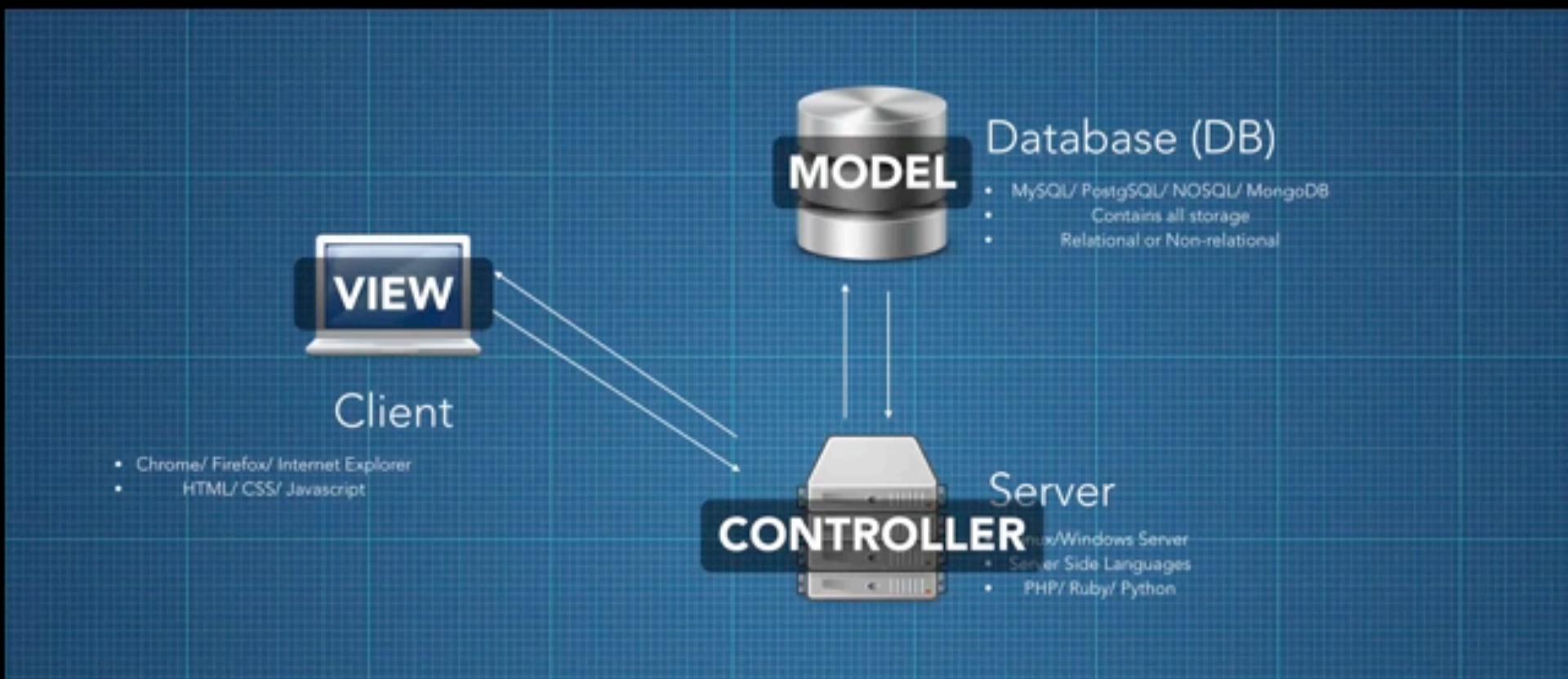


VIEW



MODEL

HOW DOES A WEBSITE WORK? THE FLOW



FROM 3-TIER ARCHITECTURE/MVC FRAMEWORK TO COMPUTATIONAL THINKING

Case Study: Redesigning the Lobby Experience



Exploring the Hotel Experience of the Future with Marriott Hotels

Source: MIT Mobile Experience Lab

**What is the key lesson you can learn from the
“Marriott lobby experience” case?**

HOME

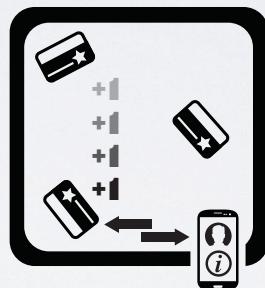


Joins loyalty program, creates a profile & installs phone app.

LOBBY



Given physical loyalty card on check-in — stores profile info, points & doubles as room key.



(Can be done in lobby or room)
Set availability via orientation of card. (Lobby only) Loyalty points awarded to cards at the same table. Table lights up to show activity, interests shown on table & lobby display map. Profiles added to app network.

ROOM

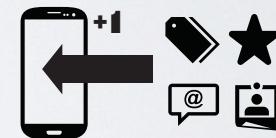
BOOKING

CHECK-IN

MEETUP

RETURN

INTERACTIONS OUTSIDE HOTEL



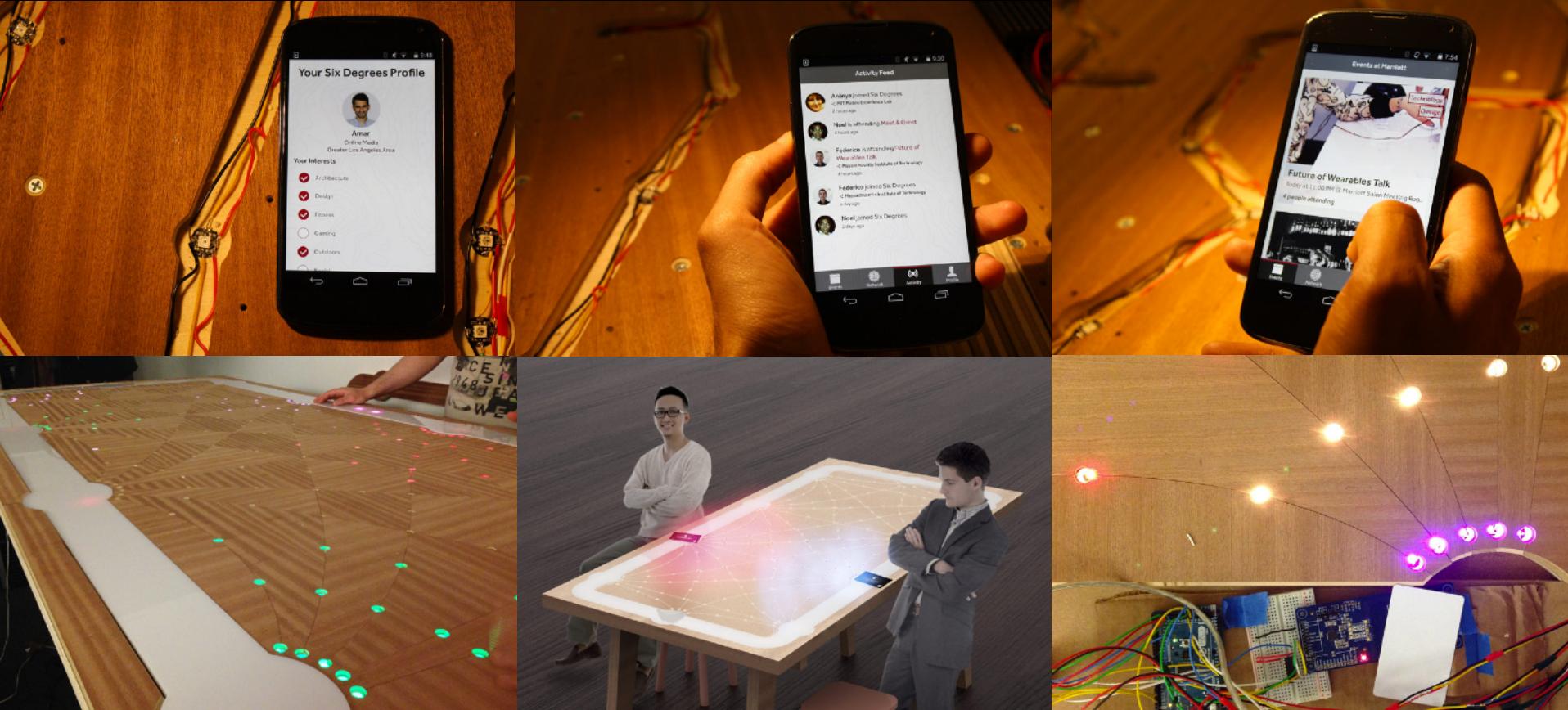
Prompted by app to tag places visited, ratings & social media for points — added to in-app database of recommendations.

Source: MIT Mobile Experience Lab



THE PROBLEM STATEMENT (关注who, what and why):

了解用户体验、痛点及有待创造的独特价值。





THE SOLUTION (关注how, and how much):

建立组织、社群系统、不断创新的科技平台，及持续具扩展性的商业模式。

Patterns: Persona Types, Contexts, Artefacts, Scenarios

avid social explorer

Gen Y travelers seeking personalized yet serendipitous experiences, good company to share them with, and the ability to capture and celebrate them.



bored lobbygoer in transition

Anyone using the lobby as a meeting place or gathering point, looking to pass the time and avoid awkwardness.



PERSONA

The collage includes:

- A whiteboard with hand-drawn wireframes for a mobile application, including a "CHECKBOOK" section and a "RECOMMENDED" section.
- A whiteboard with handwritten notes about "Feedback + Financial Guidance" and "Smartbox is connected to the bank".
- A whiteboard with a list of "MORE FEATURES":
 - 1) Safe & Vip for bank
 - 2) Possible
 - 3) Earnard Savings
 - 4) Personalized Financial Guidance
 - 5) Easy Transfer Bank
- A person's back as they write on a wall covered in colorful sticky notes under the heading "MEANS...".
- A table covered with many colorful sticky notes, with the word "INFORMATION" visible on the surface.

Source: MIT Mobile Experience Lab

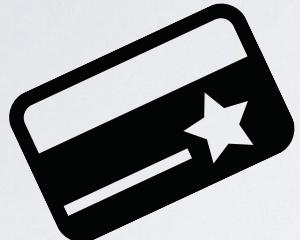


CONTEXTS

Source: MIT Mobile Experience Lab

ARTEFACTS

THE CARD



THE TABLE



THE APP



room key
point counter
status symbol

the social hub

shared memory
social networks
recommendations

LOYALTY

Source: MIT Mobile
Experience Lab

INTERACTION

DATA



ROLE PLAY PHYSICAL EXPERIENCE

SCENARIOS

Source: MIT Mobile Experience Lab

THE JOURNEY AS A STORY

Elements (元素)

1. PERSONA - 人 (人物)
2. CONTEXT - 景 (場景)
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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

HOME

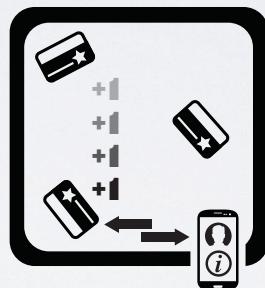


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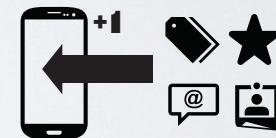
BOOKING

CHECK-IN

MEETUP

RETURN

INTERACTIONS OUTSIDE HOTEL



Prompted by app to tag places visited, ratings & social media for points — added to in-app database of recommendations.

Source: MIT Mobile Experience Lab

WHAT'S NEW?

HOME

LOBBY

ROOM

BOOKING

CHECK-IN

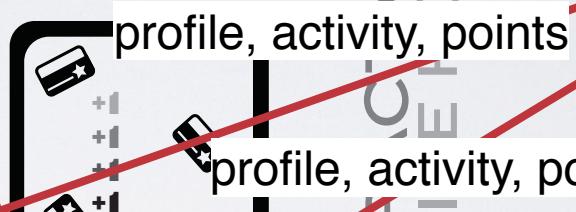
MEETUP

RETURN



USER JOURNEY MAP

profile, activity, points



Profile, activity, points
of other guests at the same table. Table lights up to show activity, interests shown on table & lobby display map. Profiles added to app network.



Review Data



Database

profile, activity, points

INTERNSHIPS

OUTSIDE

Source: MIT Mobile Experience Lab

KEY LESSON: UX + DATA

The data factor is pervasive throughout the journey.

HOME

LOBBY

ROOM

BOOKING

CHECK-IN

MEETUP

Source: MIT Mobile
Experience Lab

USER JOURNEY MAP

profile, activity, points

Booking
Data

Check-in
Data

Interact-
ion Data

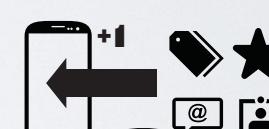
Review
Data

Give
check
in point



profile, activity, points

Profile
of user
on table
activity
points
of friends at
the same
table. Table
lights up
to show
activity,
interests
shown
on table &
lobby display
map.
Profiles
added to app
network.



profile, activity, points

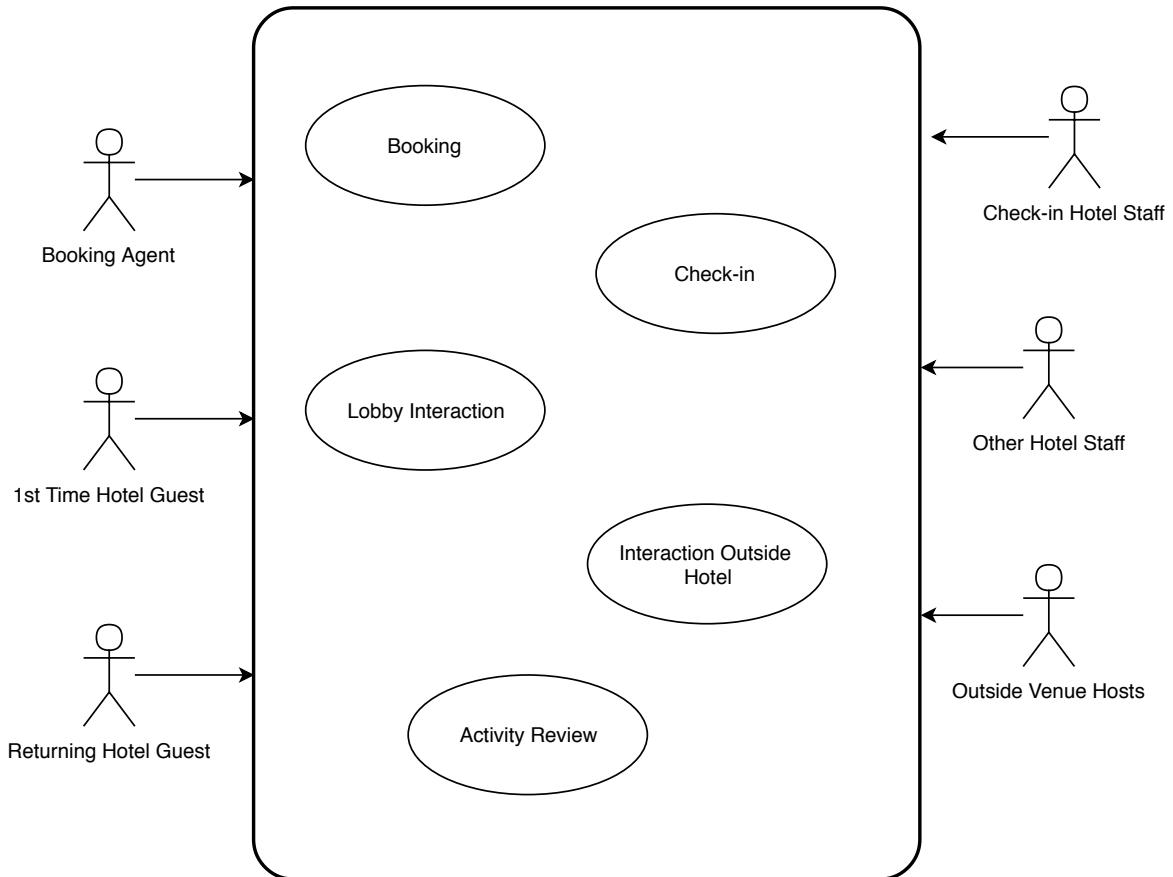
Places
Media
Group
Actions.



Data-
base

profile, activity,
points

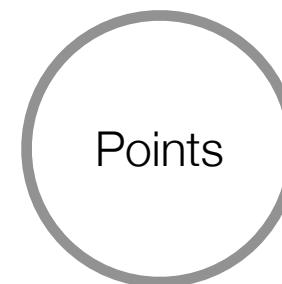
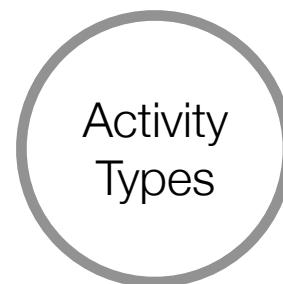
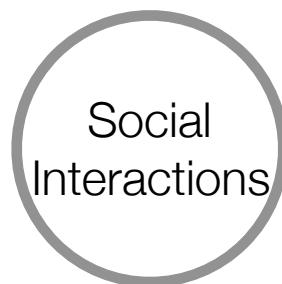
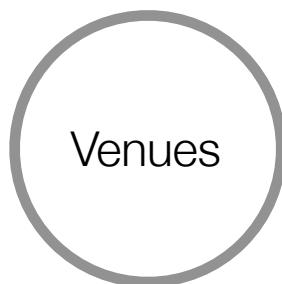
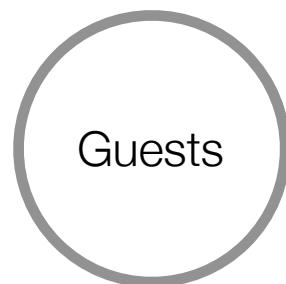
Develop use cases from journey map.



Use Cases of a Hotel Loyalty App

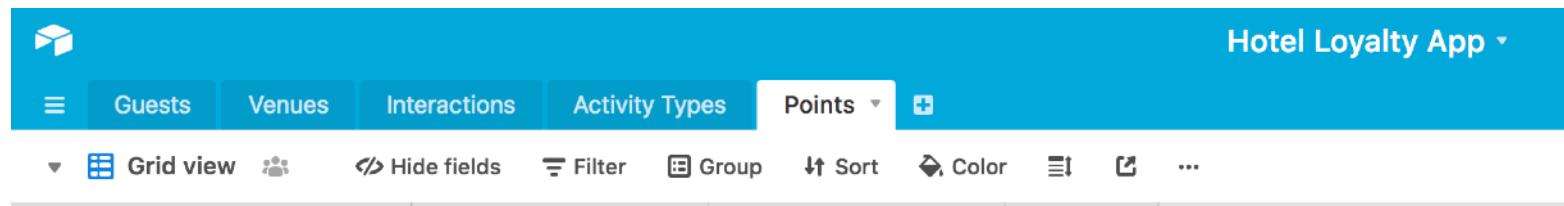
Derive data entities from use cases.

Data Entities to be Tracked



- 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

Tracking Data Entities





“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

**To understand and construct our world
through data models.**

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

WHAT IS A “DATABASE”?

“A **Database** is a computerised system that makes it easy to search, select and store information..”

BBC Website



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Select an option ▾

Skip

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- ✓ Increased record & attachment limits
- ✓ Extended revision & snapshot history
- ✓ Extended functionality with blocks
- ✓ Advanced calendar features
- ✓ Custom branded forms
- ✓ More colors and styling options
- ✓ Personal views

Priority support Not available during trial
And more!



WORKSPACES

My First Workspace

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Please verify your email address by clicking the link sent to
[bernardsuen@hotmail.com](#). [Resend verification email](#)



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Event Marketing



Digital Content Calendar



User Studies



Product Launch



Product Planning



Content Marketing Management



Digital Video Production



Digital Asset Management



Applicant Tracking



Add a base



WORKSPACES

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Event Marketing

Digital Content
Calendar

User Studies



Product Launch



Product Planning

Content Marketing
ManagementDigital Video
ProductionDigital Asset
Management

Applicant Tracking



Add a base

- Start with a template
- Import a spreadsheet
- Start from scratch



My First Workspace

Pro trial 14 days left



WORKSPACES

- My First Workspace Trial
- + Add a workspace



Event Marketing

Digital Content
Calendar

User Studies



Product Launch



Product Planning

LEARNING AND RESOURCES

- Guide to Airtable
- Video tutorials
- Help center
- Ask a question
- Importing
- Understanding views
- Advanced linking
- What's new

Content Marketing
ManagementDigital Video
ProductionDigital Asset
Management

Applicant Trac

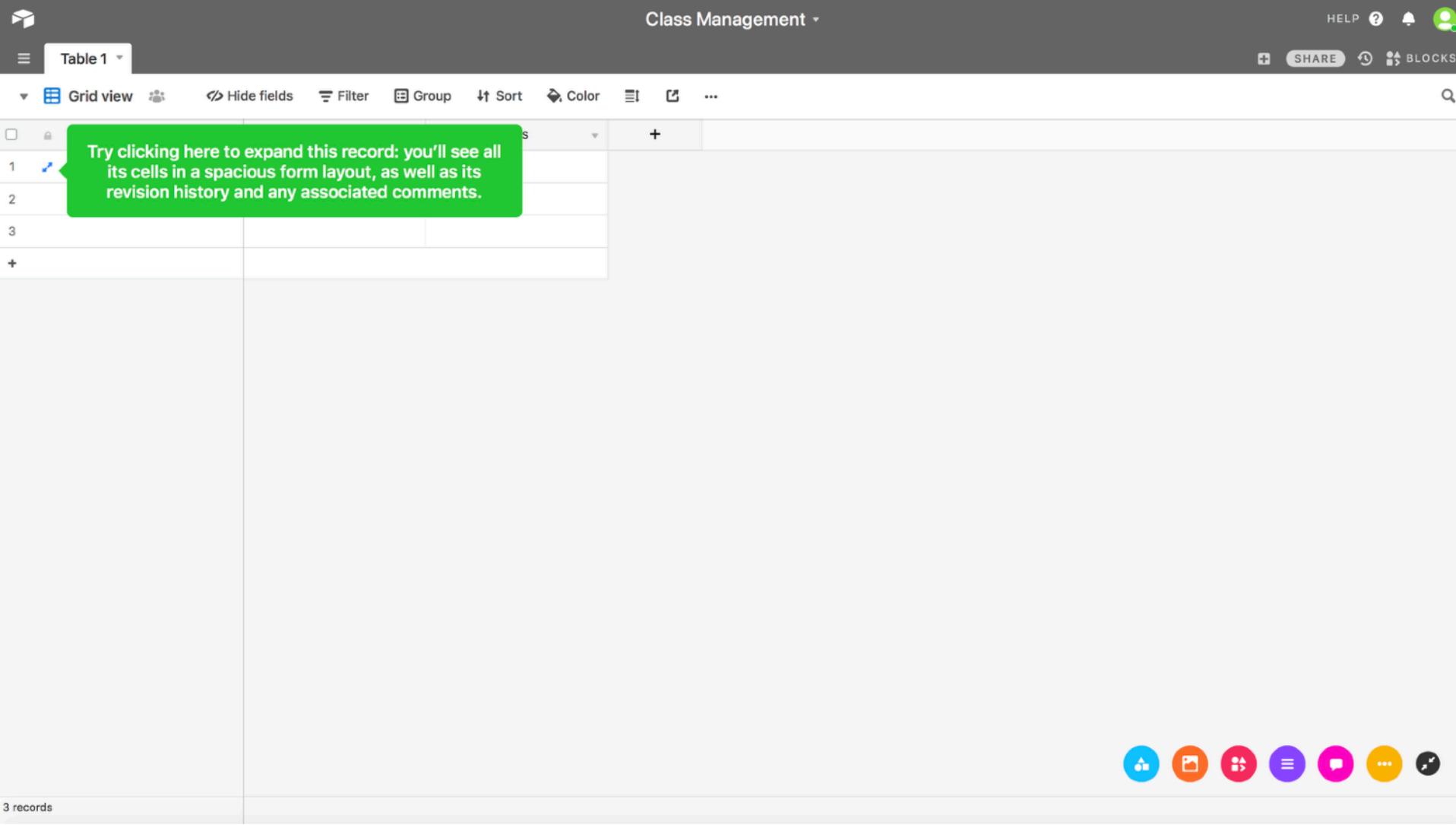


Class Management



+ Add a workspace
Add a base

- Share
- Duplicate base
- Move base to another workspace
- Slack notifications
- Delete base



Class Management ▾

HELP ? 🔔 🙋

Table 1

SHARE

Grid view Hide fields Filter Group Sort Color ...

A Course ID A Course Title Notes Attachments

Course ID

1
2
3
+

3 records

Blocks

+ Add a block

Course ID Course Title Notes Attachments

Blocks give your base superpowers.

ORT COUNTDOWN SUMMARY PIVOT TABLE

Add a block

Blocks icons: Refresh, Document, Chat, Clock, Search, Bell, Hashtag

Small circular icons: Magnifying glass, Share, Print, Copy, More options

Reconnecting... ⏱

Class Management ▾

HELP ? 🔔

Courses ▾

SHARE ⏪ ⏴ BLOCKS

Grid view Hide fields Filter Group Sort Color ...

Create empty table Import a spreadsheet

	A Course ID	A Course Title	Notes	Attachments	
1			Course ID		
2					
3					
+					

Trying to reconnect... please check your internet connection

3 records





Reconnecting... ☰

Class Management ▾

HELP ? 🔔



Courses

Students

+ SHARE ⓘ BLOCKS



Trying to reconnect... please check your internet connection

Saving... ☁

Class Management ▾

HELP ? 🔔

Courses Students

Grid view Hide fields Filter Group Sort Color ...

Course ID	Course Title	Notes	Attachments
com5961	Data Driven Product & Service Design	Course ID	
2			
3			
+			

3 records



Louisa from Airtable

Welcome to Airtable!

Here's some other resources to get you started:

Thumbs up, thumbs down, confetti, play button, lightbulb, star, and a small circular icon.

All changes saved

Class Management

Courses Students

Grid view Hide fields Filter Group Sort Color ...

Name Notes Attachments

Customize field type

Rename field

Edit field description

Duplicate field

Insert right

Sort A → Z

Sort Z → A

Add filter

Group by this field

Field moved to trash UNDO

SHARE BLOCKS

HELP ?

4 records

4 records

All changes saved

Class Management

Courses Students

SHARE BLOCKS

Grid view Hide fields Filter Group Sort Color ...

	A Student ID	Notes	Attachments	+
1				Add field
2				
3				
4				
+				

4 records

Add field

4 records

All changes saved

Class Management

HELP ? 🔔 

Courses Students

+ SHARE ⏱ BLOCKS

Grid view Hide fields Filter Group Sort Color ...

	A Student ID	A Notes	Attachments	A Field 4
1				
2				
3				
4				
+				

Field 4

A Single line text

A single line of text. You can optionally prefill each new cell with a default value:

Default text

Enter default text

Cancel Save

4 records





Class Management ▾

HELP ? 🔔



Courses

Students ▾

SHARE 🔍 BLOCKS

Grid view Hide fields Filter Group Sort Color ...



	A Student ID	A Notes	Attachments	A Field 4
1				<input type="text" value="Student Name"/> A Single line text
2				
3				
4				
+				

Student Name

A Single line text

A single line of text. You can optionally prefill each new cell with a default value:

Default text

Enter default text

Cancel

Save



4 records

FROM TABLES TO VIEWS

https://airtable.com/universe

Apps Cyberport Bootc... Blockchain NLP and Chatbot FinTech E-Commerce Classes Development Tools Data Science Machine Learning Music Drupal Cloud Providers Other Bookmarks

Airtable Bases Templates Universe HELP ? 🔔 e

[Search Universe](#)

Sort by featured ▾

CATEGORIES

- Featured
- Arts and culture
- Community and local interest
- Creative production
- Education
- Entrepreneurship
- Fashion and style
- Food and drink
- Government and politics
- Health and self-improvement
- Journalism and publishing
- Marketing and sales
- Nonprofits and volunteering
- Operations
- Product, design, and UX
- Products and consumer reviews
- Professional
- Real estate
- Science and technology
- Sports and games
- Travel and outdoors

[Publish your own!](#)

AIRTABLE UNIVERSE

Explore, discover, and share your passion

Cole Haan Creative Operations

Cole Haan Brand Creative is an in-house, full service agency. Our Creative Operations team manages...

Andrew Coulter Enright

Twilio's Lightweight CMS

Tony Mataya

Britannica's Digital Content Management System

Alison Eldridge

Insomniac Events' Staffing Template

Insomniac Events

Project Tracker

Design Projects Tasks Clients +

SHARE ⏪ BLOCKS 🔍

Find a view

Main View

- Incomplete projects by leader
- Completed projects
- Project calendar
- Due dates only
- Gallery
- Kanban
- Form

Add a view: Grid Form Calendar Gallery Kanban

Project Photos	Category	Client	Project Lead	Project Team	
	Brand identity	New York City Parks	Chuck Harrison	Emily Pilloton, Eddie Opara	15/9/2017
	Brand identity	Second Home	Jasper Morrison	Chuck Harrison, Anishka Clarke	25/9/2017
	Brand identity	Metro Loft	Gail Anderson	Gail Anderson, Patricia Urquiola	28/9/2017
	Brand identity	Codecademy	Chuck Harrison	Anishka Clarke, Patricia Urquiola	6/10/2017
	Brand identity	Mohawk	Emily Pilloton	Patricia Urquiola	12/10/2017
	Brand identity	Bigelow Tea	Patricia Urquiola	Emily Pilloton, Jasper Morrison	16/10/2017
	Brand identity	Massachusetts Institute of Tech	Emily Pilloton	Anishka Clarke	17/10/2017
	Brand identity	Museum of Modern Art	Gail Anderson	Eddie Opara, Naoto Fukasawa	24/10/2017
	Brand identity	GRiD Systems Corporation	YiuSin Suen		

CATEGORY
Industrial Design Count 2

Ultimate Utility Bike		Industrial Design	Oregon Manifest	Gail Anderson	Naoto Fukasawa	4/10/2017
C17 Bike Saddle	✓	Industrial Design	Brooks England	Chuck Harrison	Chuck Harrison	11/10/2017

CATEGORY
Healthcare Design Count 2

Hand Hygiene System	✓	Healthcare Design	SwipeSense	Chuck Harrison	Jasper Morrison	21/9/2017
HGH Injection Device	✓	Healthcare Design	Eli Lilly and Company	Gail Anderson	Emily Pilloton	5/10/2017

18 records

Project Tracker

Design Projects Tasks Clients +

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

Today < > October 2017 Month 2 week Week 3 day Day Q Find a record All records

Mon	Tue	Wed	Thu	Fri	Sat	Sun
25 Second Home Brand Identity	+ 26	27	28 443 Greenwich Brand Ident...	29	30	1
2	3 Compass Notebook Compu...	4 Ultimate Utility Bike	5 HGH Injection Device	6 Codecademy Brand Identity	7	8
9	10 C17 Bike Saddle	11 PalmPad	12 Mohawk Brand Identity	13	14	15
16 Tea Packaging	17 MIT Media Lab Logo	18 Melon Headband	19	20	21	22
23 MOMA Brand Identity	24	25	26	27	28	29
30	31	1	2	3	4	5

Tea Packaging Oct 16, 2017 

C17 Bike Saddle Oct 11, 2017 

Second Home Brand Ide... Sep 25, 2017 

Ultimate Utility Bike Oct 4, 2017 

Compass Notebook Com... Oct 3, 2017 

MOMA Brand Identity Oct 24, 2017 

PalmPad Oct 11, 2017 

Codecademy Brand Iden... Oct 6, 2017 

Convertible 2260 Laptop Sep 20, 2017 

443 Greenwich Brand Id... 

Project Tracker

Design Projects Tasks Clients +

SHARE BLOCKS

Gallery Customize cards Filter Sort Color ...

NYC Parks Brand Identity
COMPLETE
Prototyping
PROJECT PHOTOS

Convertible 2260 Laptop
COMPLETE
PHASE
PROJECT PHOTOS

Hand Hygiene System
COMPLETE
PHASE
PROJECT PHOTOS

Second Home Brand Identity...
COMPLETE
Research
PROJECT PHOTOS

443 Greenwich Brand Ide...
COMPLETE
PHASE
Prototyping
PROJECT PHOTOS

Compass Notebook Comp...
COMPLETE
PHASE
PROJECT PHOTOS

Codecademy Brand Identity
COMPLETE
PROJECT PHOTOS

Ultimate Utility Bike
COMPLETE

HGH Injection Device
COMPLETE
PHASE

PalmPad
COMPLETE
PHASE

C17 Bike Saddle
COMPLETE
PHASE

Mohawk Brand Identity
COMPLETE
PHASE

<https://airtable.com/tblbZlxfgBuuk2O3x/viw6z2UcS9BXyBSWb/recmnpTieT9J0vHWw>

Project Tracker

Design Projects Tasks Clients +

Kanban Stacked by Phase Customize cards Filter 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...
2 records +

Testing

mit media lab
MIT Media Lab Logo
COMPLETE ✓

NYC Parks Brand Identity
COMPLETE ✓

Mohawk Brand Identity
COMPLETE ✓

Hand Hygiene System
COMPLETE ✓

9 records +

https://airtable.com/tblbZlxfg8uuk2O3x/viwItXQhtUPszSfW6/recdZb9L3SVN4Ey1K

Project Tracker

Design Projects Tasks Clients +

Form Share form Open form ...

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

RECAP OF “AIRTABLE” AND THE “DATABASE” CONCEPT

- 1. Creating a database (called a “Base” in Airtable)**
- 2. Create a table or import from a spreadsheet (e.g. csv file)**
- 3. Add fields to the table and customise field type.**
- 4. Build relationships between fields and tables.**
- 5. Create views (calendar, kasan and gallery views)**

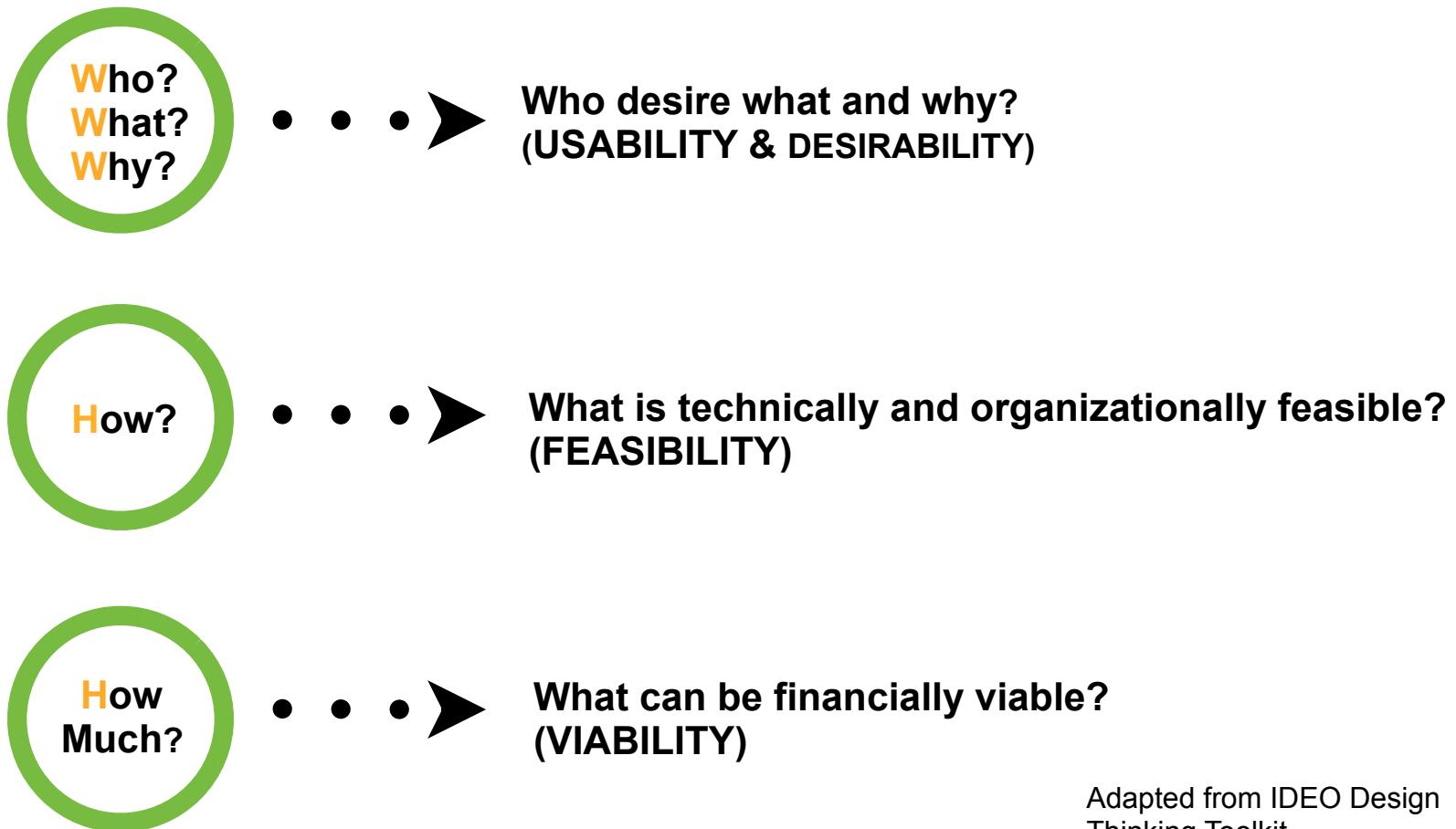
- 6. A database is a collection of tables.**
- 7. A table is a collection of records (rows) with each record containing information about one unique entity (e.g. student, class, product)**
- 8. A record is collection of fields (columns) with each field representing an attribute of the entity.**
- 9. A key field is a unique attribute for differentiating one record from another (e.g. student id)**

RECAP

From journey mapping to data mapping: Turn story into system, UX journey into use case and data.

The data lives on an infrastructure built with the integration of client (view), server (controller) and database(model) using 3-tier architecture and MVC framework.

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 types, contexts, artefacts, and scenario</u> patterns to formulate problem (who, what, and why).
Ideation	Abstraction	Develop socio-cultural and technical systems to reshape user stories and data flow.
Prototyping	Algorithm	Build <u>experience prototype and computational models</u> to represent future scenarios for validation.
Testing & Implementation	Automation & Evaluation	Continuous testing, improvement and automation to evaluate <u>functional, emotional, social, economic and environmental</u> impacts (how and how much).



Adapted from IDEO Design Thinking Toolkit

REFERENCE LINKS

1. Airtable 介绍 1：為什麼要使用 Airtable 、案例说明

<https://www.youtube.com/watch?v=de16zUwt48k>

2. Airtable 2 介面介绍

<https://www.youtube.com/watch?v=uKh6AaP-SLY>

3. JavaScript Tutorial

<https://www.youtube.com/watch?v=fju9ii8YsGs>

PROBLEM SET #1

- **Find a subject of interest to you (KPop, books, movies, fashion, traveling, etc.) and build a database using Airtable to study it.**
- **Create tables, build relationships, and use views (Calendar, Gallery, and Kanban) to display your contents (At least 10 entries).**
- **Share you Airtable base with me:
bernard@cuhk.edu.hk**

THANK YOU FOR YOUR TIME!