

Digital Product Design: What managers should know

ERASMUS+ Foresight Programme

Online, 26 May 2023





How the customer explained it



How the project leader understood it



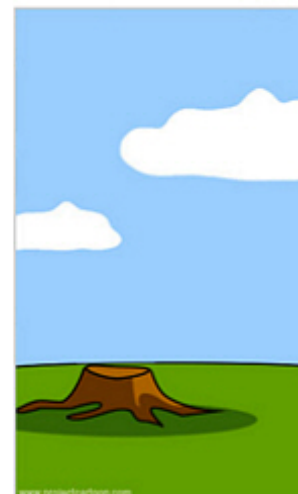
How the analyst designed it



What operations installed



How it was documented



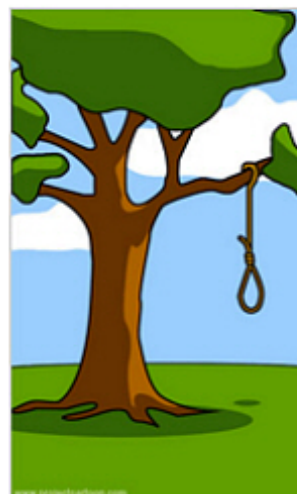
How it was supported



How the business consultant described it



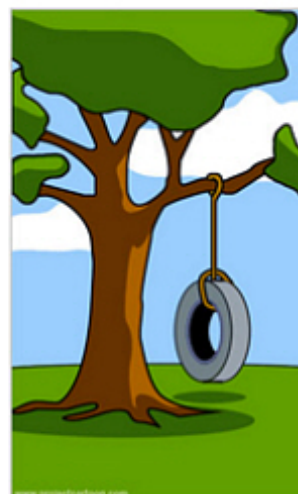
How the programmer wrote it



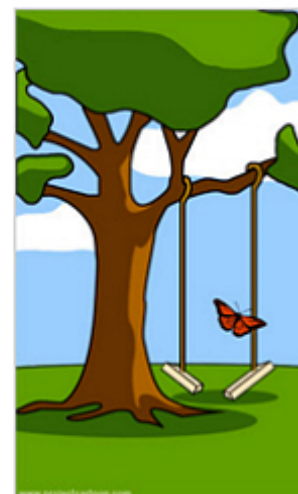
What the beta testers received



What marketing advertised
iSwing



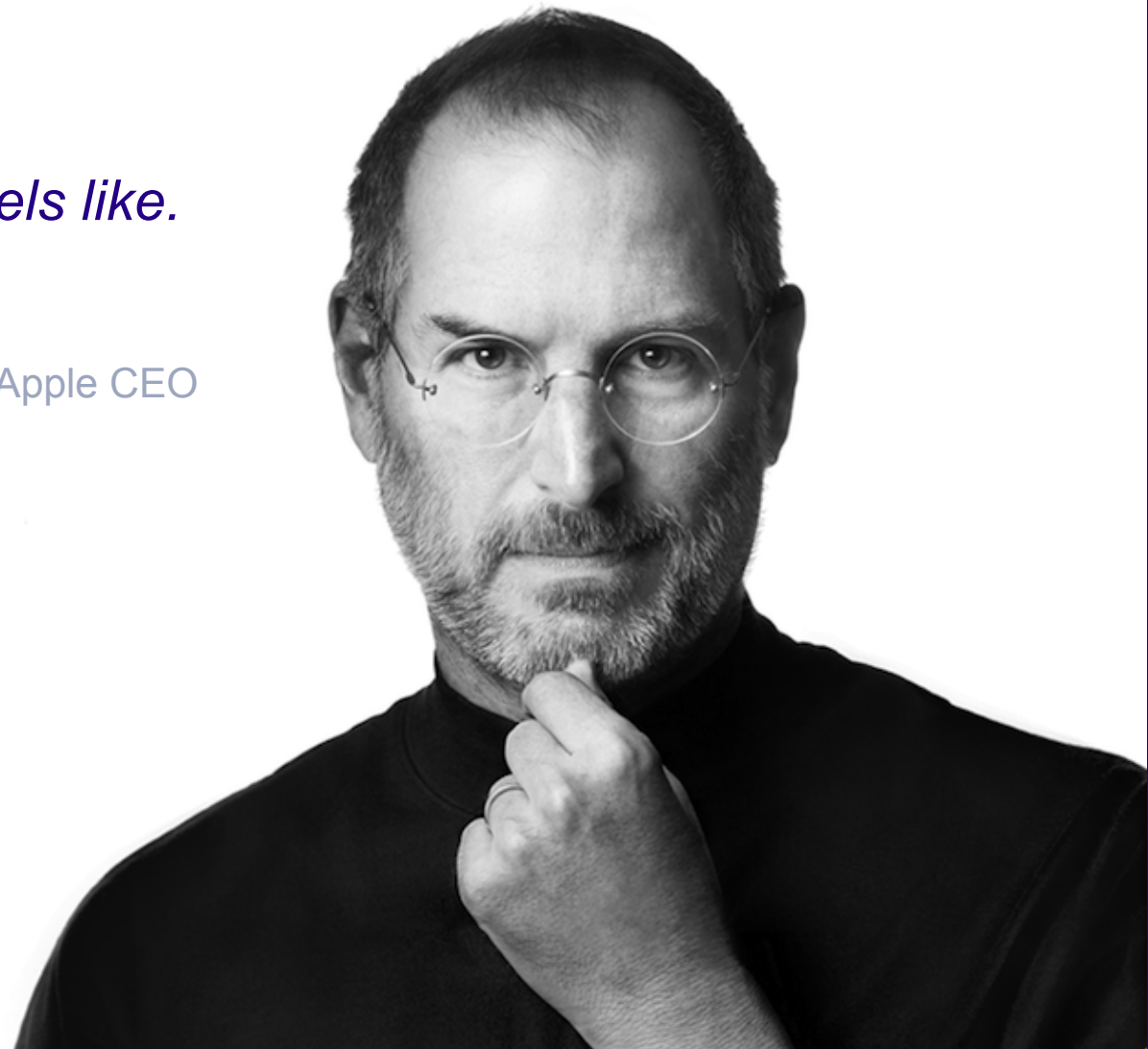
What the customer really needed

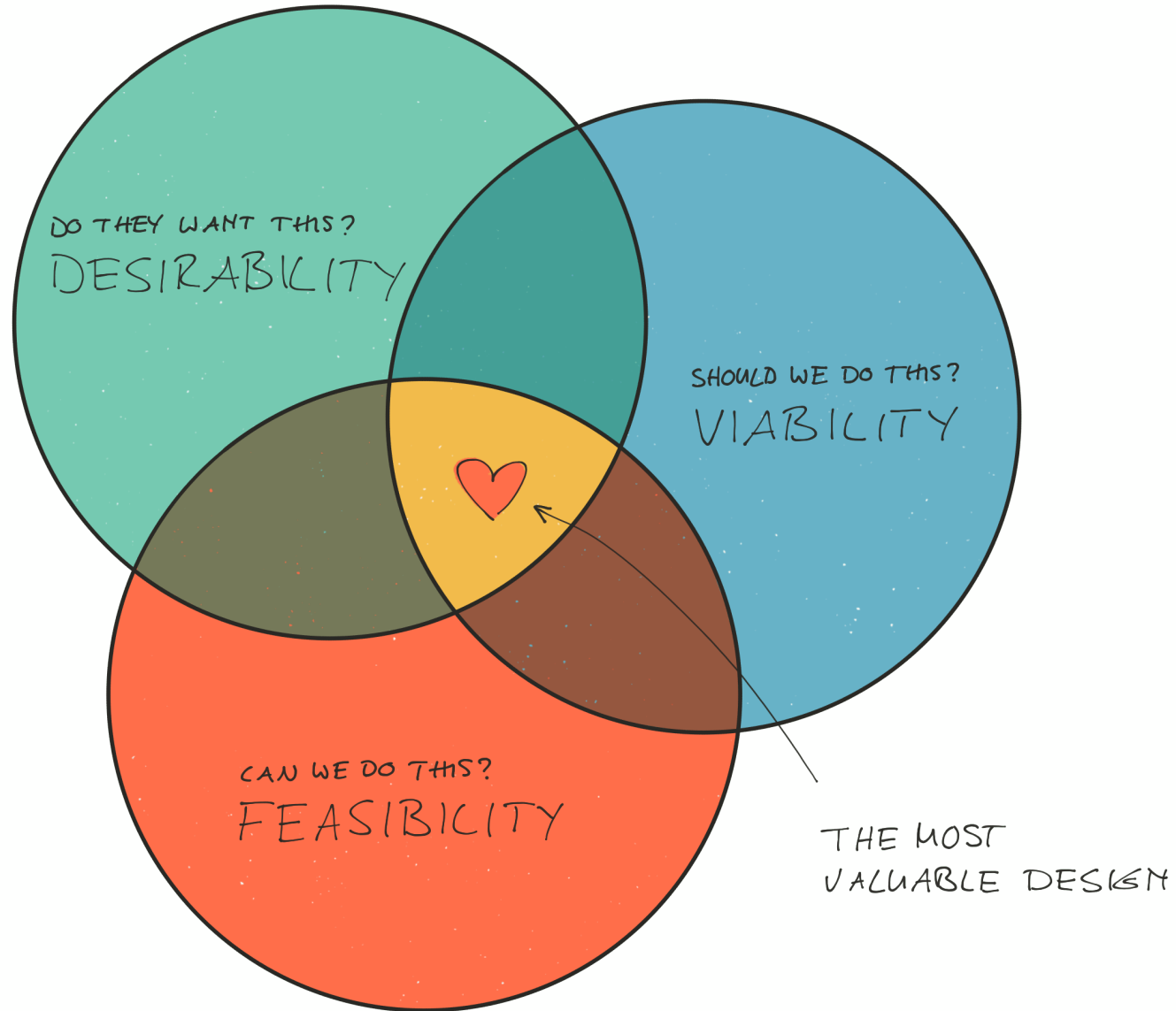


How it performed under load

*Design is not just what it looks like and feels like.
Design is how it works.*

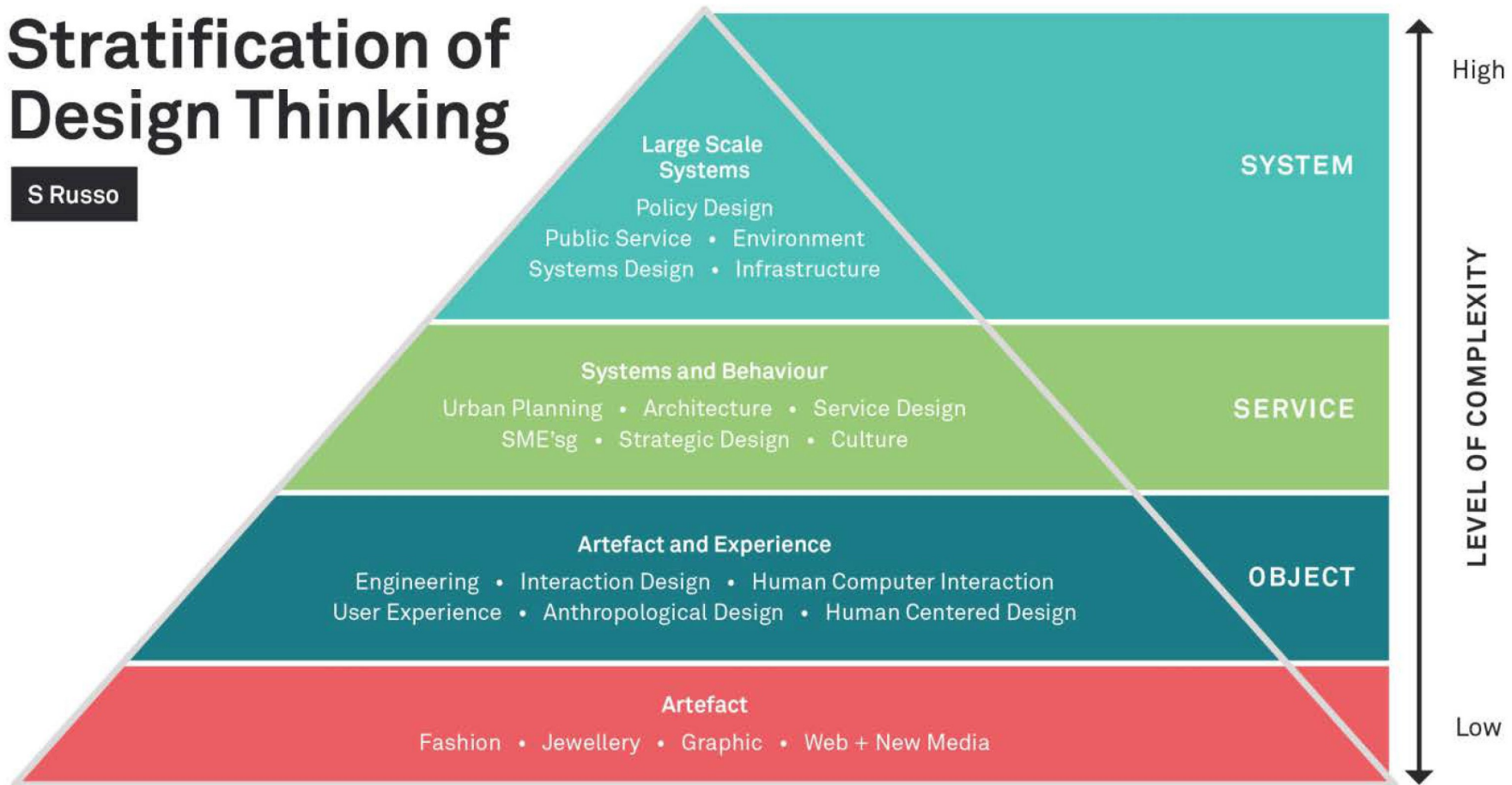
– Steve Jobs, former Apple CEO



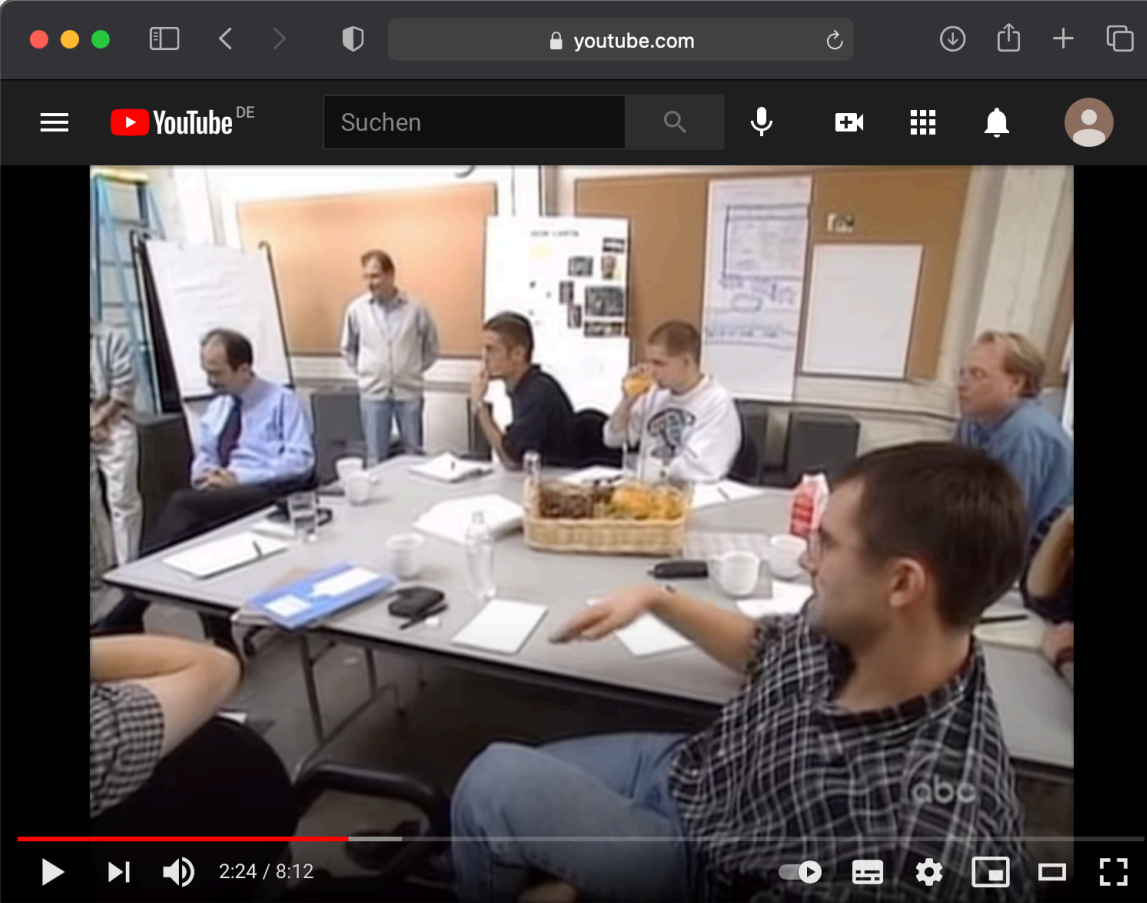


Stratification of Design Thinking

S Russo



<https://www.youtube.com/watch?v=M66ZU2PClcM>



The screenshot shows a YouTube video player interface. The browser address bar at the top displays 'youtube.com'. The YouTube navigation bar includes the logo, a search bar with the text 'Suchen', and icons for search, microphone, camera, grid, notifications, and profile. The video content shows a group of people in a meeting room. A man in a plaid shirt is pointing at a document on a table. Other people are seated around the table, some looking at the man pointing. There are whiteboards and a basket of snacks on the table. The video player controls at the bottom show a play button, a progress bar at 2:24 / 8:12, and icons for volume, play/pause, full screen, and other settings. The video title is 'ABC Nightline - IDEO Shopping Cart' and it has 1.615.866 views and was uploaded on 02.12.2009. Below the title are icons for likes (4664), comments (191), share (TEILEN), and save (SPEICHERN).



Empathize	Define	Ideate	Prototype	Test
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Discovery	Interpretation	Ideation	Experimentation	Evolution
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Understand	Diverge	Decide	Prototype	Validate
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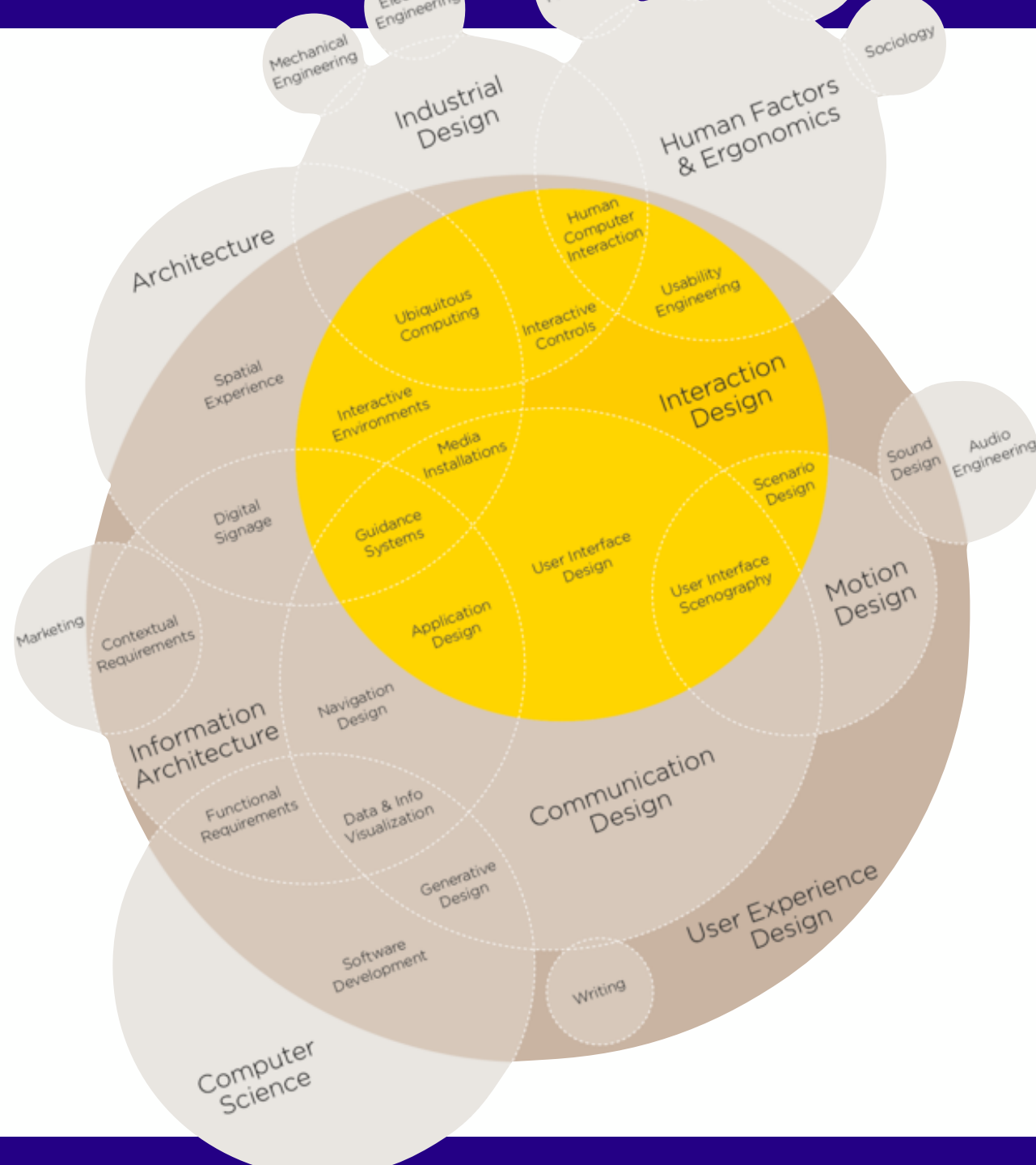
Unpack	Sketch	Decide	Prototype	Test
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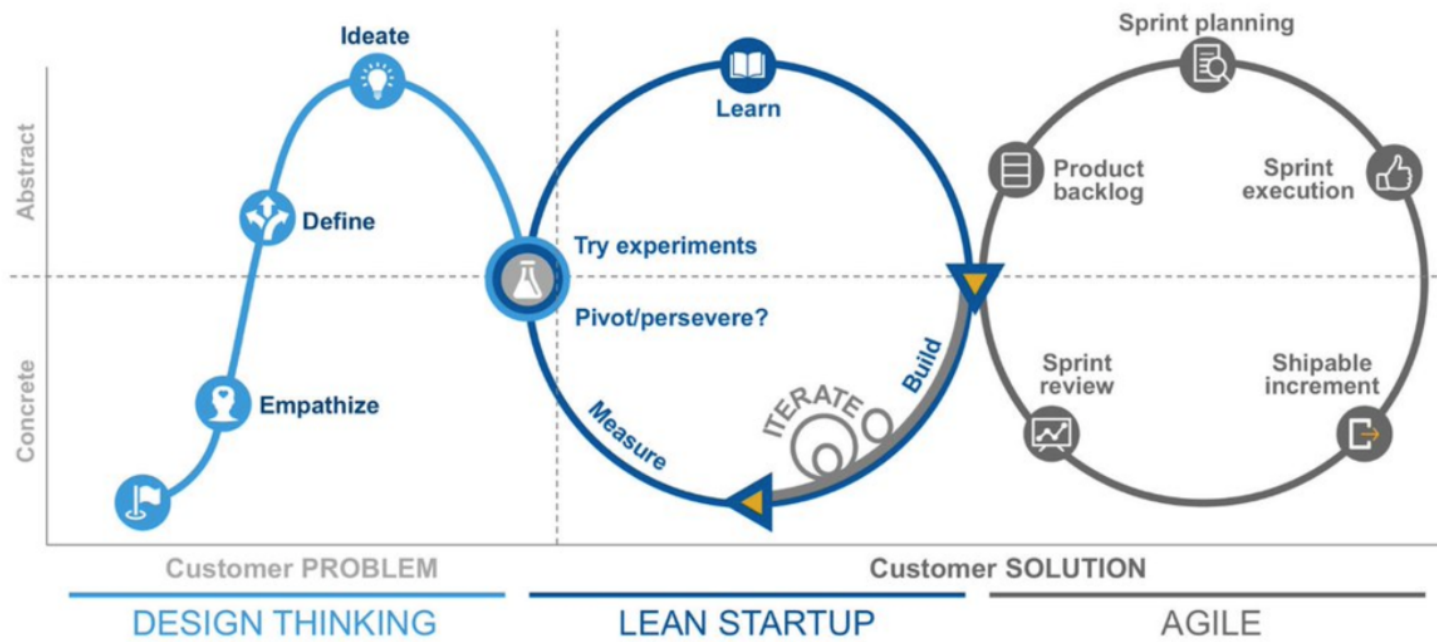


Define	Understand	Ideate	Build	Test
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Understand	Diverge	Converge	Build	Test
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1 Design Basics

Design Principles and Grids

From Books...

Grids, typography, and colour

caput ioseph: et super verticem nazareth inter fratres suos. Quasi primogeniti thauri pulcritudo eius: comus riugetosis comus illius. In ipso erit habitus generis usq; ad terminos terre. Hec sunt multitudines ephraim: et hec milia manasse. Et zabolon ait. Tenete zabolon in regno tuo: et Machar in tabernaculis eius. Populos uocabunt ad montem: ibi immolabunt victimas iusticie. Qui inundationem maris quasi lac fugerit: et thesauros abscondidos armarum. Et gad ait. Benedictus in latitudine gad. Quasi leo requirit: capiteq; brachium: et uerticem. Et uidit principatum suum: et in parte sua dedit: et repositus: qui fuit cum principibus populi et fecit iusticias domini: et iudicium suum cum israhel. Dan quoq; ait. Dan celsus leo: sicut laqueus de basan. Et nephtali dixit. Nephtalim abundantia preteretur: et plenus erit benedictionibus domini. Manasse et meridiem possidebit. Aser quoq; ait. Benedictus in filijs aser: dicit placens fratribus suis: et intingat in oleo pedem suum. Sicut et res calicamentum eius. Hinc dicit inueniens tue ita et fructus tua. Non est alius ut deus redissim q. Aserior celi auxiliator natus. Magnificencia eius discrucunt nubes: habitaculu e? sursum: et subter brachia serupetena. Sicut a facie tua inimicum: dicitq; cetera. Habitabit iser cetera: et solus. Qui iacob in terra fructu: et vini: reliq; caligabunt rore. Beatus tu israhel. Quis similis tu: popule qui saluatis in domino. Cuius auxiliu tu: gladius glorie tue. Regabunt te inimici tu: et rorem colla calcabis. *cap. xxxviii*

Ascendit ergo moyses de campo sabbus moab super montem uebo in uerticem phasga contra ihericho: ostenditq; ei dominus omnem terram galaad usq; dan: et uniuersum nephtalim terraq; ephraim: et manasse: et omnem terram usq; ad mare nouissimum: et australem partem et latitudinem campi ihericho ciuitatis palmorum usq; segor. Dixitq; dominus ad eum. Hec est terra pro qua iuravi abraham: et iacob dicens. Et ueni nunc dabo eam. Vidisti eam oculus tuus: et non transibis ad illam. Nunc autem est ibi moyses seruis domini in terra moab iubente domino: et sepe iurauit eum in ualle reze moab contra phogor: et non cognouit homo sepulcrum eius usq; in presentem diem. Moyses enim et uiginti annoru erat quando moro? Et sic caligauit oculis eius: nec uides illi? mori sunt. Stetit enim cum filijs israhel in campeis moab triginta diebus: et completi sunt dies pland? lugentium moysen. Iosue uero filius nunc repletus est spiritu sapientie: quia moyses posuit super eum manus suas. Et obedierunt ei filij israhel: feceruntq; sicut precepit dominus moysi. Et non surrexit propheta ultra israhel sicut moyses que uollet dominus: facere ad faciem in omnibus signis atq; portendis que per eum misit ut faceret in terra egypti pharaoni et omnibus seruis eius: ueneruntq; uere illi: et cunctam manum robustam magnamq; mirabilia que fecit moyses coram uniuerso israhel. *cap. xxxix*

Explicat dicitur nomiu.

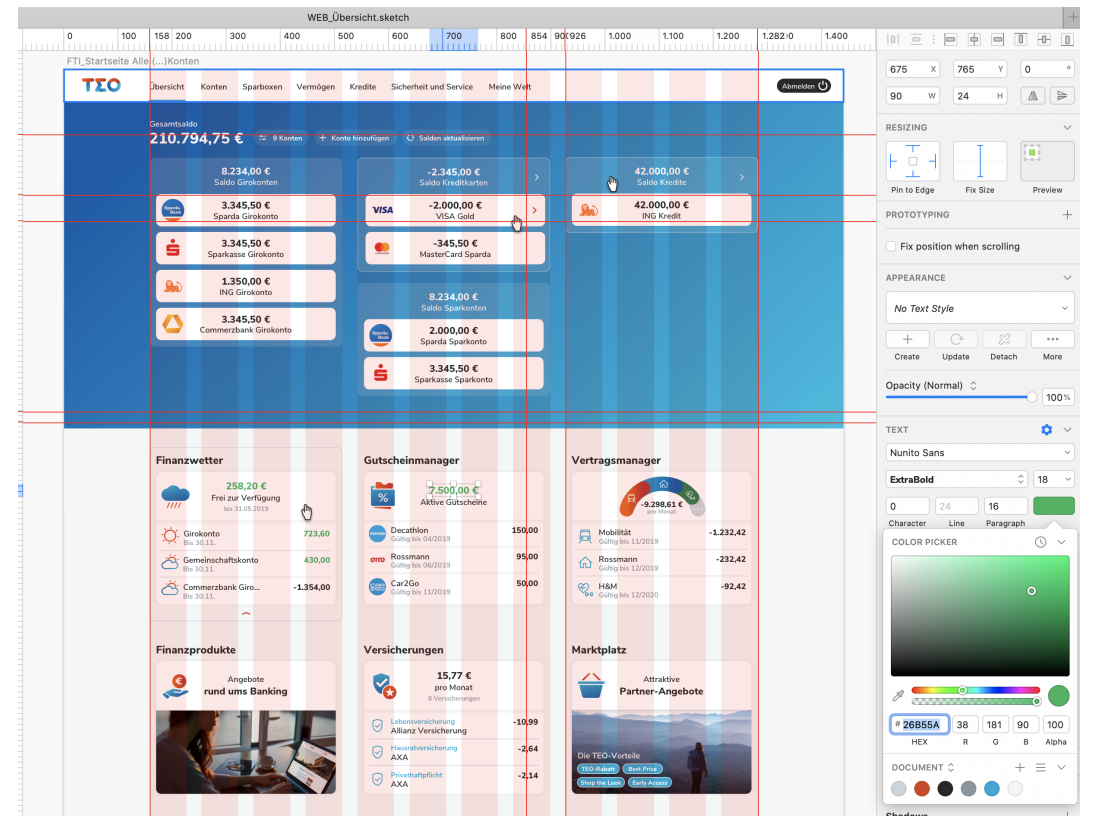
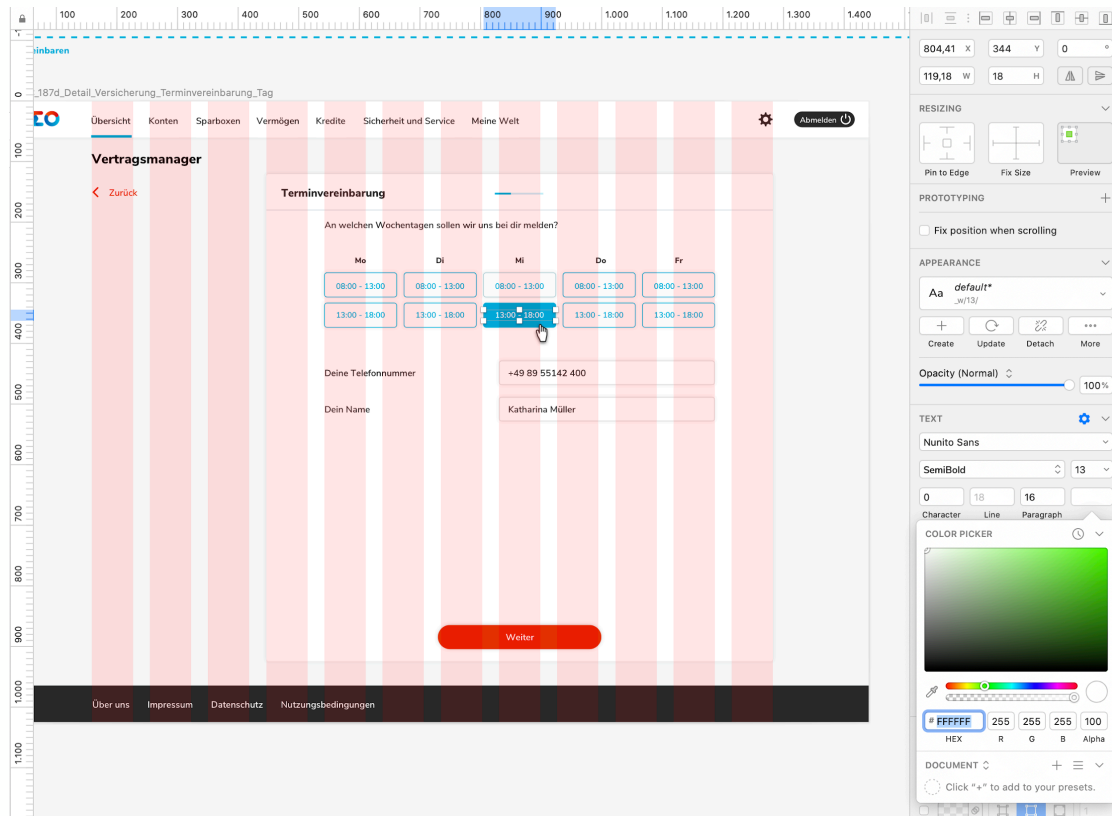
Incipit prologus bti iero: p bti in libro ioseph. **Q**uoniam uero p rathaco moysi uelud p rati fenore liberati ad ihelum fluminae manu mittim? que heder iohne lertum id e iohne filiu nunc uocet: ad iudiciu libri que ioythim appellat: ad ruti q; et heder q; iohne nominibus efferunt. **M**ouemusq; le dorem ut silua hebraicoru nominu: et distinctiones per mēbra diuinas diligens scriptura cōseruet: ne et nosce labor et illius studiū percat. Et ut in pmo qd sepe restat? sum sciat me nō in reprehensione uereū noua eūdere sicut amia mei teimā dicit: sed p uili portione offere lique uere hominibus q; tamē nra dēctat: ut p grecos egyptios q; et sinupu: et labore maxio indigit: editionē nram habēt. Et scubi antiquos uoluminum lēione dubitatur: hēc illis cōfētes inueniant qd requirunt: Maxime tū apud latinorū sint exemplana quorū codices: et u uisquisq; p archieo suo uel addidit: uel subtraxerit: et uiliū est: et uisq; nō possit uerū esse qd dissouat. Unde esset arcuato uulnere cōtra nos insingere scriptus: et sanctū op? uenerata cōpre ligua dēstiat: uel suscipio si placet uel deuenio si displicet: non in eceq; illos uelūū. **D**s tūi abundauit malicia: et ligua tua cōnabat dolos. **H**edes adūsus fratrem nūi loq; hario: et adūsus filiū matris tue pmetas scan dāli: her fecisti et ratiū. **E**xtimasti inique te ro tui filis: arguā te et ratiā illa oca facit uā. **Q**ue tūi audimms uel legimms uel nos laborādo sū dāre: et alios detrahendo laborare: dolet iudeos q; calumniandi eis et

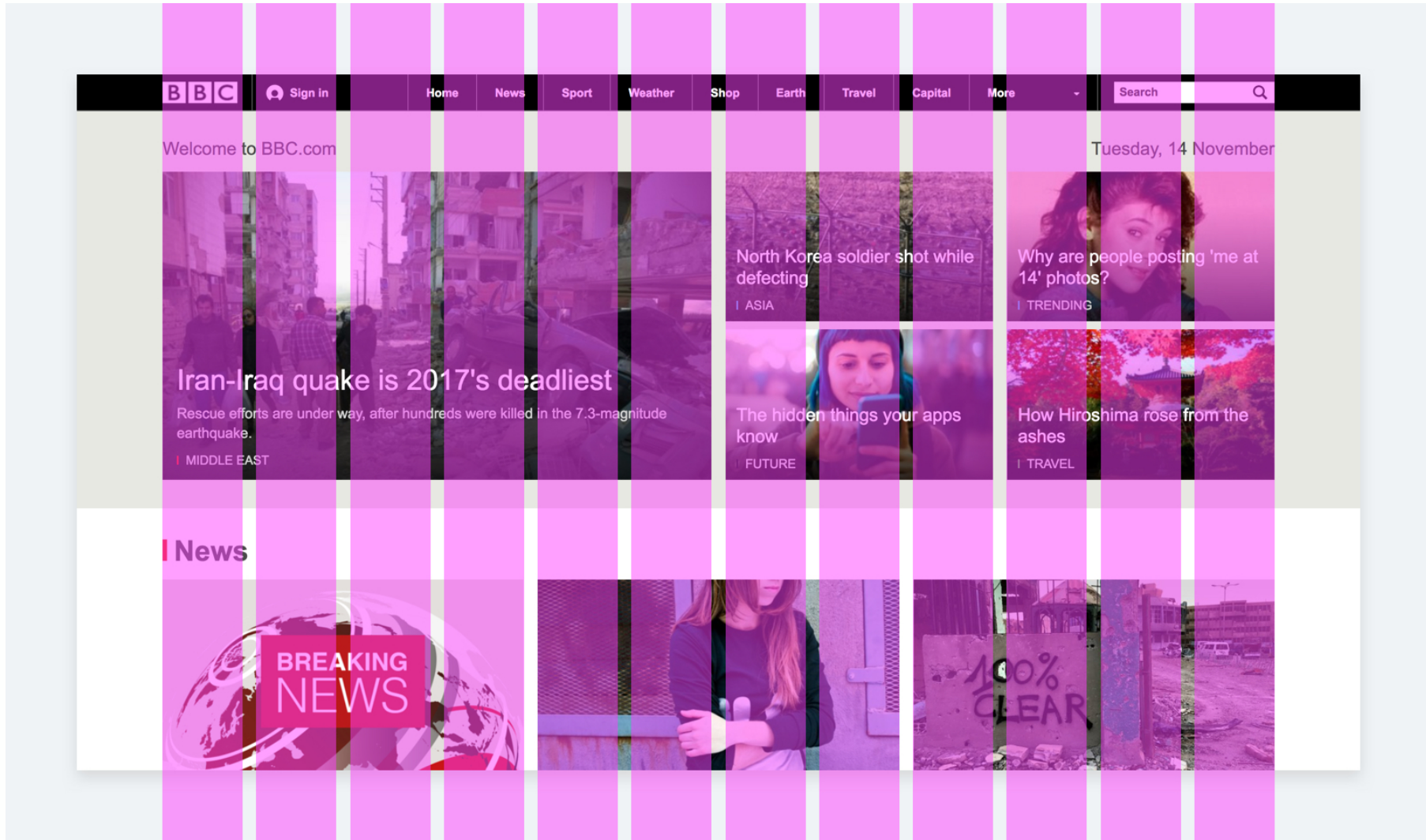
icidendi cisti anos sic ablata occasio: et ecclesie homines id despiceo rimo lacere unde aduersarij rōq; anteat: Quod si uerus sig tantū inter pretatio placet: q; michi nō displicet: et nichil egea red pēdū putat: cur ea q; sub asterisco: et obliis uel addita sunt uel āputata legūt: et nō glige? **Q**uare danielē iuxta theodoniois cōllationē ecclesie susceperit: **L**ur origenē miratē et eusebiū pāphili: cūctas editiones h. militer distictes: **A**ut q; fuit stulticia: postq; uera dixerit: ptere q; fallia sunt? **U**nde autē in nouo testamēto p bare poterit assumpta testimonia: q; i libri uerebms nō habemur: **H**ec dicitur: ne omnino calūniantibz rāctē uideant. **L**ectū post sancte paulē dominionē cui? uita uirtutis exāplū est: et hos libros quos eusebio uirgini cisti negare nō ponit: dēceam? dū spiritus? hos regit actus. **p**hēreā explanatio ni incubere: et omnium iam diu opus quodam post liminio reprec: prefer tū tū et ammirabilis sandusq; uir panmachius hēc idē licetis hāgit: et nos ad partā scilicet dōmōro? hēreā cō? sūctā dēam? auz cūctē. **Explicat prologus. Incipit lib ioseph. C. 1.** **I**actum ē post moysen moysi serui dūi: ut loqueret dñs ad iohne filiu nūi nūctum moysen: et dicit ei. **M**oyses seruis meus mortuus est. Surge et rati israhel: et rati tu et omnis popo reum: in terra qua dabo filijs isrl. **O**mnē locū que calcauerit uestigū pēis uiri uobis mādā: sicut locū? sum moysi. **A** dēctē et libano usq; ad flumina magnū ratiāre: dñs terra egyptū

...to Digital Products

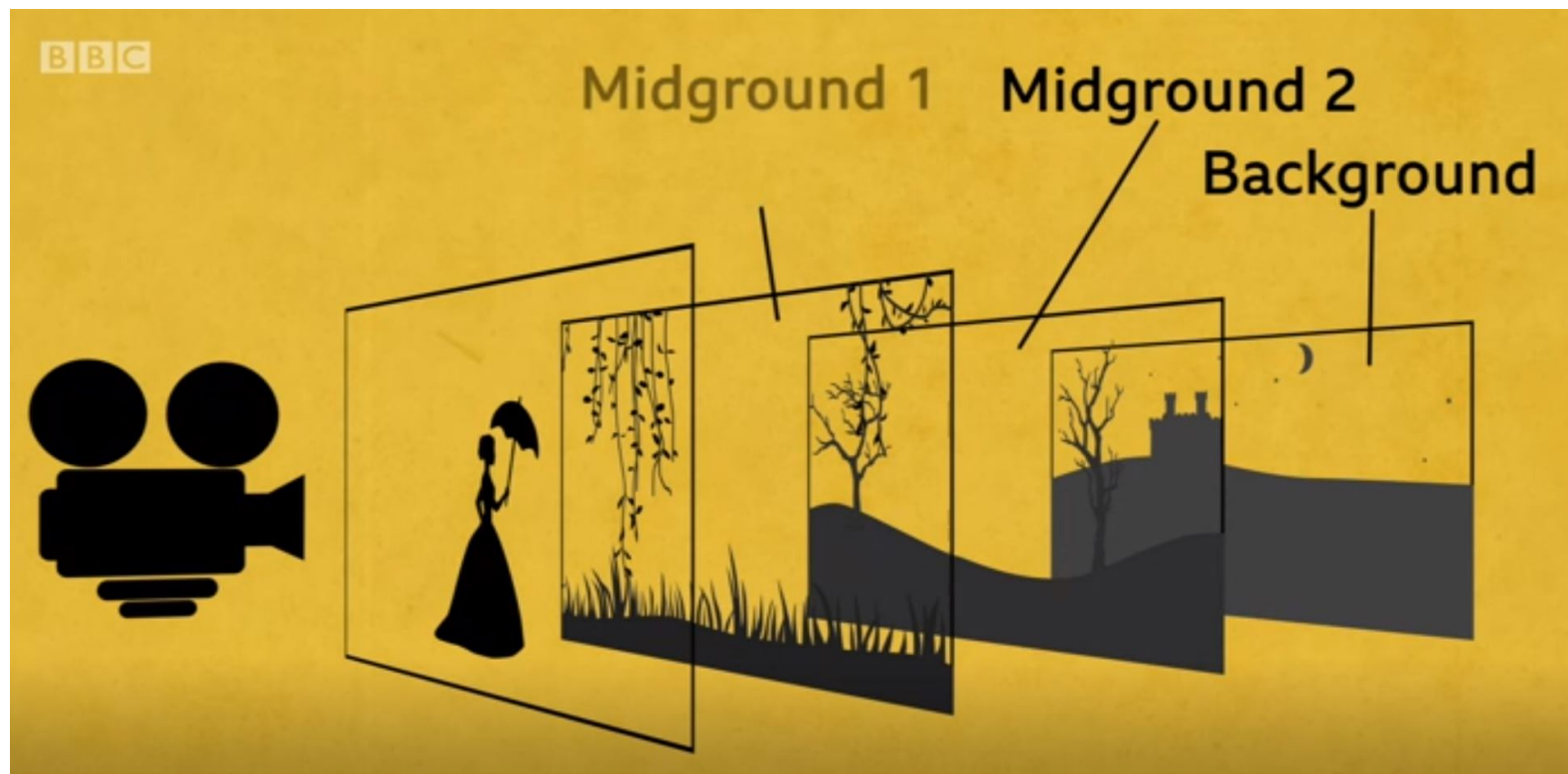
How is design for digital different?

Grid, typography, colors...same but different

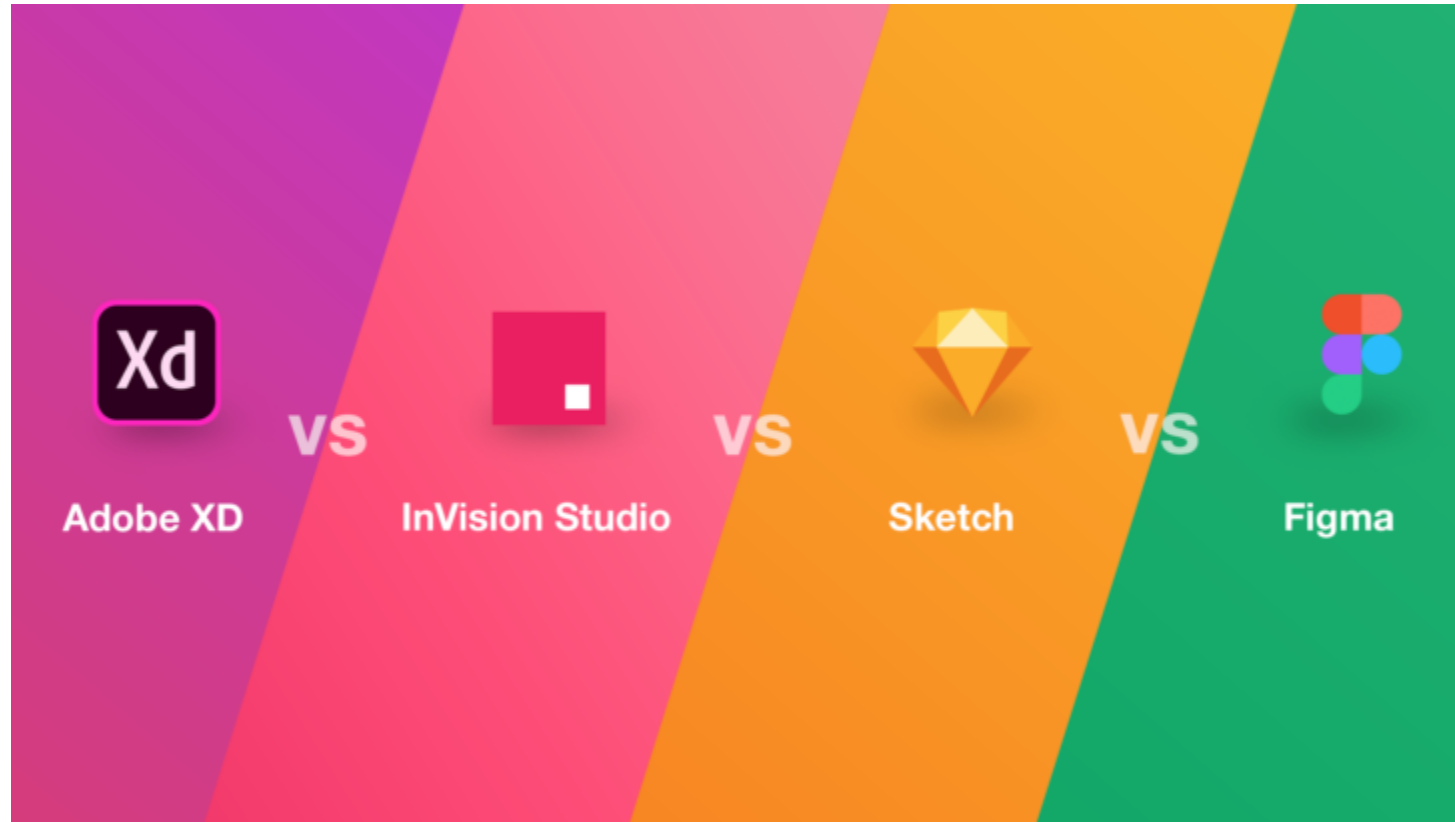




Working with layers



Digital design tools



UX vs UI

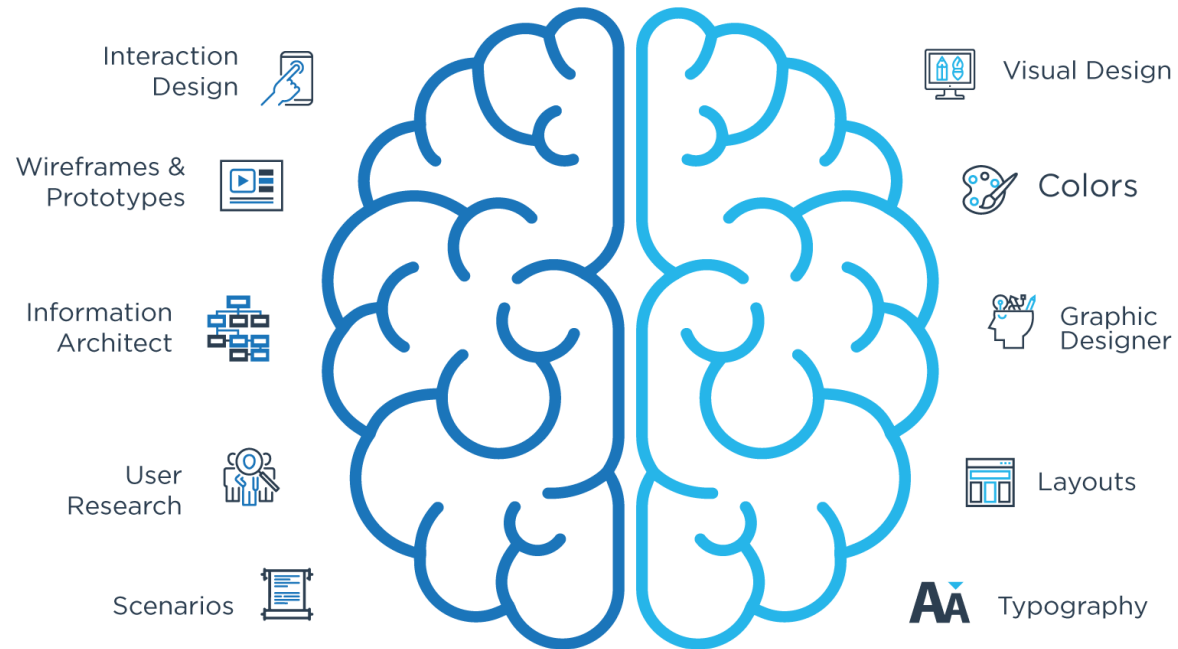
Knowing the difference Between

UX

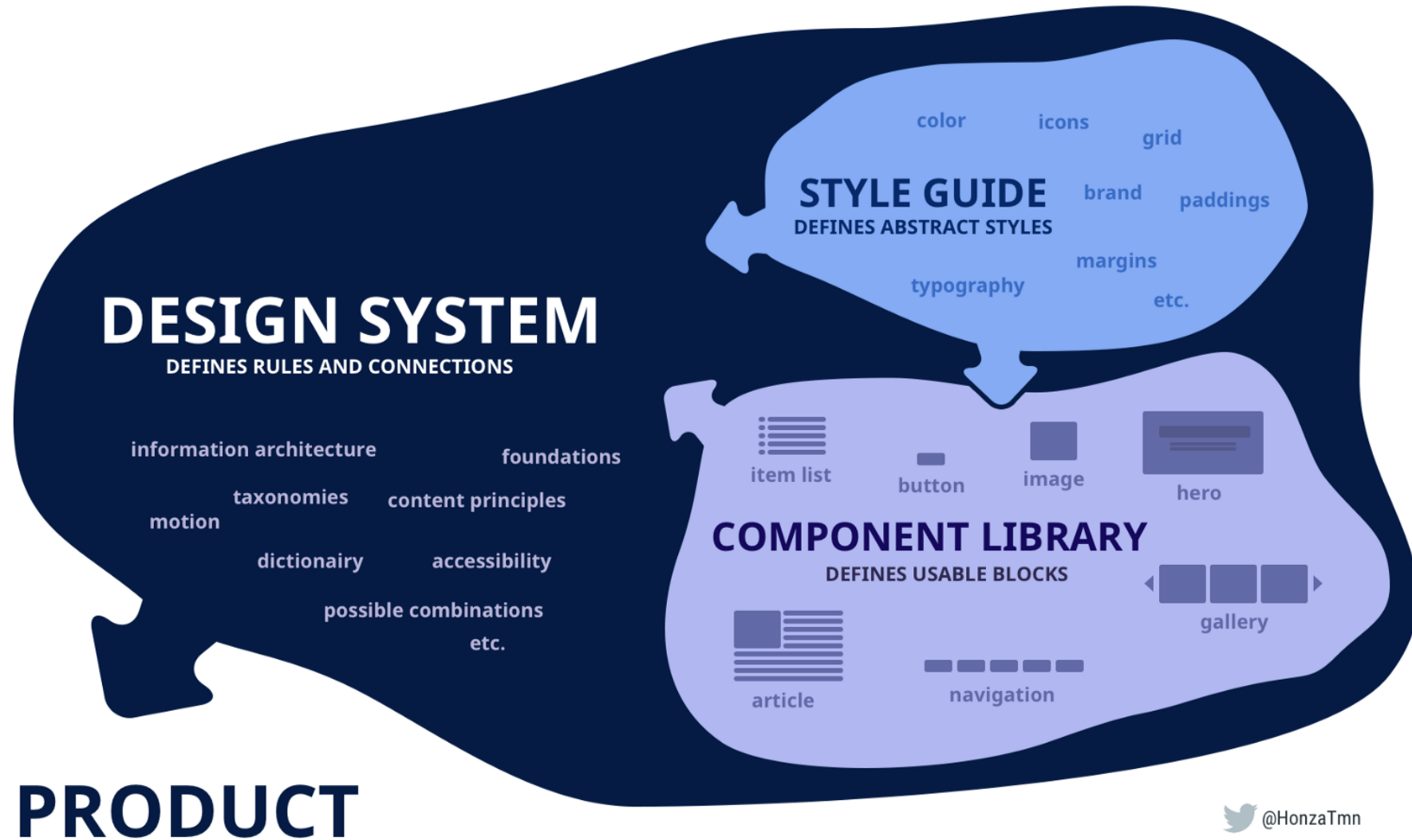
&

UI

Design



What are design systems?



Native app platforms

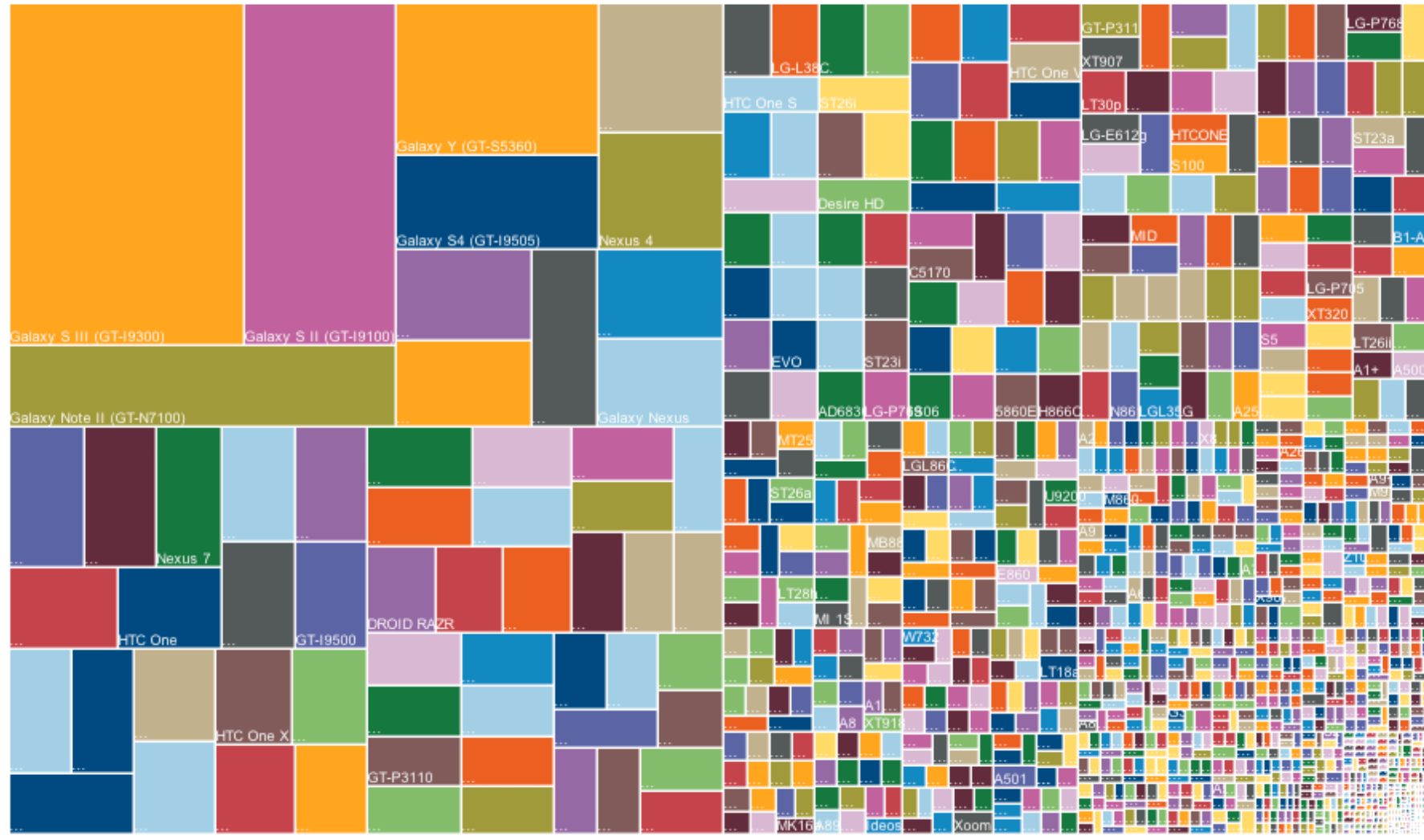


iOS



Android

Device fragmentation

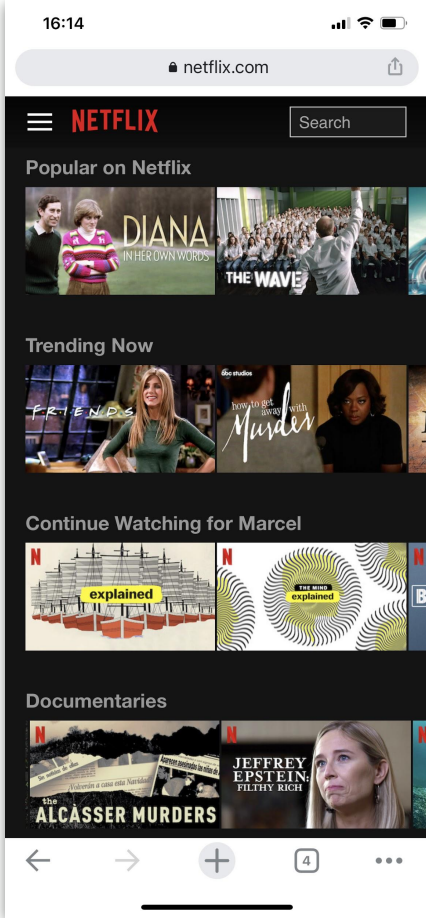


How is an app different from a website?

App



Website



Features web vs. native

Feature	Website	Native app
Works offline	✗ (not by default)	✓
Camera/camera roll	✗ (camera is possible with permissions)	✓ (with permissions)
Geolocation	✓ (not in the background, though)	✓ (with permissions)
Contacts & address book access	✗	✓ (with permissions)
Bluetooth	✗	✓
Accelerometer	✗	✓
Microphone	✓ (with permissions)	✓ (with permissions)
Touch/Face ID	✗	✓ (with permissions)
Push notifications	✗ (can be done, but not as intuitive)	✓ (with permissions)
ML/AI features	✗	✓

Types of devices



How Long Does Apple Support Older iPhone Models?

Historical iOS compatibility of every iPhone model to date



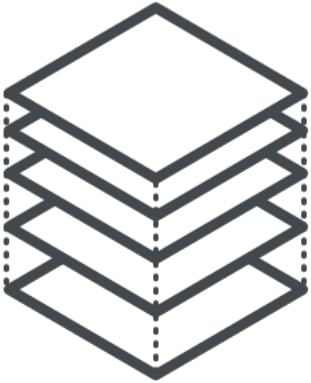
Source: Apple



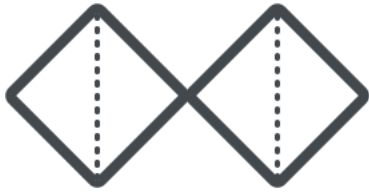
statista

ANDROID PLATFORM VERSION	API LEVEL	CUMULATIVE DISTRIBUTION
4.0 Ice Cream Sandwich	15	
4.1 Jelly Bean	16	99.8%
4.2 Jelly Bean	17	99.2%
4.3 Jelly Bean	18	98.4%
4.4 KitKat	19	98.1%
5.0 Lollipop	21	94.1%
5.1 Lollipop	22	92.3%
6.0 Marshmallow	23	84.9%
7.0 Nougat	24	73.7%
7.1 Nougat	25	66.2%
8.0 Oreo	26	60.8%
8.1 Oreo	27	53.5%
9.0 Pie	28	39.5%
10. Android 10	29	8.2%

Digital Product Design



1
Elements



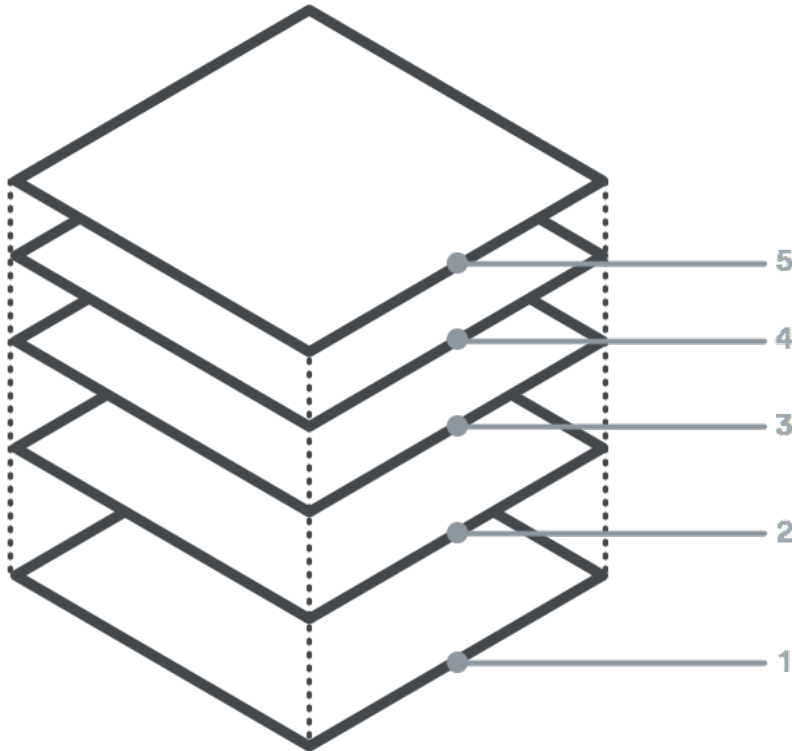
2
Stages



3
Tools

2 Elements of User Experience Design

The five layers of UX Design



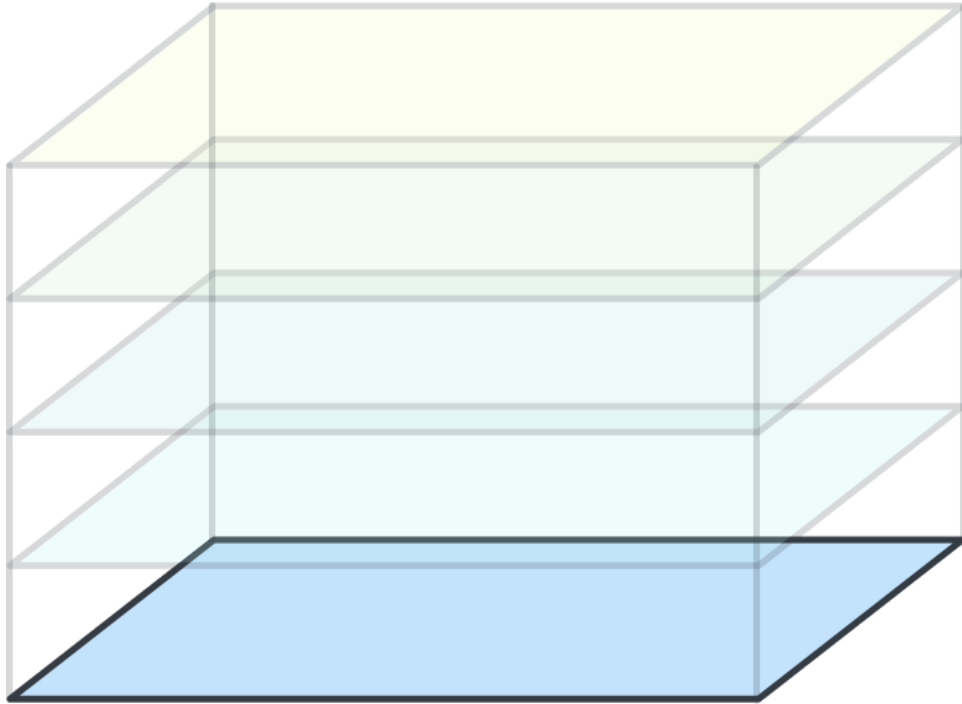
① **Strategy**
People Problem &
Business Goal

④ **Skeleton**
User Interface
& Navigation Design

② **Scope**
Feature & Content
Requirements

⑤ **Surface**
Visual Design &
Motion Design

③ **Structure**
Interaction Design &
Info Architecture



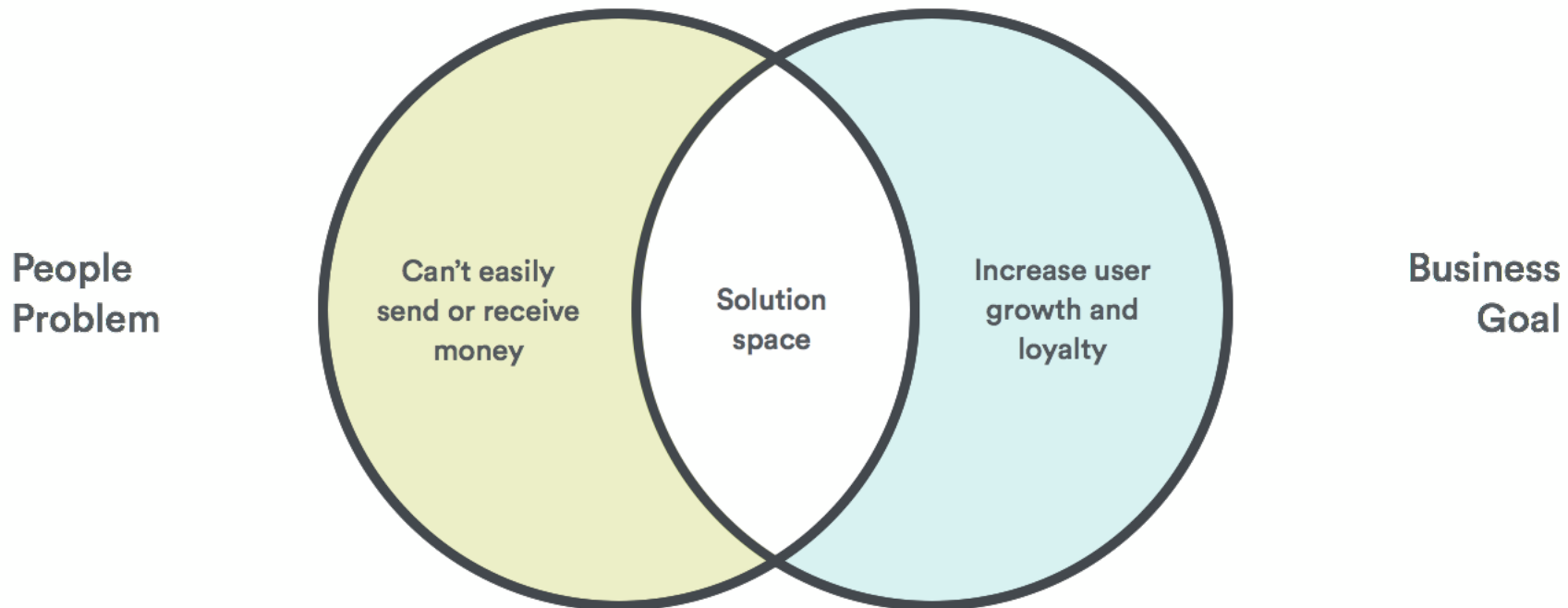
Strategy

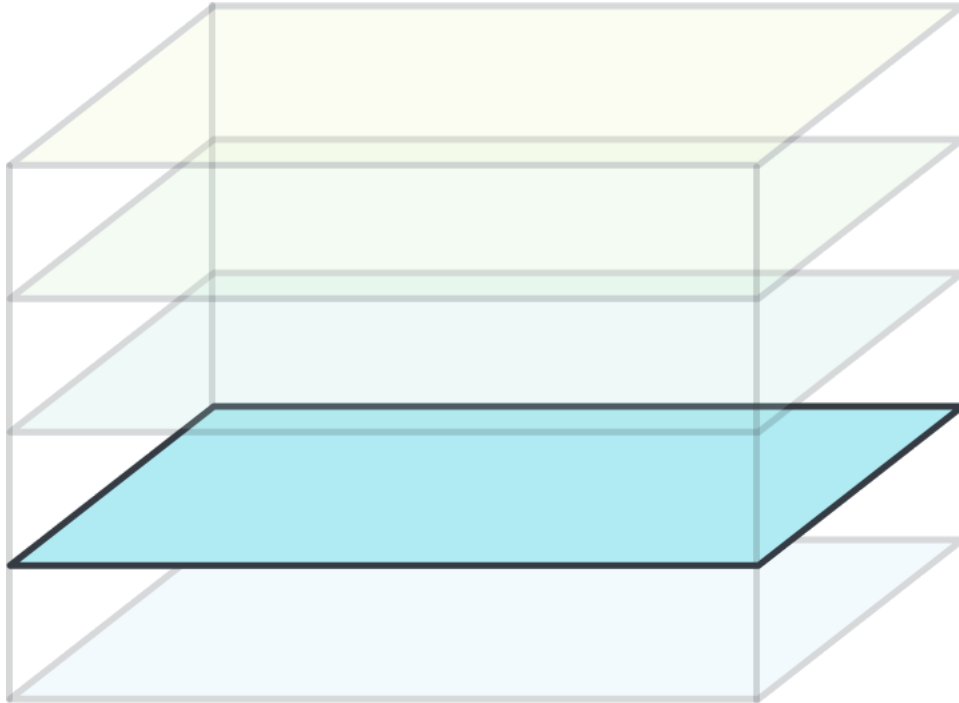
User Needs

Product Objectives



The reason for the product — Why we create it, who are we doing this for, why people are willing to use it, why they need it. The goal here is to define the user needs and business objectives.





Scope

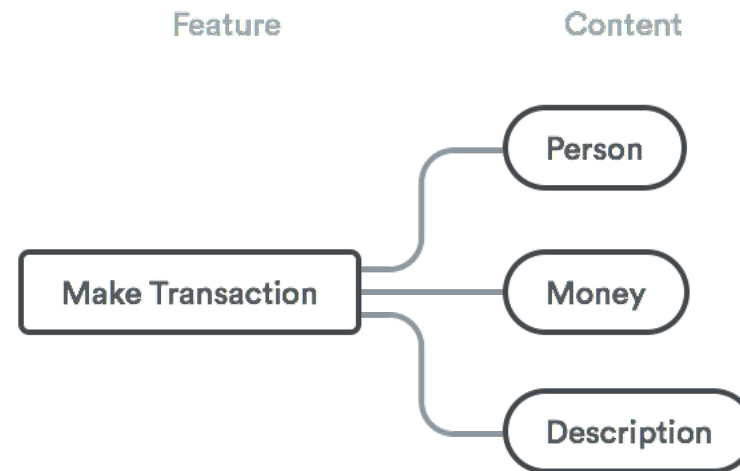
Functional Specifications

Content requirements



Scope

Functional Requirements: It's the requirements about the functions, or features in the product, how features work with each other, and how they interrelate with each other. These features is what user need to reach the objectives.

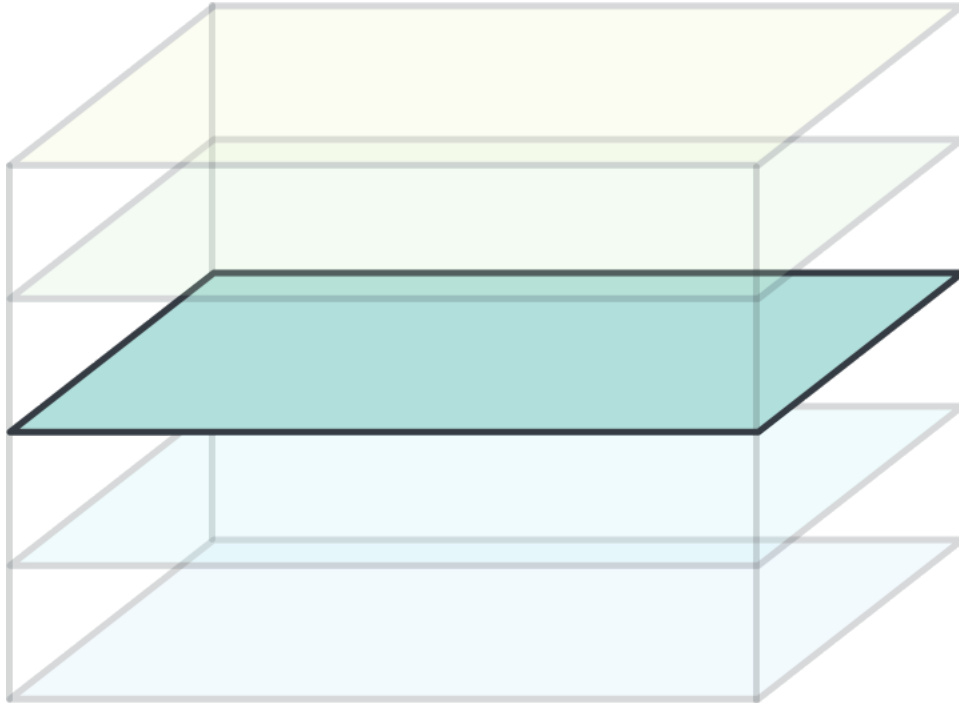




Scope

Content Requirements It's the information we need in order to provide the value. Information like text, images, audio, videos, ...etc. Without defining the content, we have no idea about the size or time required to complete the project.





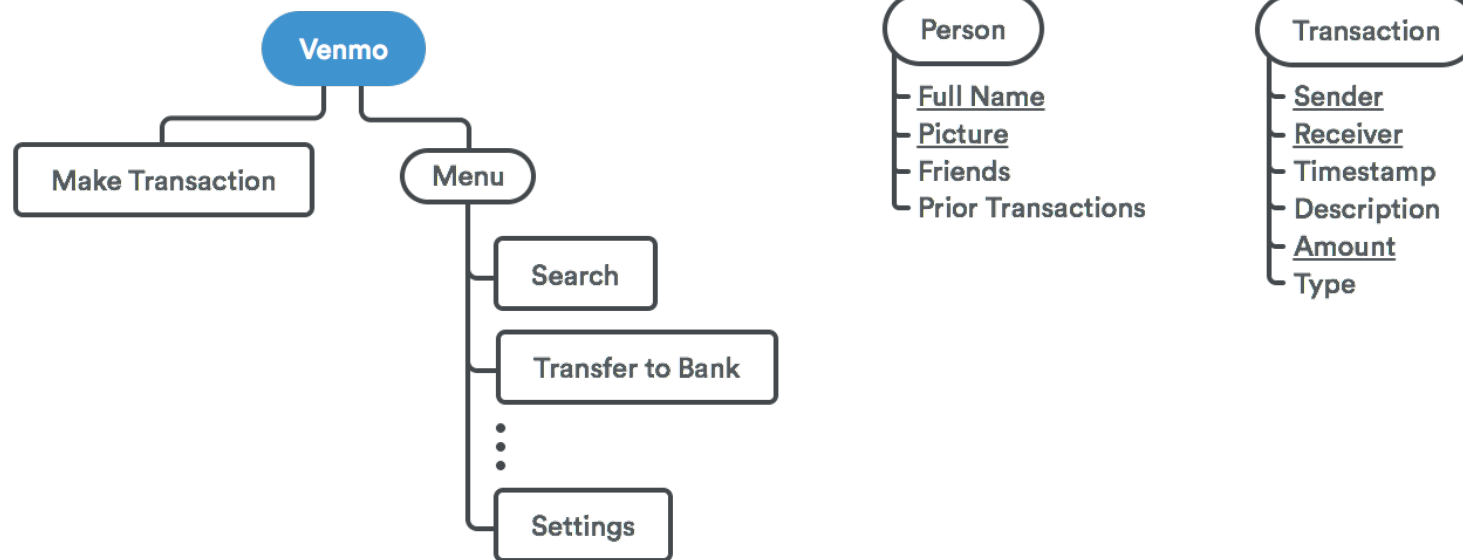
Structure

Information Architecture

User Flow



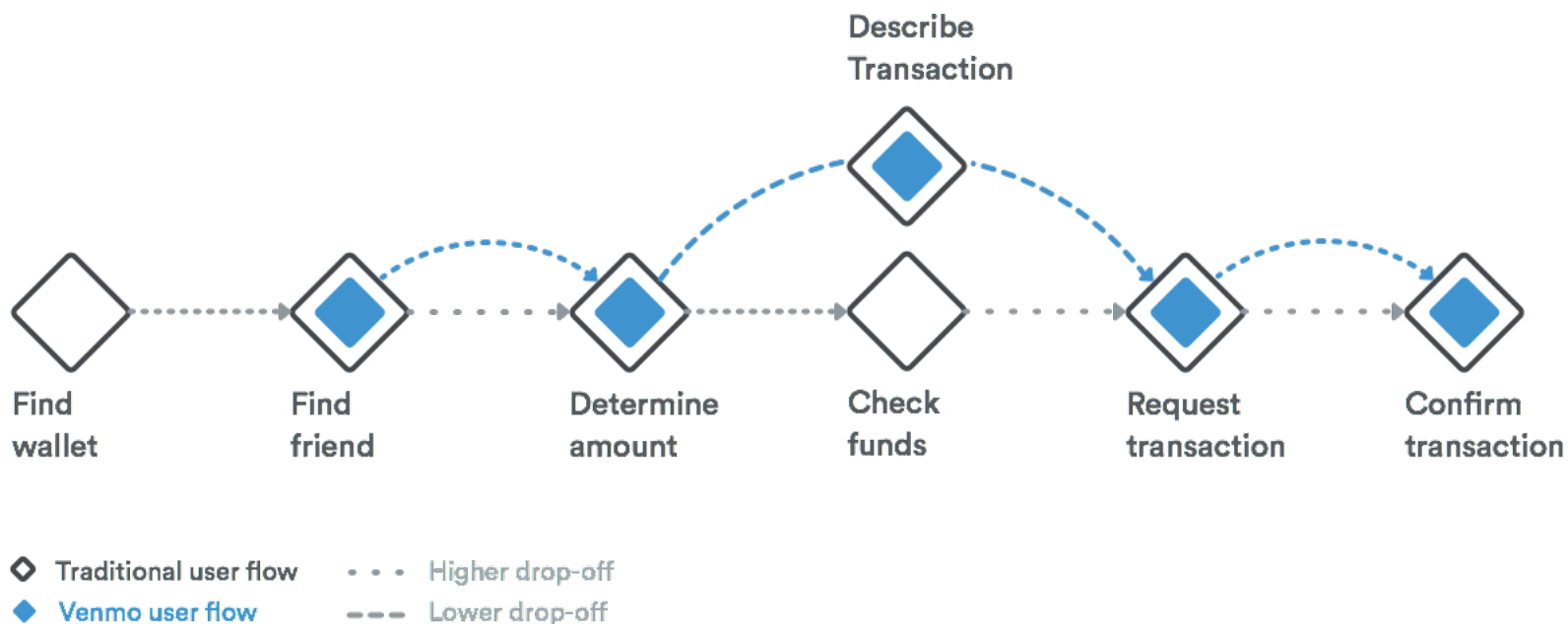
Information Architecture: Given the content requirements, it defines relationships between different entities.

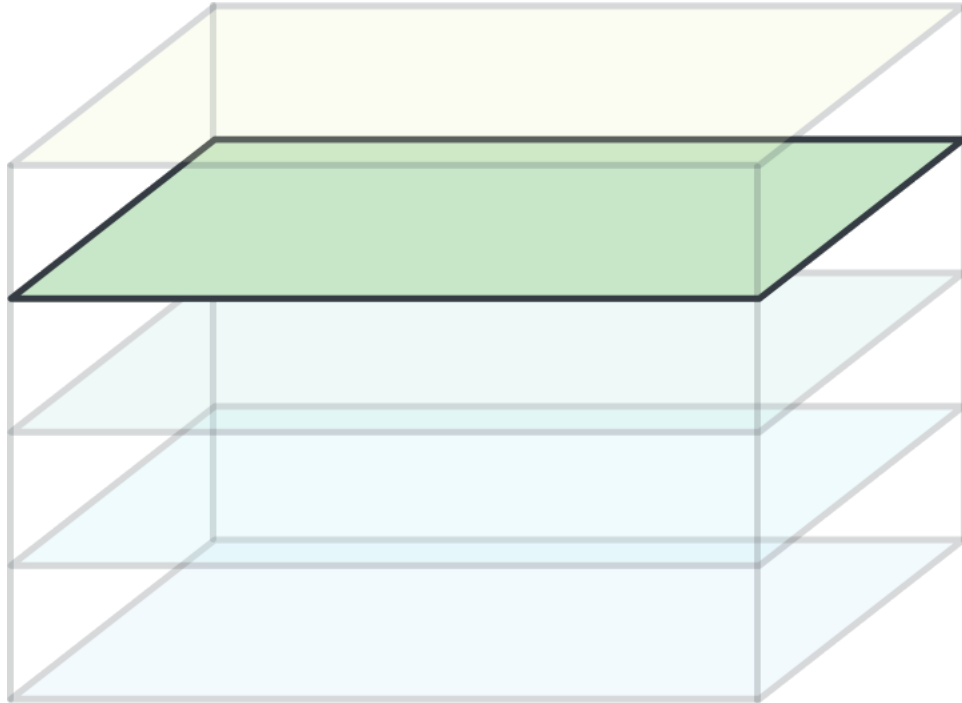




Structure

Interaction Design: Given the functional requirements, it defines how user can interact with the product, and how the system behaves in response to the user interactions.





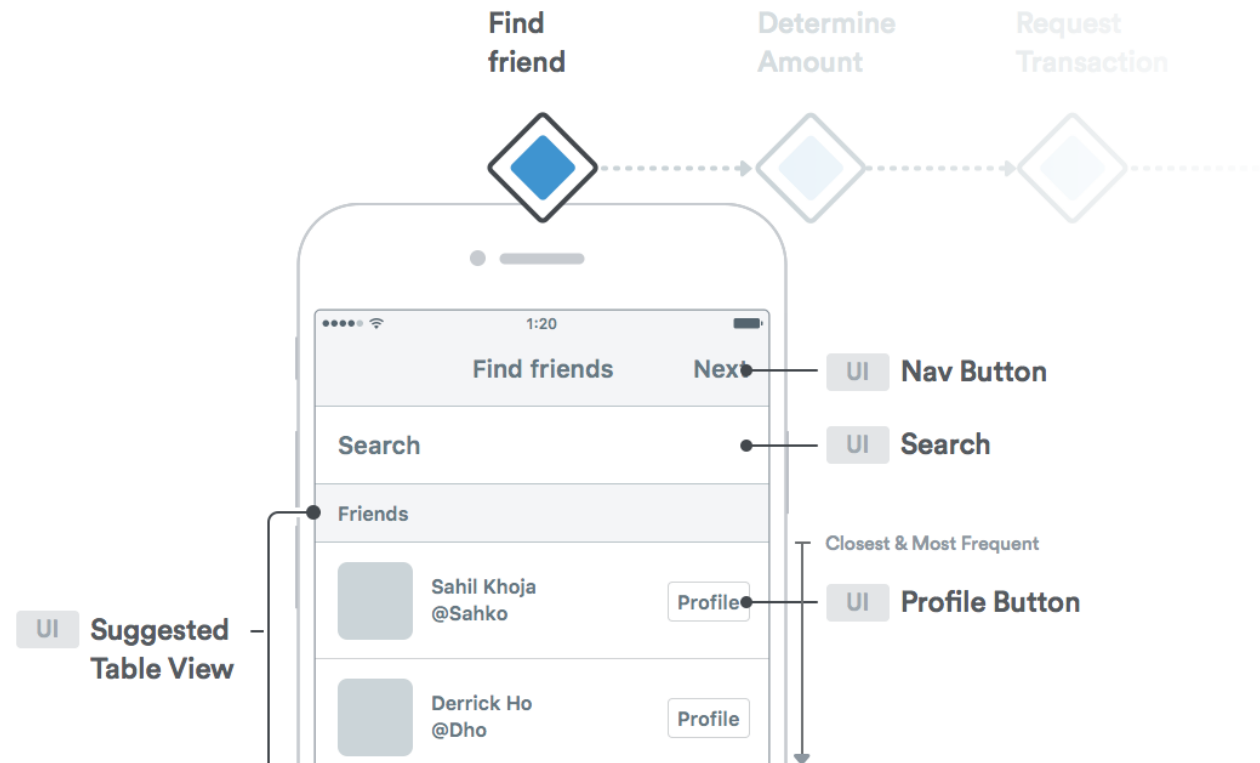
Skeleton

Interface Design

Information Design



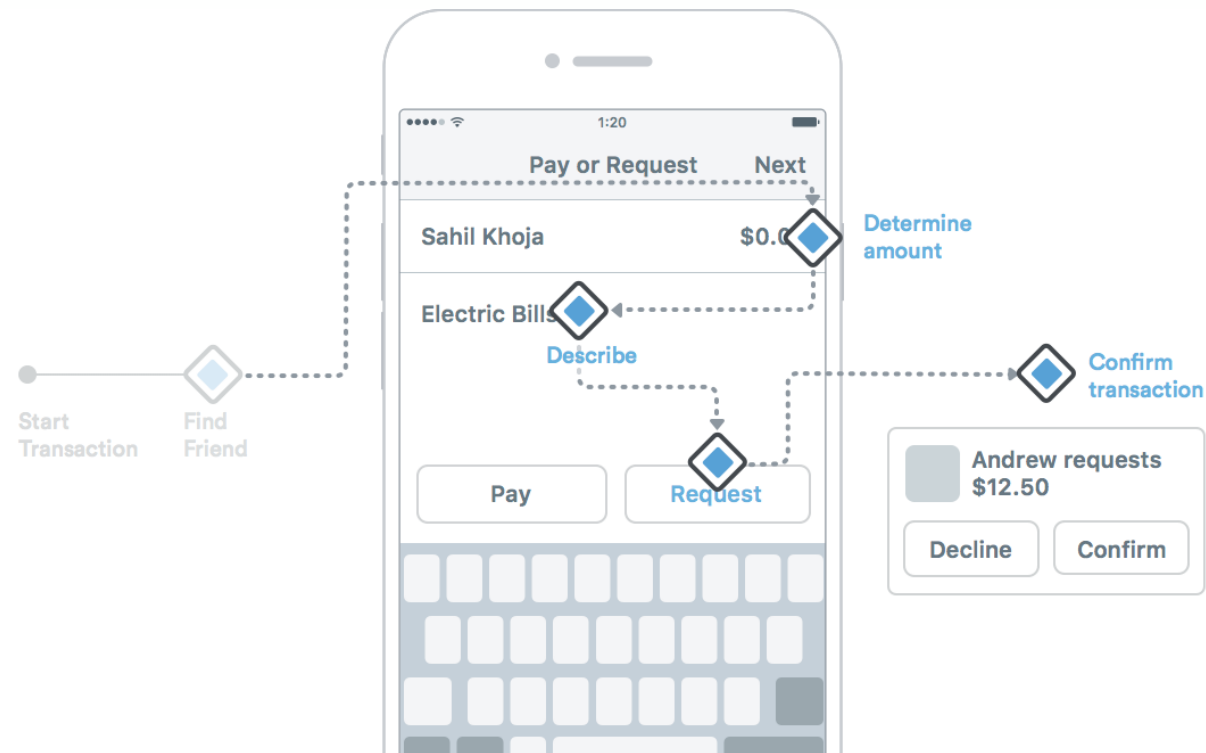
Interface Design: Presenting and arranging interface elements to enable users to interact with the functionality of the system.

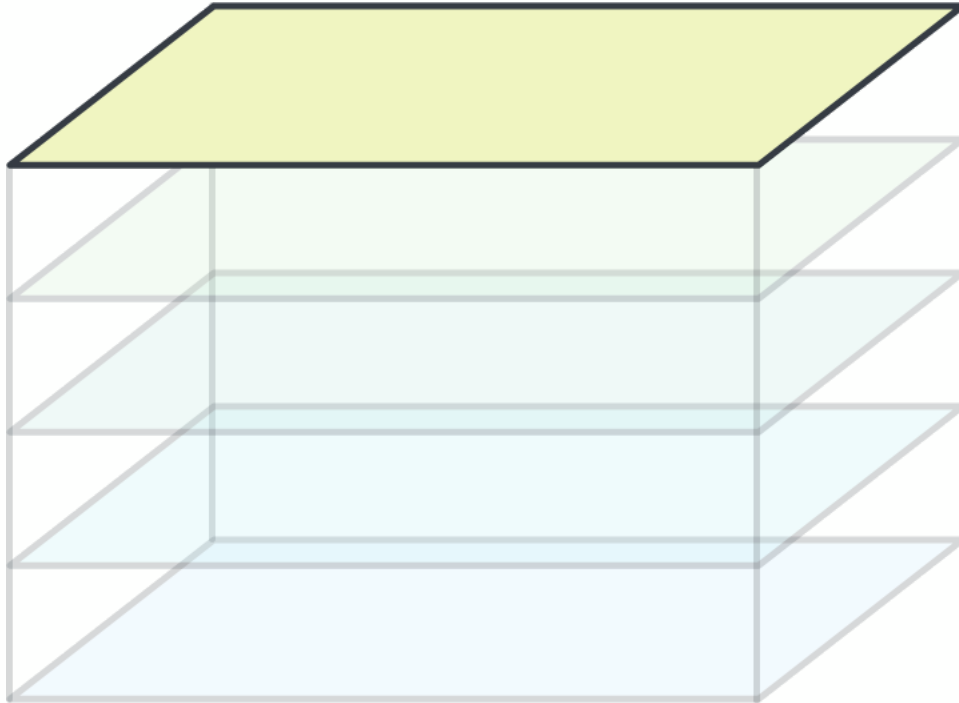




Skeleton

Information Design: Defines the presentation of information in a way that facilitates understanding. Also includes Navigation through the product.





Surface

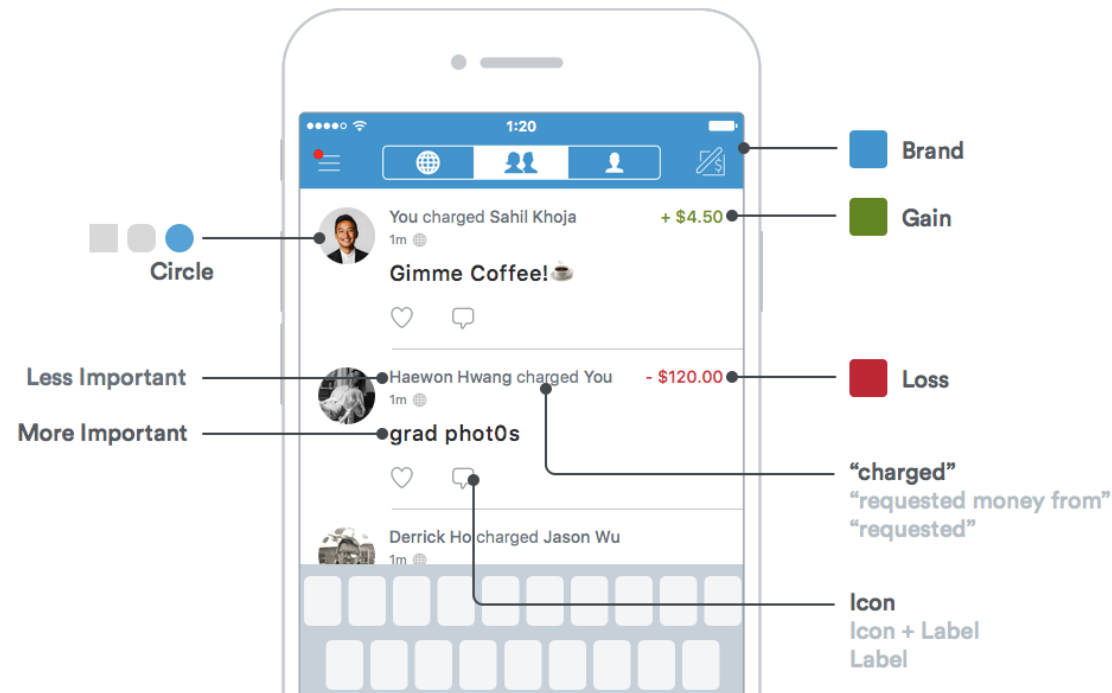
Sensory Experience

Visual Design



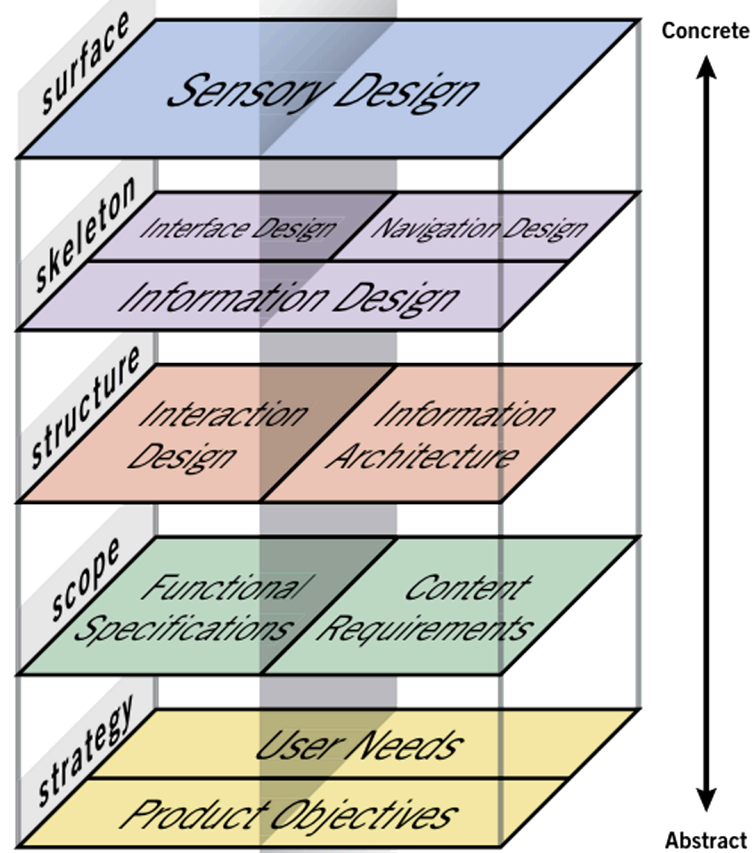
Surface

Visual Design: Appearance of content, controls, which gives a clue of what user can do, and how to interact with them. It should make things easier to understand, increase cognitive ability to absorb what users see on the screen.



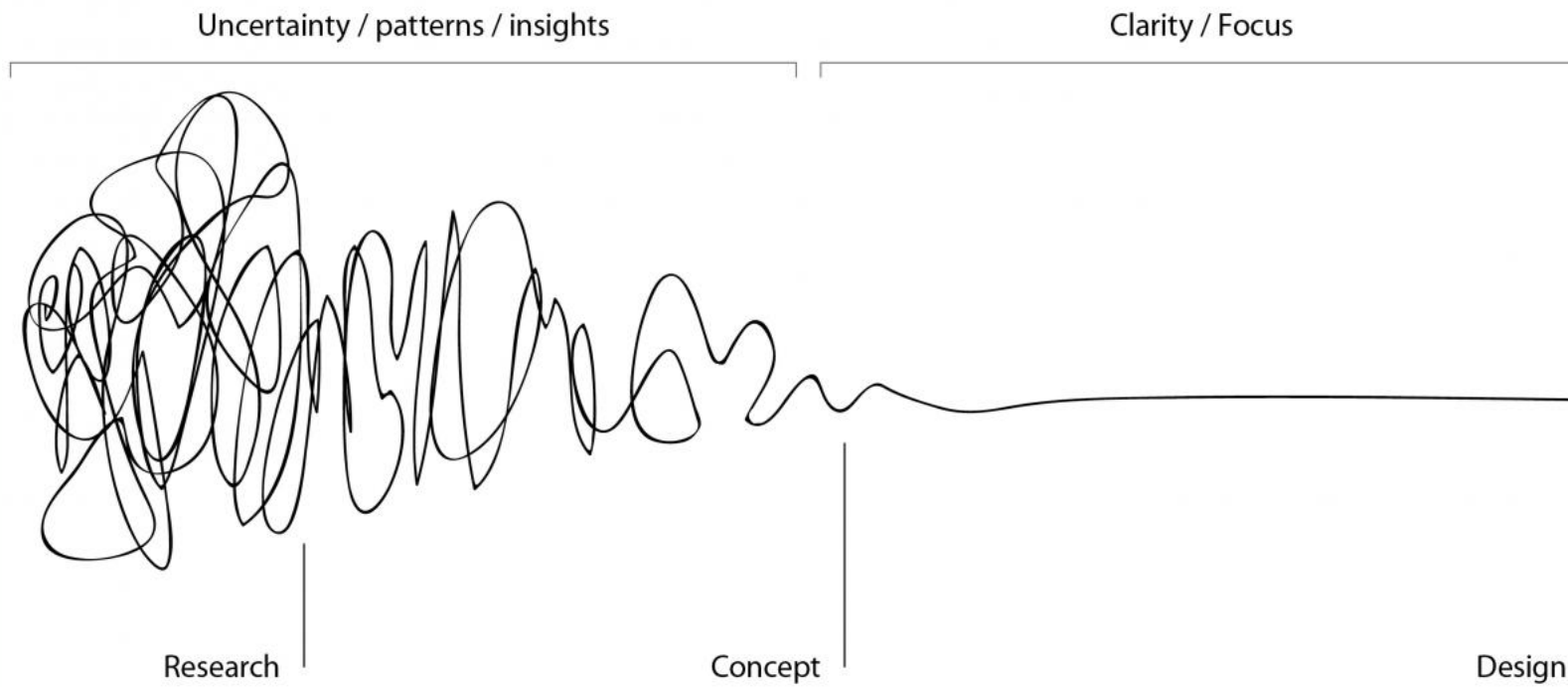
product as functionality

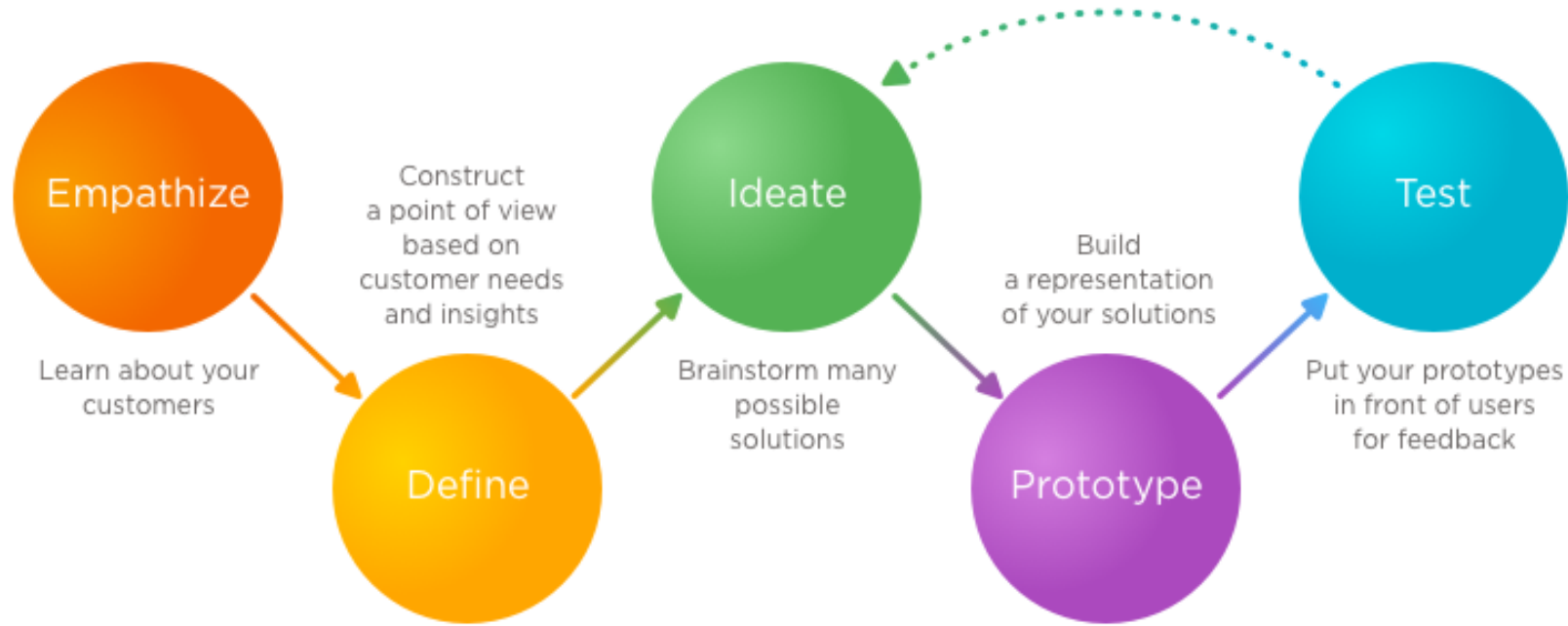
product as information



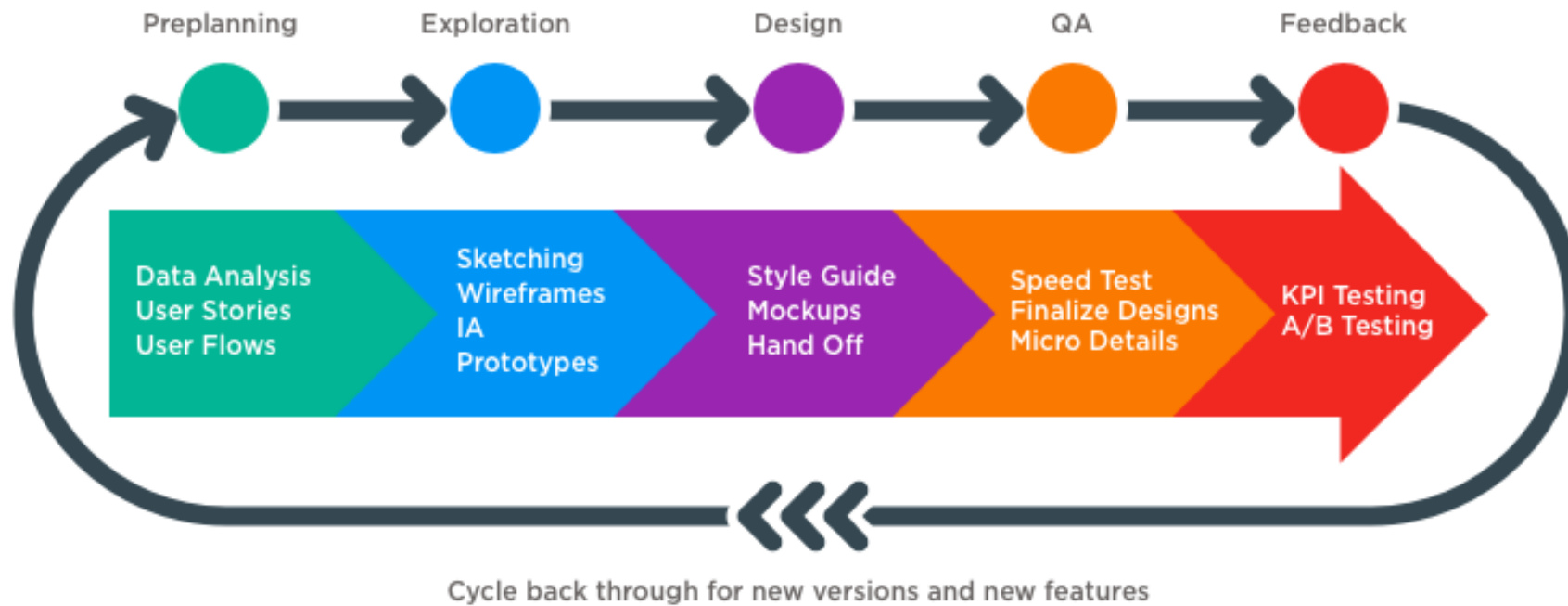
3 Process of User Experience Design

Meeting some old friends





UX Design Process by effectiveui.com



4 Tools of User Experience Design

Meeting more old and some new friends

Design
Grid

Design
Principles

Ideation
Techniques
(e.g. HMW)

Value
Proposition
Canvas

What are we building on?

Not everything can be covered in this session.

User
Research

Personas

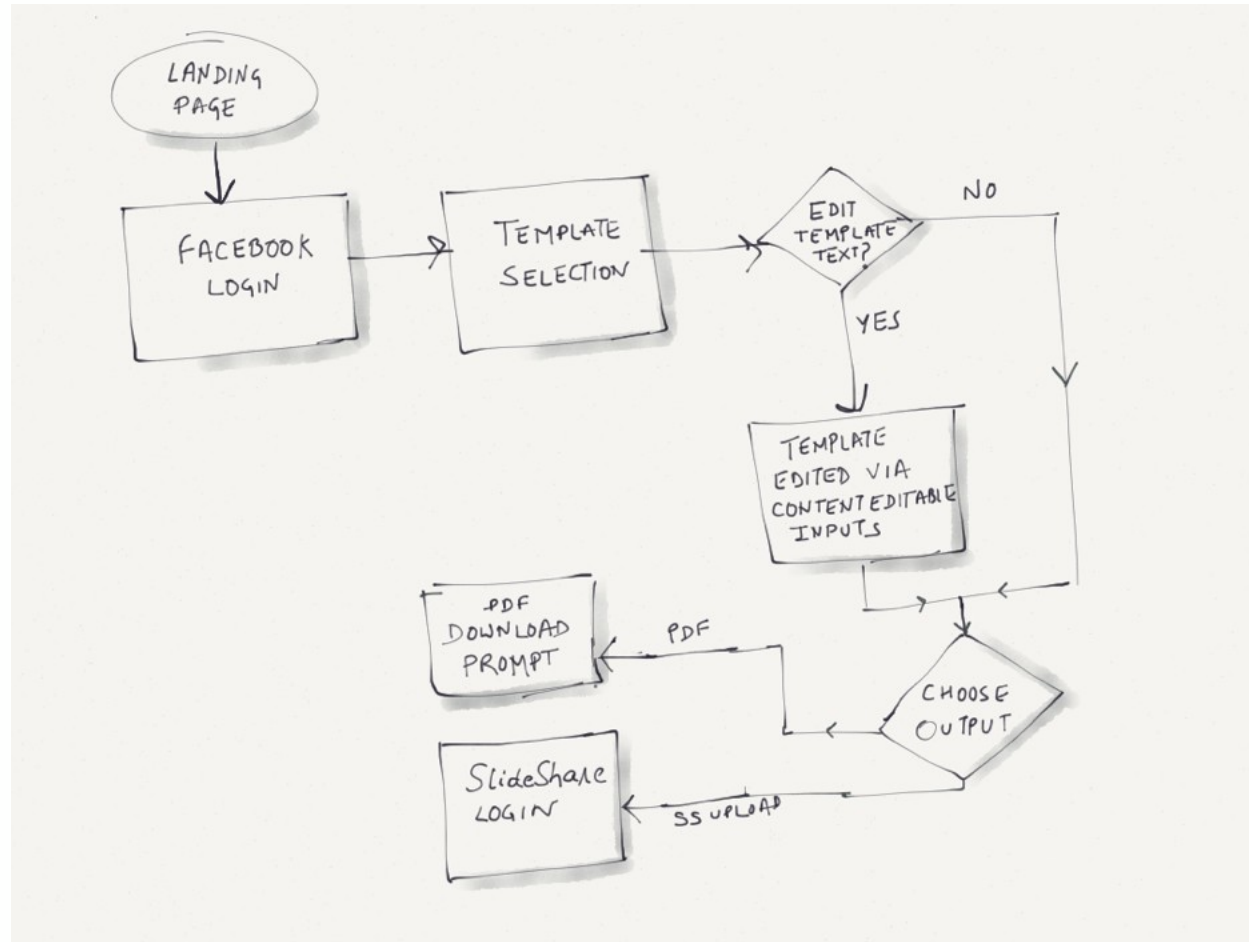
Service
Blueprint

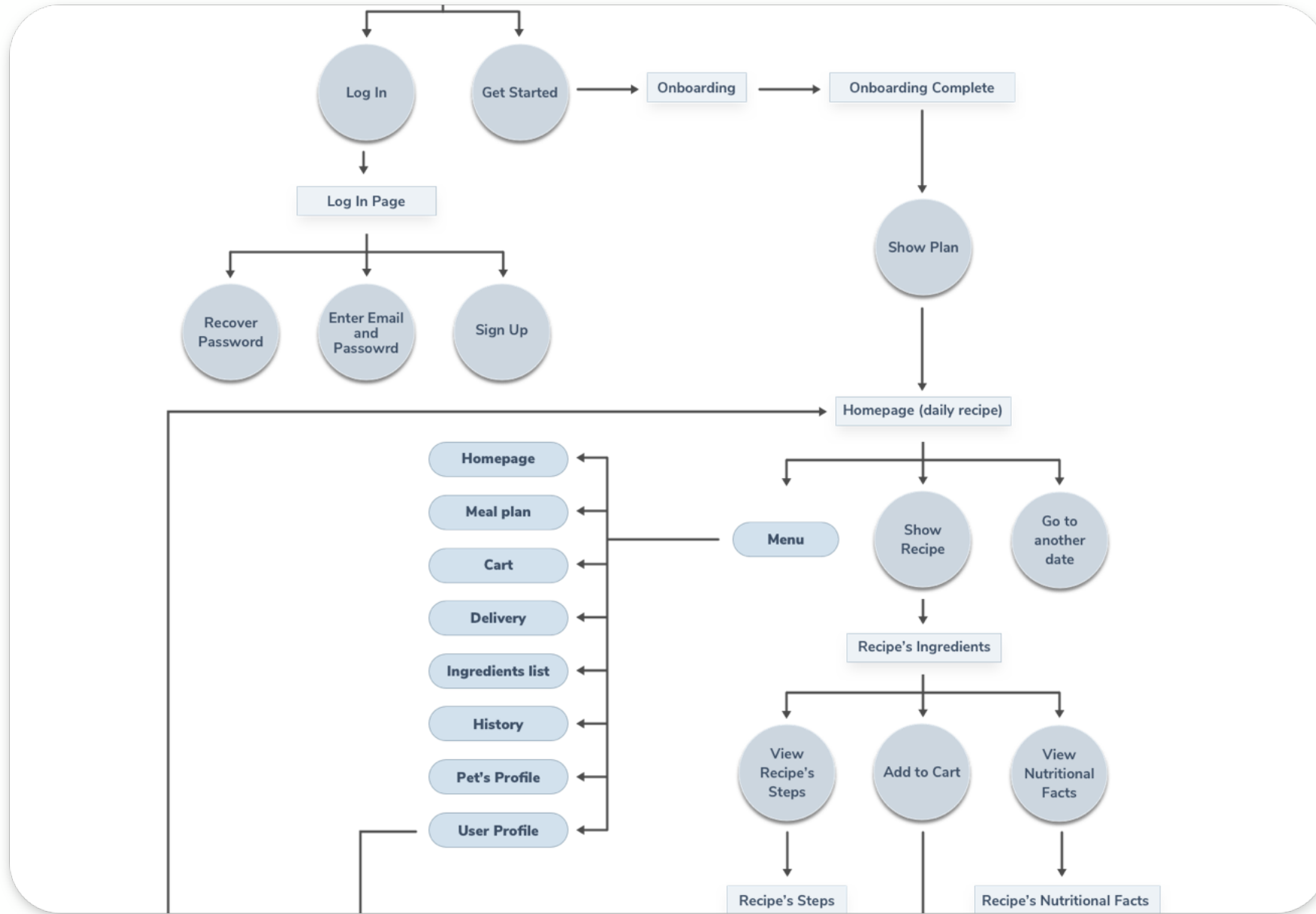
Stakeholder
Map

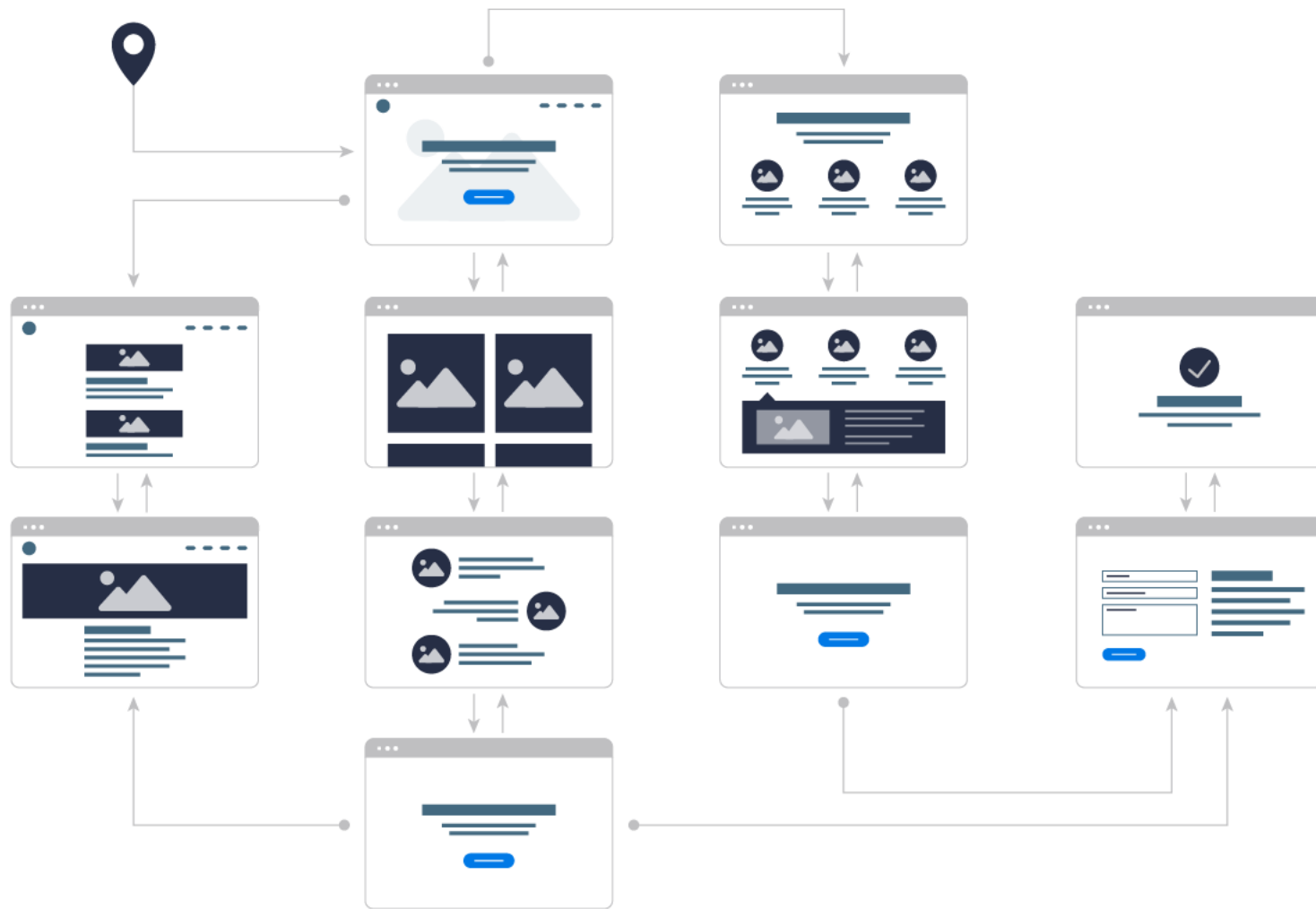
User Journey

User Flows

User Flows are diagrams that display the complete path a user takes when using a product. It is a map of all the screens.

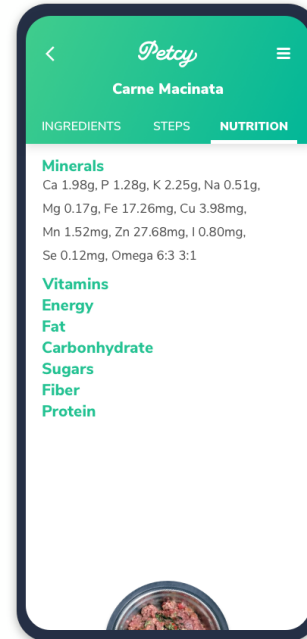
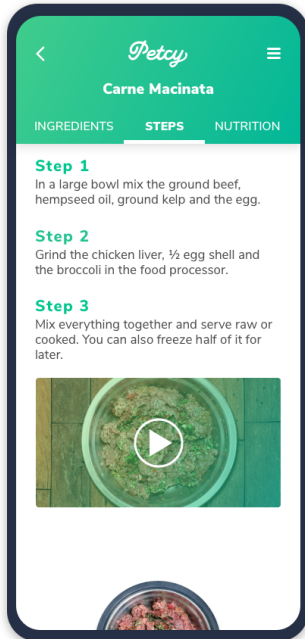
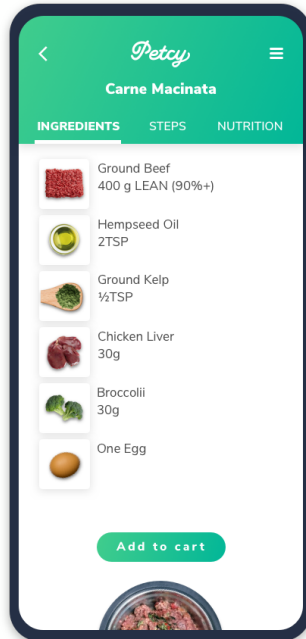
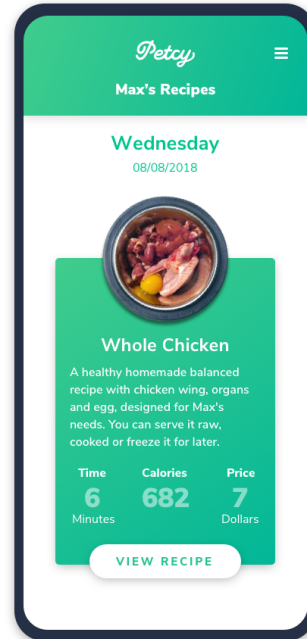
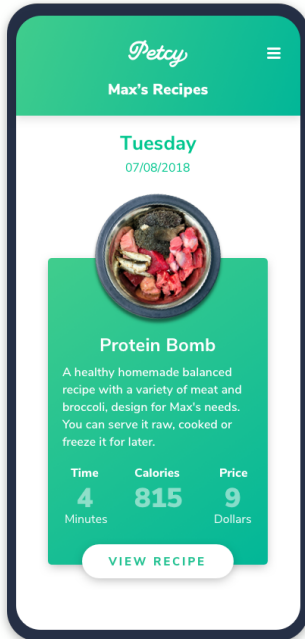
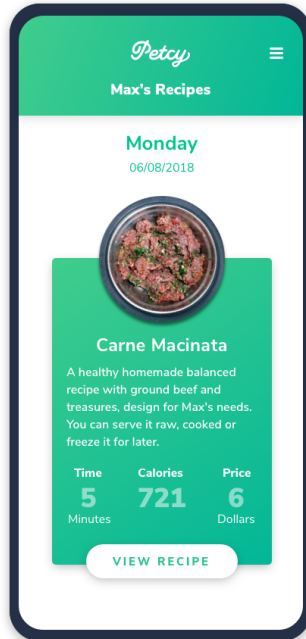






Wireframes

An abstract representation of screen content on interface element level.

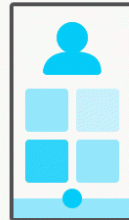


Interface Design

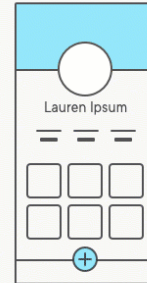
1.
Thumbnail
page level



2.
Blockframe
layout level

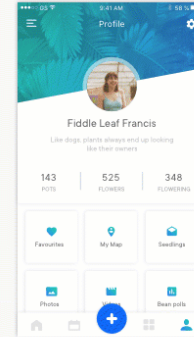


3.
Wireframe
component level

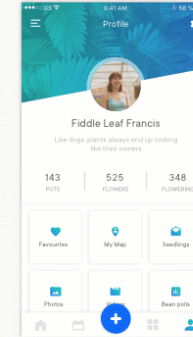


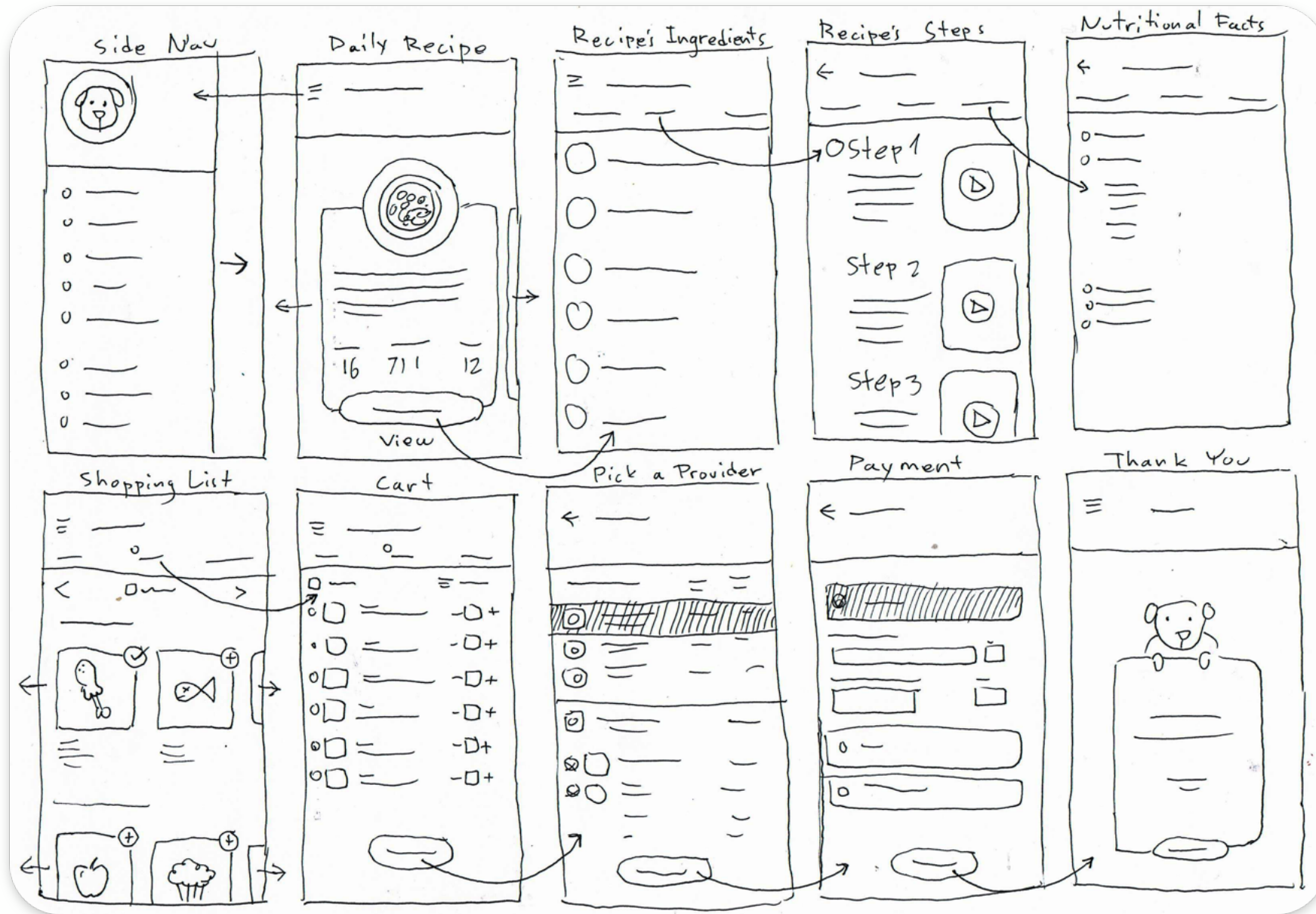
low-res ↔ high-res

4.
Interface
styles level




5.
Prototype
interactions level





RECIPES SHOPPING LIST PROFILE



A healthy homemade balanced recipe design for Max's needs. You can serve it raw, cook it or freeze it for later.

Time 5_{Min.} **Calories** 721_{Cal} **Price** \$6

[View Recipe](#)

Recipe's ingredients

INGREDIENTS STEPS NUTRITION

- Ground Beef 400 g LEAN (90%+)
- Hempseed Oil 2TSP
- Ground Kelp ½ TSP
- Chicken Liver 30g
- Broccoli 30g
- ½ Red Bell Pepper


PROFILE

- [Homepage](#)
- [View recipes](#)
- [Shopping list](#)
- [Delivery](#)
- [Ingredients list](#)

- [About Pety](#)
- [Give us a review](#)
- [Share the app](#)

← Thank You

THE LIST CART DELIVERY



Thank you for shopping with us

The food will be delivered to you in the next 24 hours.

[Back to homepage](#)

The hardest part of making Max a healthy and happy dog is over.

Shopping List

THE LIST **CART** DELIVERY

< This week >


MEAT & SEAFOOD

- 500g Ground Beef LEAN (90%+)
- 300g Chicken Wings

VEGETABLES & FRUITS

-
-

Max



Breed
Min Pin Wire Fox

Age
3 Years old

Sex
Male

Condition
8.0kg - Ideal

Activity
High Energy

Diet
Nothing selected

Health
No exclusions

← 3 Simple Steps

INGREDIENTS STEPS NUTRITION

Step 1

In a large bowl mix the ground beef, hempseed oil, ground kelp and the egg

Step 2

Grind in the food processor the chicken liver, ½ egg shell, broccoli and the red bell pepper

Step 3

Mix into the meat mixture and serve

← Pick a provider

THE LIST **CART** DELIVERY

Providers in your area:	Total price:
<input type="checkbox"/> Joe's Fresh Market 90 Carter Streets	\$80
<input type="checkbox"/> GO Grocery Outlet 39 Walker Alley	\$75
<input type="checkbox"/> Village Food Center 607 Nova Trail	\$68

[Checkout](#)

Examples for Interface Elements

Input Controls:

buttons, text fields, checkboxes, radio buttons,
dropdown lists, list boxes, toggles, date field

Navigational Components:

breadcrumb, slider, search field, pagination, slider, tags, icons

Informational Components:

tooltips, icons, progress bar, notifications,
message boxes, modal windows

Containers:

accordion

User Stories

Describe your feature from a user perspective without any details on the technical delivery. If it's not in a User Story, it will not exist in your software.

User Stories

As a

..... (type of user/persona/role),

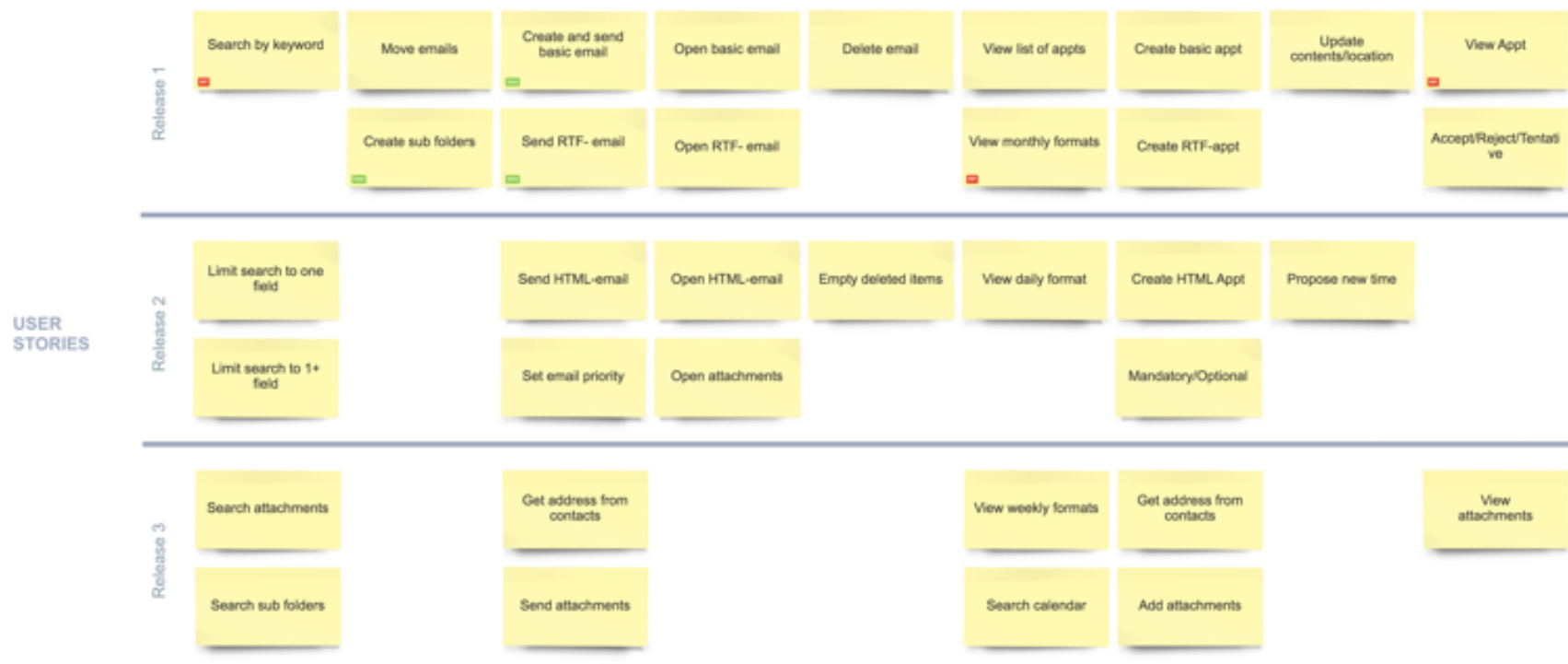
I want

..... (action),

so that

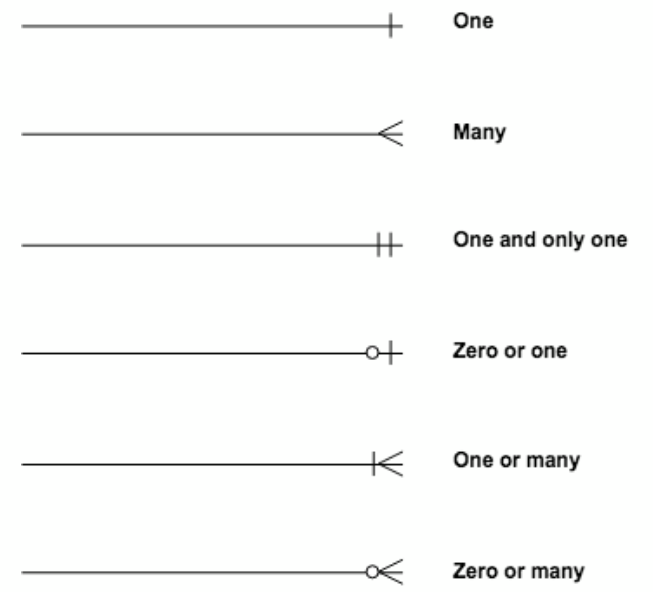
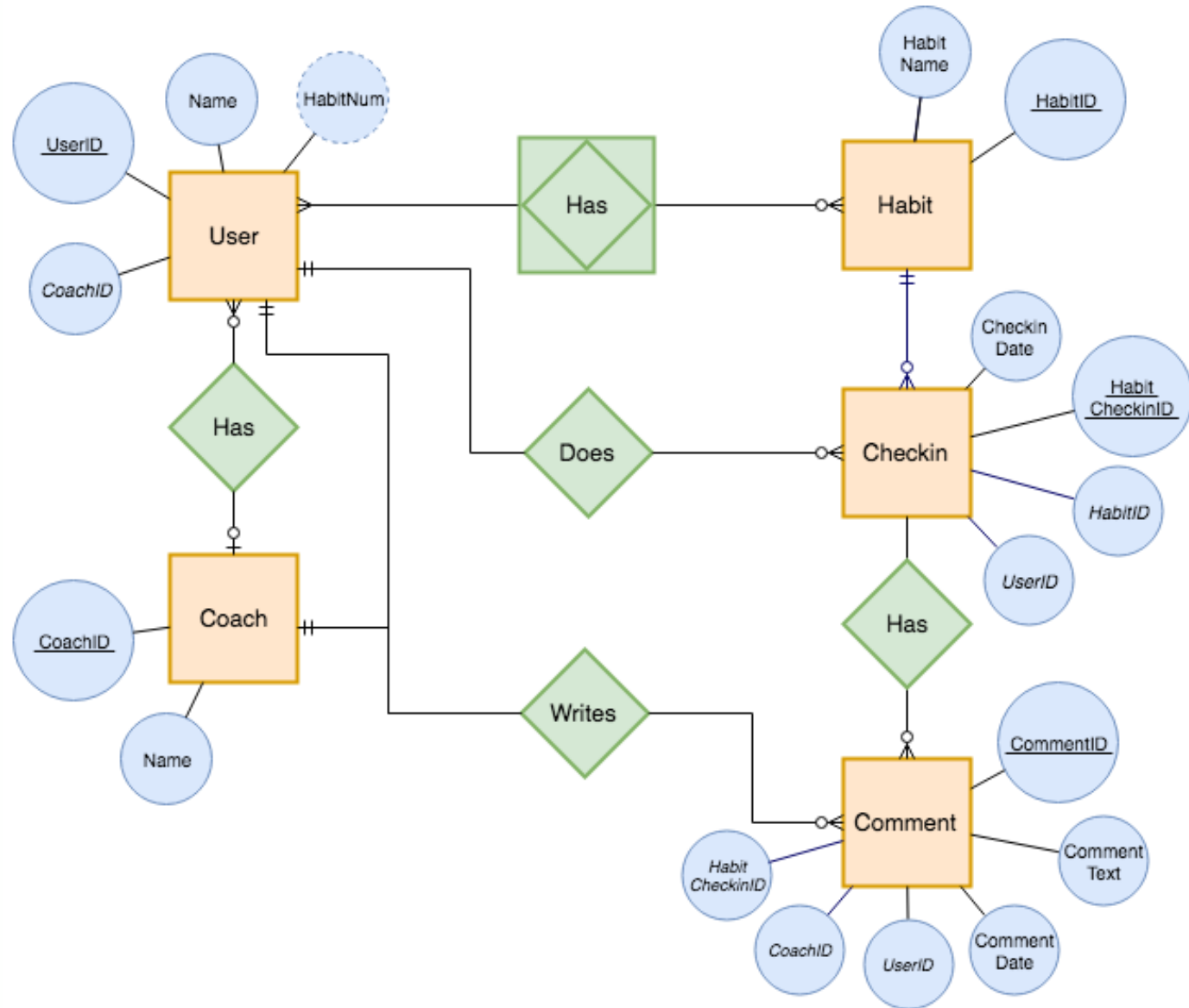
..... (outcome).

As a/an	I want to...	so that...
moderator	create a new game by entering a name and an optional description	I can start inviting estimators
moderator	invite estimators by giving them a url where they can access the game	we can start the game
estimator	join a game by entering my name on the page I received the url for	I can participate
moderator	start a round by entering an item in a single multi-line text field	we can estimate it
estimator	see the item we're estimating	I know what I'm giving an estimate for
estimator	see all items we will try to estimate this session	I have a feel for the sizes of the various items
moderator	see all items we try to estimate this session	I can answer questions about the current story such as "does this include ___"
moderator	select an item to be estimated or re-estimated	the team sees that item and can estimate it



Entity Relationship Models

An ER model is composed of entity types and specifies relationships that can exist between entities.



Apply what we learned today

Create a concept for a stopwatch app with user login and lap function
(User Flows, Wireframes, User Stories, Entity Relationship Model)

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