Human-Computer Interaction & Design

Perancangan Interaksi - Genap 1819

AGENDA

Week	Topic	Week	Topic
1	Human-computer Interaction & Design	9	Project 1 : Usability Testing
2	Human-computer Interaction & Design	10	Project 2: Design Thinking
3	Psychology 101	11	Project 2: Design Thinking
4	Design Principles	12	Project 2: Design Thinking
5	Interaction Styles and Devices	13	UI Design Tutorial
6	Project 1 : Usability Testing	14	Project 2 : Design Thinking
7	Project 1 : Usability Testing	15	Project 2 : Design Thinking
8	Mid Term Exam	16	Project Presentation

AGENDA

- Human-Computer Interaction
- History of HCI
- Vision of HCI
- Design
- Commonly used terms

PRE-TEST / WARMING-UP

(waktu 30 menit)

Apa itu UX Designer dan UI Designer ?

Apa persamaan dan perbedaan UX dan UI Designer ?

Apa saja Elemen UX ?

Apa itu Emotional Design ?

Apa itu Mental Model ?

Coba Desainkan Tempat minum dan Botol Kecap yang Ideal menurut anda !

PEMBAHASAN

Seperti ilustrasi botol ketchup ini. kira-kira botol yang mana yang lebih memudahkan Penggunanya?

yang kanan bukan? tidak hanya indah seara design, tapi juga efisien saat digunakan sehingga memberikan experience yang baik kepada si Pengguna. itulah tujuan dari sebuah UX Design

Jadi,
apa sih UX Design itu?

USER EXPERIENCE IS...

LOOK + FEEL + USABILITY

UX Design adalah proses menciptakan produk (mostly adalah produk aplikasi either web/mobile) yang memberikan pengalaman yang bermakna dan relevan bagi pengguna.

Berbagai Definisi dari UX Designer

1. *Craft user value and visualize user flows into beautiful, testable product designs*. *Craft user value* ini sedikit sudah diterjemahkan ke Bahasa Indonesia. Mungkin arti terdekatnya: “**Membuat produk yang bermanfaat dan memvisualisasi user flows menjadi disain produk yang teruji dan indah**.”

2. Merubah **cara orang berinteraksi** dengan **produk digital**. Menggunakan semua keahlian di disain produk, disain interaksi, dan disain visual untuk membuat ‘*magical experience’*.

Berbagai Definisi dari UX Designer

3. **Kompeten dalam semua tahap dari proses disain, pengalaman hands-on di disain visual, user research, dan sangat berbakat serta terampil dalam Interaction and Information Architecture Design. Sebagai profesional UX/UI yang lengkap, menghubungkan antara kebutuhan bisnis, inovasi, dan disain yang baik. Seorang komunikator hebat dengan pengalaman yang intensif untuk kolaborasi lintas fungsional yang luas dan bisa menyeimbangkan kebutuhan pengguna dan tujuan bisnis.**

Berbagai Definisi dari UX Designer

4. **Membayangkan bagaimana orang menggunakan produk dan membawa visi tersebut menjadi kenyataan dengan cara yang menginspirasi, lebih baik, dan mengejutkan. Menangani hal yang kompleks dan mengubahnya menjadi disain yang intuitif, bisa diakses, dan mudah digunakan untuk seluruh orang di dunia—dari pengguna pertama sampai pengguna yang ahli. Untuk tujuan ini, diperlukan kolaborasi dengan tim disain, peneliti, engineer, dan product manager selama proses disain—dari mulai membuat user flows dan wireframes, sampai membuat mockup dan prototype. Di setiap tahap, mengantisipasi apa yang dibutuhkan pengguna, mengadvokasi mereka, dan memastikan bahwa produk akhir itu mengejutkan dan membuat senang pengguna.**

Jadi Definisi dari UX Designer

Orang yang dengan keahlian disainnya, berkolaborasi dengan berbagai lintas fungsional, mencari **‘sweet spot**’ antara kebutuhan **pengguna**, **tujuan bisnis**, dan **kemajuan teknologi**, kemudian membuat **‘magical experience**’ melalui disain produk yang bermakna, berguna, dan menyenangkan (**meaningful, useful, dan enjoyable).**

Kepanjangan? Coba kita sederhanakan.

UX Designer: Orang dgn keahlian **disain**, berkolaborasi utk produk yang lebih baik dgn mencari **‘sweet spot**’ antara **pengguna-bisnis-teknologi**

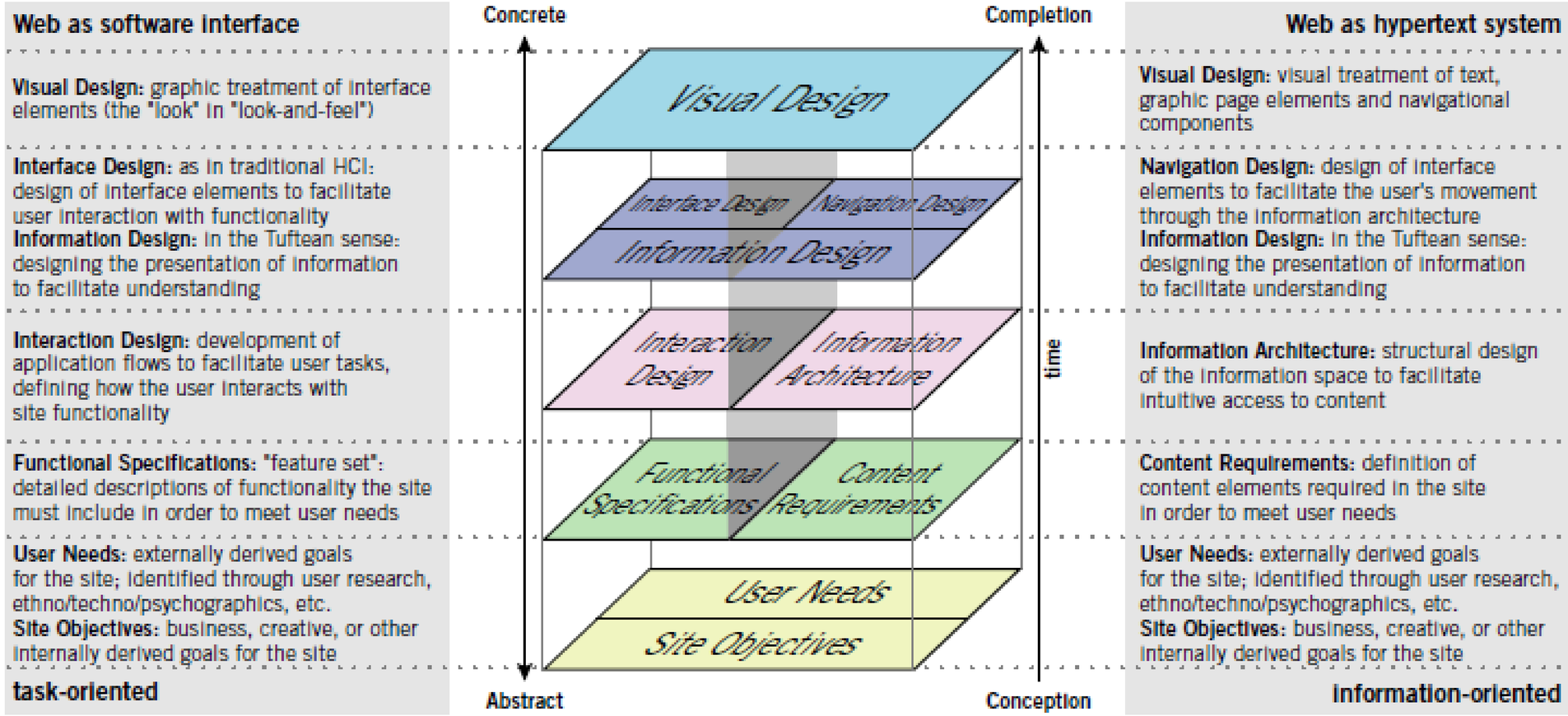
(140 karakter)

The Elements of User Experience

Jesse James Garrett
jjg@jjg.net

30 March 2000

A basic duality: The Web was originally conceived as a hypertextual information space; but the development of increasingly sophisticated front- and back-end technologies has fostered its use as a remote software interface. This dual nature has led to much confusion, as user experience practitioners have attempted to adapt their terminology to cases beyond the scope of its original application. The goal of this document is to define some of these terms within their appropriate contexts, and to clarify the underlying relationships among these various elements.



This picture is incomplete: The model outlined here does not account for secondary considerations (such as those arising during technical or content development) that may influence decisions during user experience development. Also, this model does not describe a development process, nor does it define roles within a user experience development team. Rather, it seeks to define the key considerations that go into the development of user experience on the Web today.

Lapisan 1. Fondasi. Kebutuhan Pengguna dan Tujuan Bisnis.

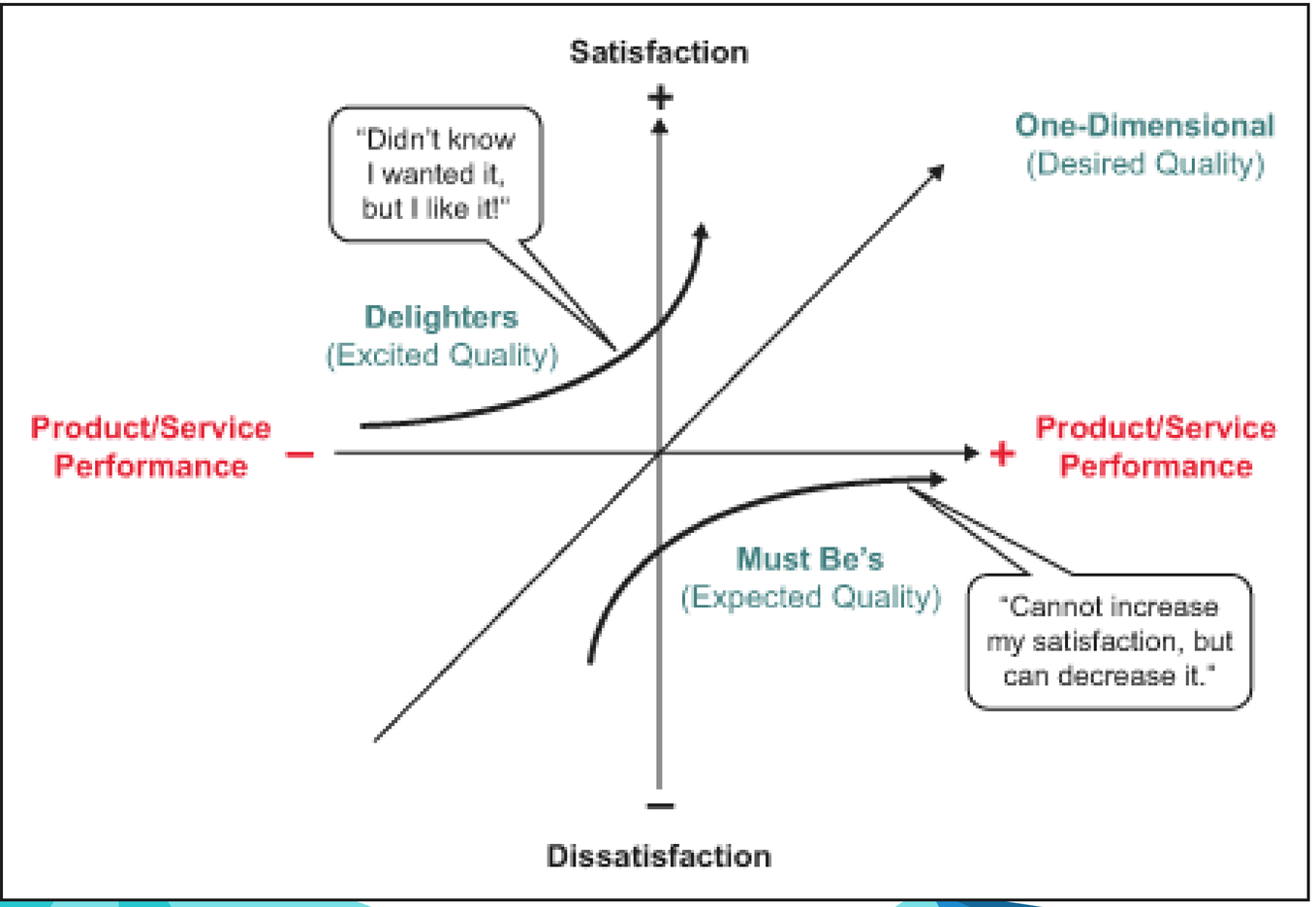
User Experience dibangun dari bawah ke atas. Sama halnya dengan membangun gedung, yang dibawah adalah fondasinya. Sebagus apapun hiasan (dalam hal ini warna, font, gambar/foto, icon), jika fondasinya tidak kuat, maka UX nya bisa roboh.

Fondasi di UX, adalah Strategi—Kebutuhan Pengguna dan Tujuan Bisnis (*User Needs* dan *Business Goals*). Untuk mengerti pengguna dan bisnis, Anda wajib bicara dan ketemu langsung dengan pengguna dan tim bisnis (termasuk product manager, management, bahkan bisa jadi sampai CEO)

Lapisan 2. Cakupan. Features dan Content.

Setelah mengerti tentang pengguna dan bisnis, baru lanjut ke lapisan selanjutnya, yaitu bicara tentang *Scope*/Cakupan. Apa features dan content yang bisa memuaskan kebutuhan pengguna dan memenuhi target bisnis? Dalam menentukan Scope ini, belum dibahas implementasi detail nya, tapi lebih ke deskripsi saja. Untuk memetakan features/content ini, saya sering menggunakan Kano Model. Di Kano Model, paling tidak ada 3 klasifikasi utama dari features/content:

Lapisan 2. Cakupan. Features dan Content.



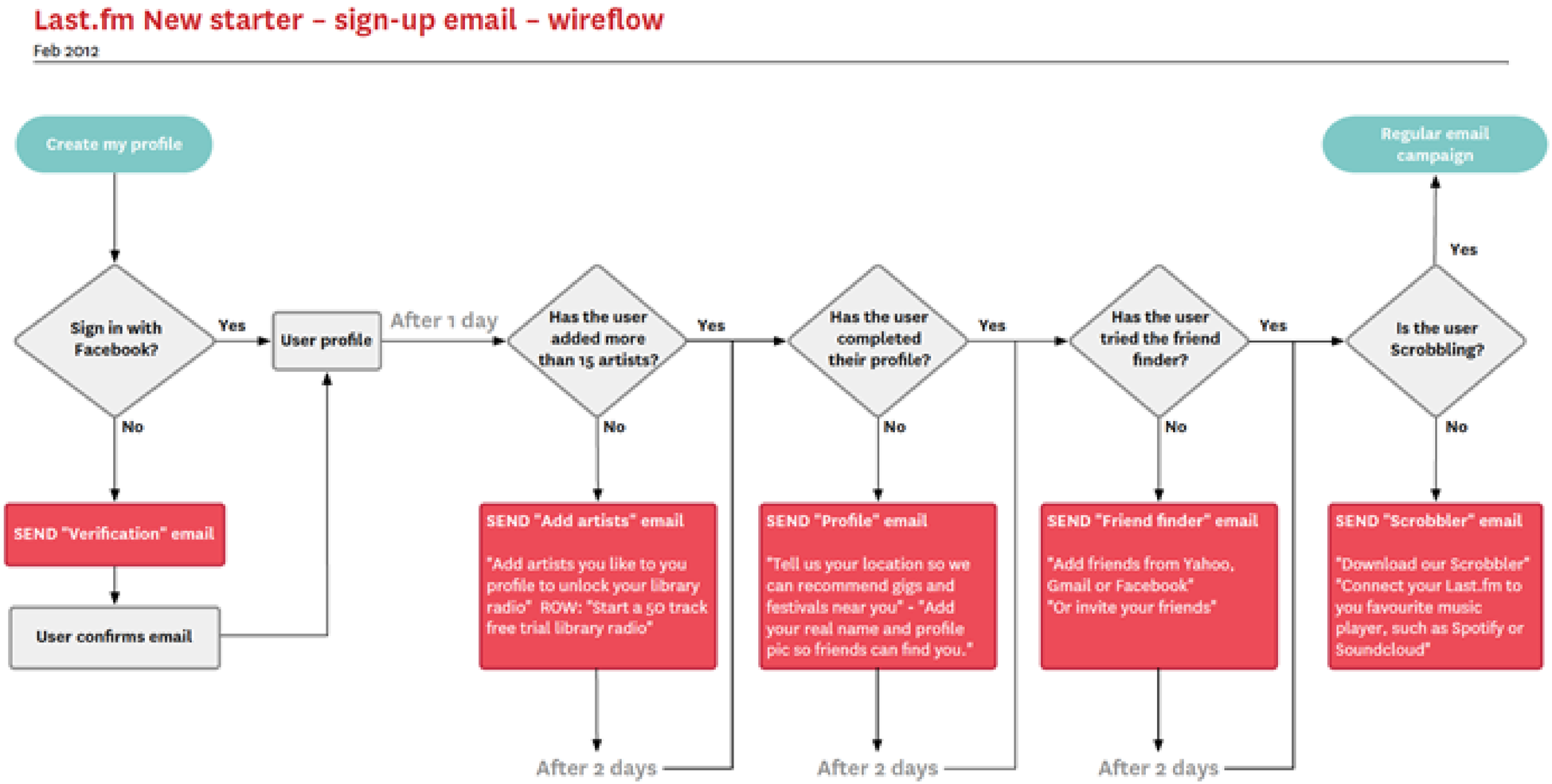
1.Must-be/Expected/Wajib: Ini features/conten yang jadi syarat untuk Anda bisa masuk ke pasar/kompetisi.
2.Desired/Performance: Dengan features/content ini, Anda bisa tetap kompetitif/stay in the market.
3.Delighters/Excitement: Dengan ini, Anda menonjol di banding kompetitor, world class.

Lapisan 3. Struktur. Information Architecture dan Interaction Design.

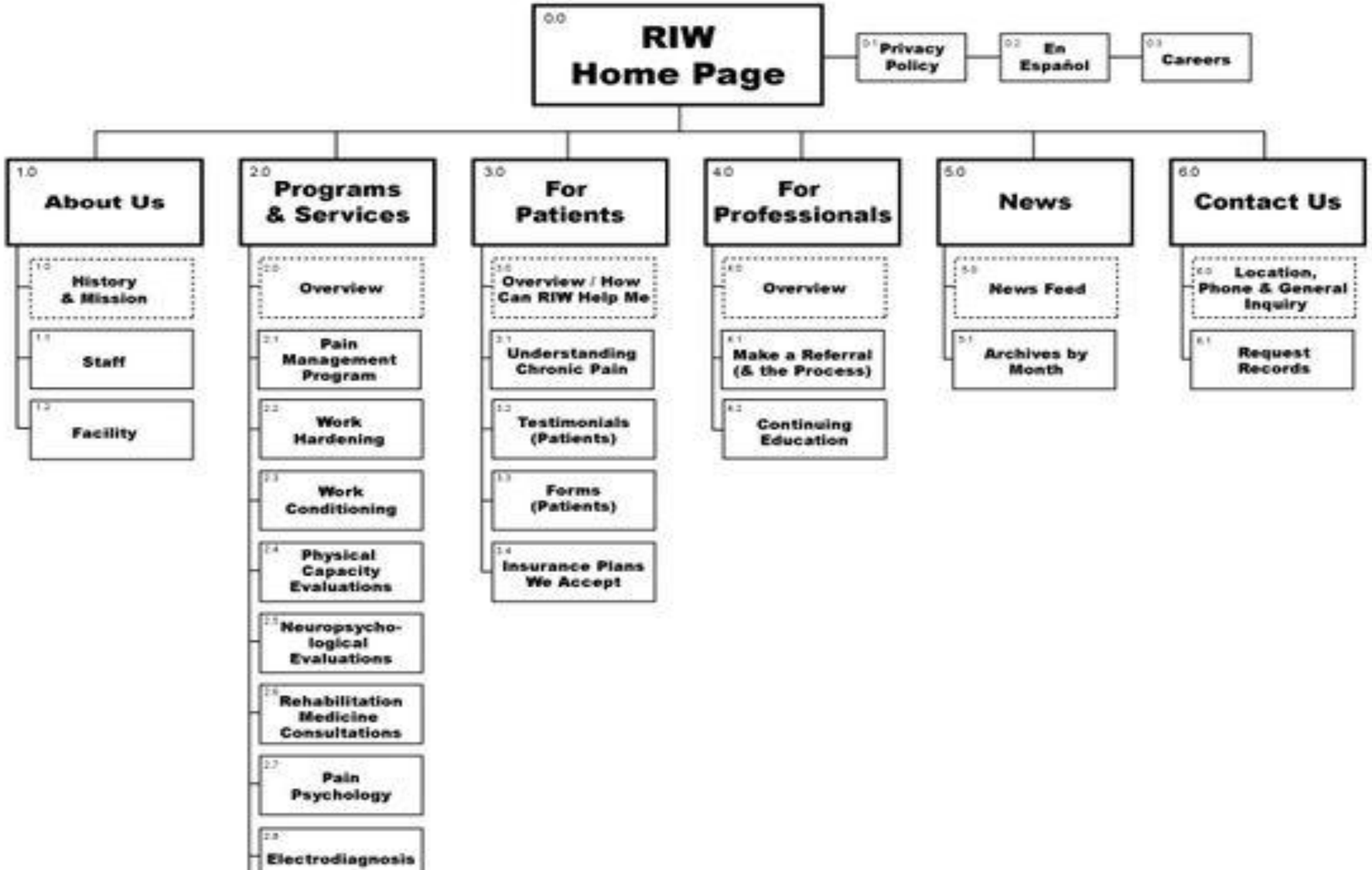
.

Di lapisan ke-3 ini, mulai dibuat user flow dan struktur informasi. Bagaimana pengguna berinteraksi dengan produk Anda, dan informasi/data apa saya yang dibutuhkan, termasuk struktur datanya. Di tahap ini, belum bicara/diskusi tentang wireframes (detail dari screen/webpage). Ini contoh dari user flow:

Lapisan 3. Struktur. Information Architecture dan Interaction Design.



Lapisan 3. Struktur. Information Architecture dan Interaction Design.



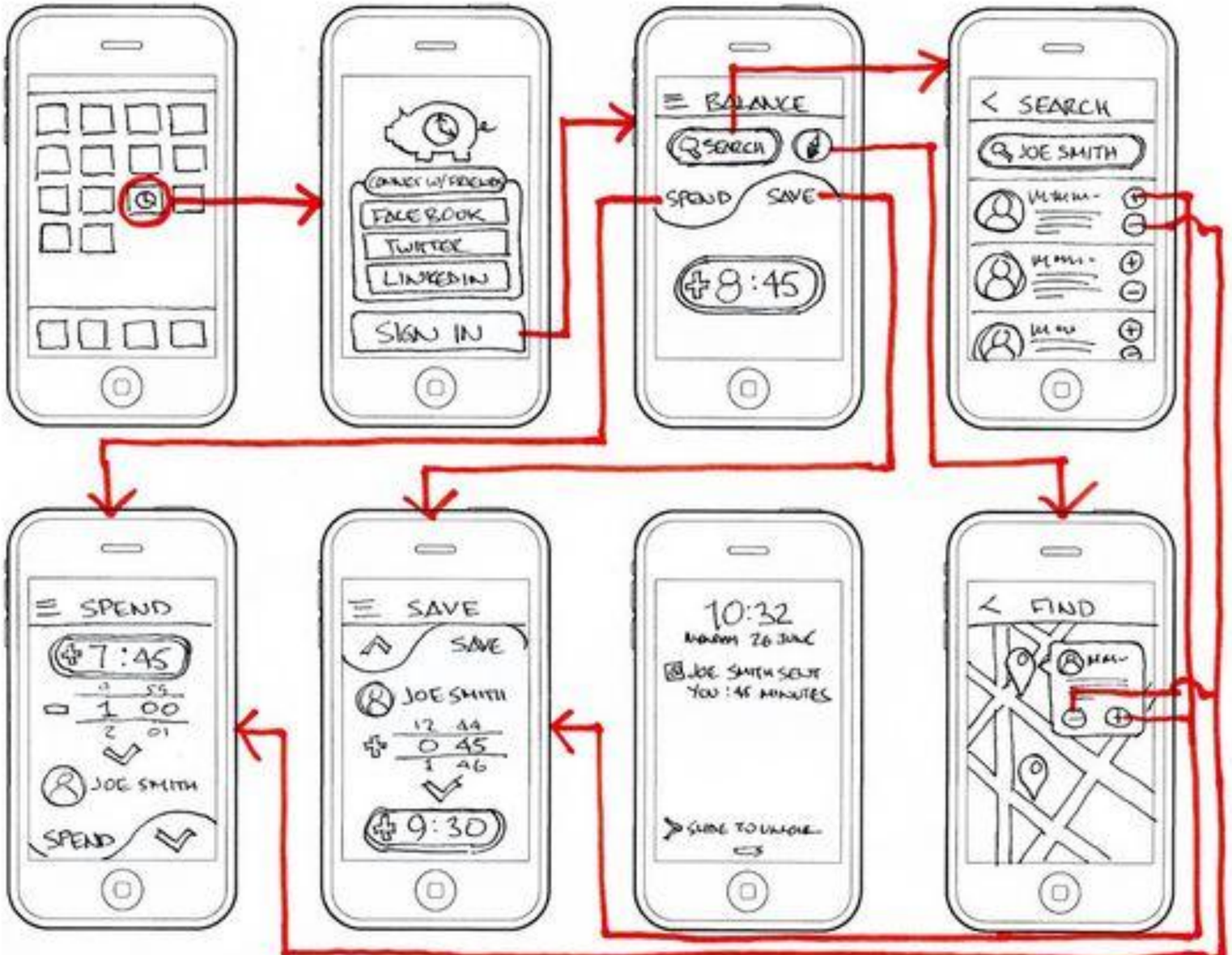
Lapisan 4. Rangka/Skeleton. Wireframes.

.

Di lapisan ke-4, ini yang biasanya kita sebut wireframes. Disini UI Design dimulai. Di wireframes, semua hal yang tadinya abstrak (dari mulai user needs, business goals, features/content, sampai user flow/information architecture), dibuat nyata/tangible. Di tahap ini, mulai dipikirkan navigasi, layout, pemilihan komponen (misalnya radio box, dropdown, button, dll), dan bagaimana informasi ditampilkan.

Semuanya ini tetap sejalan dengan lapisan 1-Strategi: kebutuhan pengguna dan tujuan bisnis. Untuk setiap penambahan screen, pemilihan komponen, penambahan langkah, Anda mesti selalu bertanya, bagaimana penambahan/pemilihan tersebut bisa membantu pengguna memenuhi kebutuhannya, atau membantu bisnis mencapai tujuannya.

Lapisan 4. Rangka/Skeleton. Wireframes.



Lapisan ke-5. Permukaan/Surface. Visual Design.

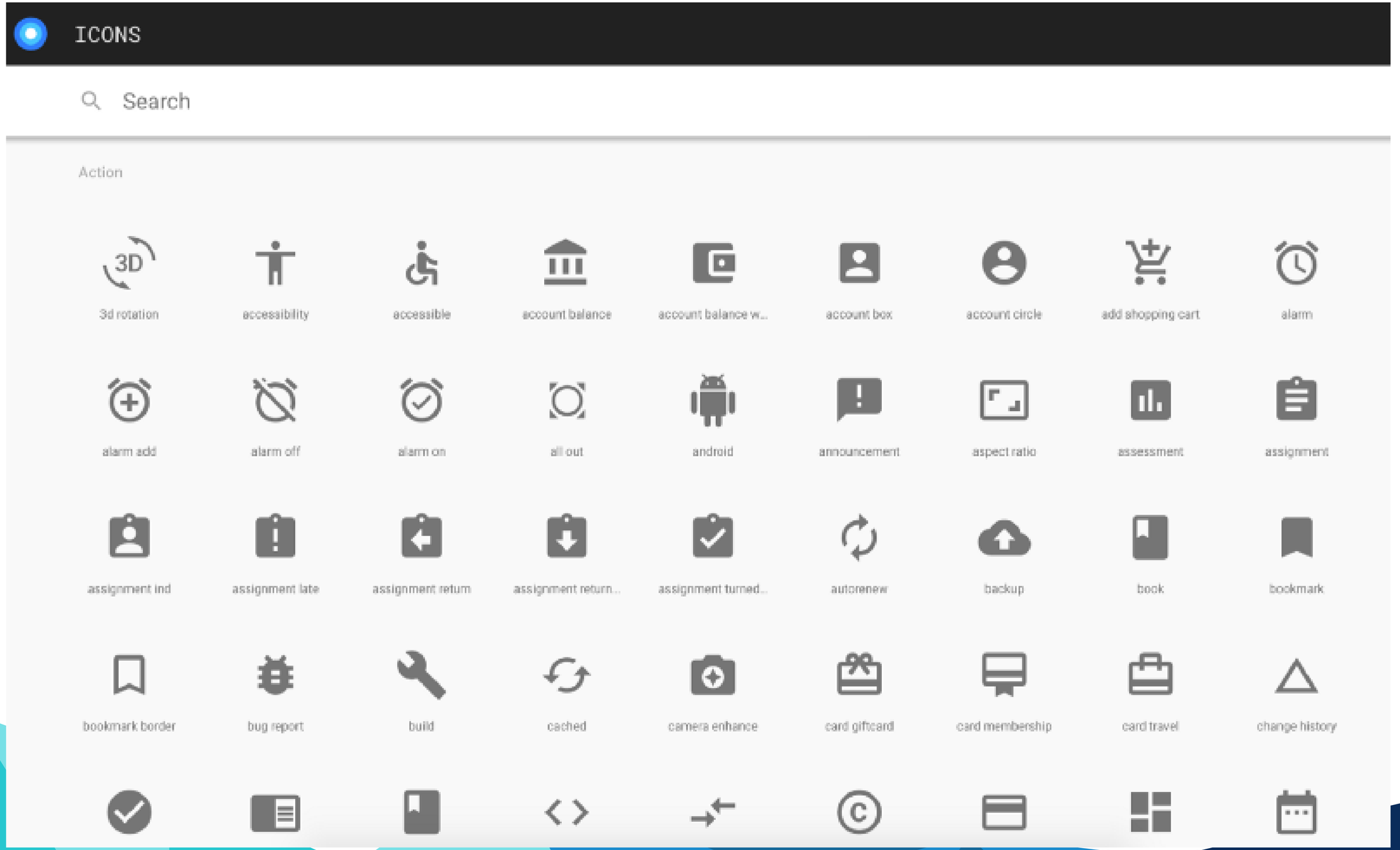
.

Di tahap paling atas ini, barulah kita ‘mempercantik’ wireframes/skeleton di lapisan ke-4. Yang termasuk di tahap permukaan, biasanya:

1. Warna
2. Icon
3. Gambar/Foto
4. Font/Typography
5. Copy Writing Style

.


Style – Color
Red
500 #F44336
50 #FFEBEE
100 #FFCDD2
200 #EF9A9A
300 #E57373
400 #EF5350
500 #F44336
600 #E53935
700 #D32F2F
800 #C62828
900 #B71C1C
A100 #FF8A80
A200 #FF5252
A400 #FF1744
Pink
500 #E91E63
50 #FCE4EC
100 #F8BBD0
200 #F48FB1
300 #F06292
400 #EC407A
500 #E91E63
600 #D81B60
700 #C2185B
800 #AD1457
900 #880E4F
A100 #FF80AB
A200 #FF4081
A400 #F50057
Purple
500 #9C27B0
50 #F3E5F5
100 #E1BEE7
200 #CE93D8
300 #BA68C8
400 #AB47BC
500 #9C27B0
600 #8E24AA
700 #7B1FA2
800 #6A1B9A
900 #4A148C
A100 #EA80FC
A200 #E040FB
A400 #D500F9


ICONS
Search
Action
3d rotation
accessibility
accessible
account balance
account balance w...
account box
account circle
add shopping cart
alarm
alarm add
alarm off
alarm on
all out
android
announcement
aspect ratio
assessment
assignment
assignment ind
assignment late
assignment return
assignment return...
assignment turned...
autorenew
backup
book
bookmark
bookmark border
bug report
build
cached
camera enhance
card giftcard
card membership
card travel
change history

are specified with sp (scaleable pixels) to enable large type modes for accessibility.

English and English-like scripts

Latin, Greek, and Cyrillic.

The basic set of styles are based on a typographic scale of 12, 14, 16, 20, and 34.

Display 4	Light 112sp
Display 3	Regular 56sp
Display 2	Regular 45sp
Display 1	Regular 34sp
Headline	Regular 24sp
Title	**Medium 20sp**
Subheading	Regular 16sp (Device), Regular 15sp (Desktop)
Body 2	**Medium 14sp (Device), Medium 13sp (Desktop)**
Body 1	Regular 14sp (Device), Regular 13sp (Desktop)
Caption	Regular 12sp
Button	**MEDIUM (ALL CAPS) 14sp**

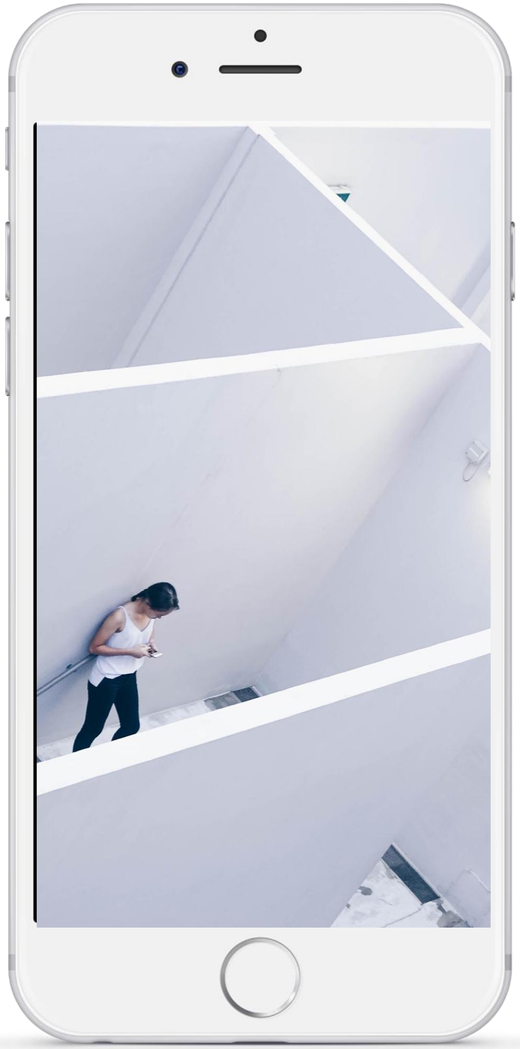
Dengan mengerti elemen yang membangun User Experience, idealnya Anda akan memiliki pendekatan yang berbeda saat mendesign produk. Ketimbang langsung lompat membuat wireframes, atau malah langsung membuat design lengkap dengan warna, icon, dan gambar, Anda akan mulai dari fondasi: mencari tahu apa kebutuhan pengguna (termasuk pain points/kesulitan, unmet needs-kebutuhan yang belum ada penyedia layanannya) dan memastikan Anda memahami apa tujuan bisnis (hal yang membuat bisnis bisa sukses). Membuat design (wireframes/visual design) relatif mudah, yang jauh lebih sulit adalah mencari tahu masalah yang penting untuk dipecahkan.

Presentasi Ide Kelompok (Tiap Kelompok 10 menit)

Human-Computer Interaction

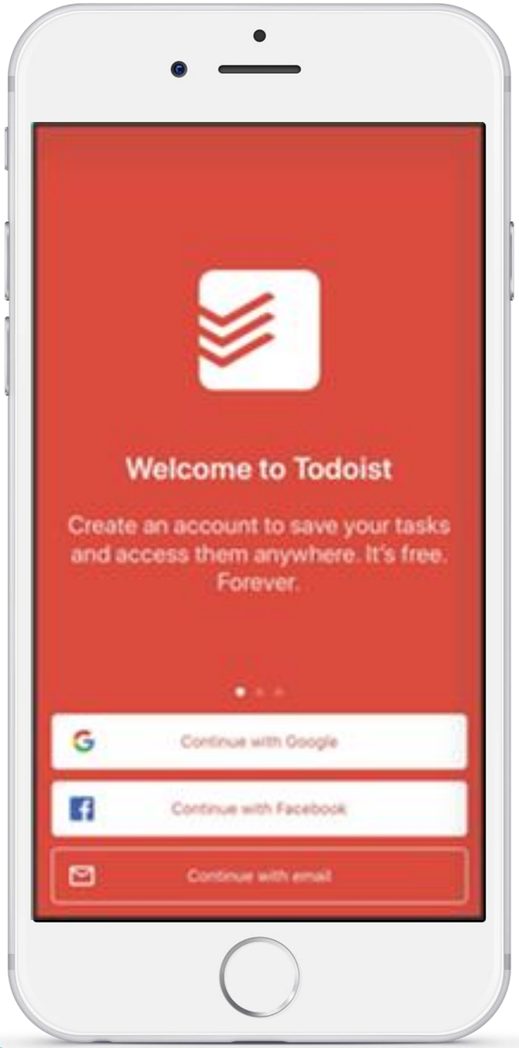
1

Aaron Marcus. 2002. Dare we define user-interface design?. Interactions 9, 5 (September 2002), 19-24. DOI=http://dx.doi.org/10.1145/566981.566992

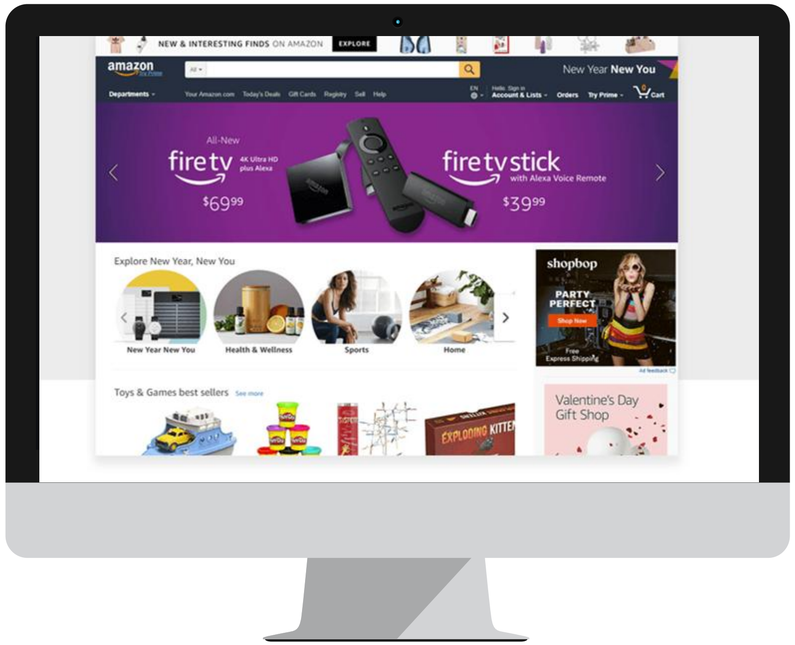


User Interface

A computer-mediated means to facilitate communication between human beings or between a human being and an artifact.

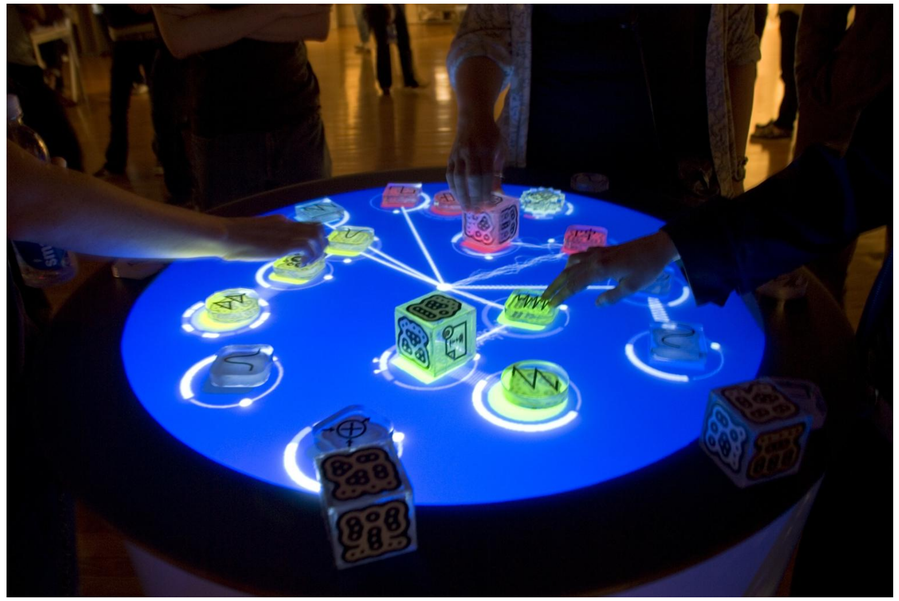


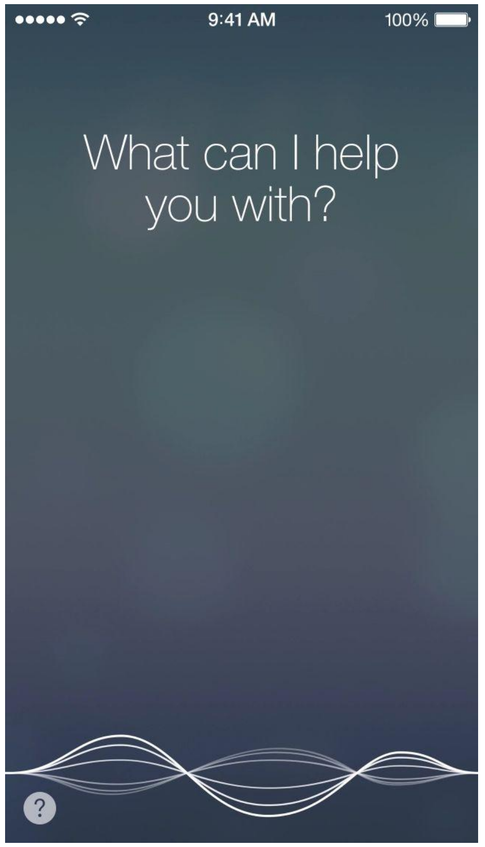
User Interface

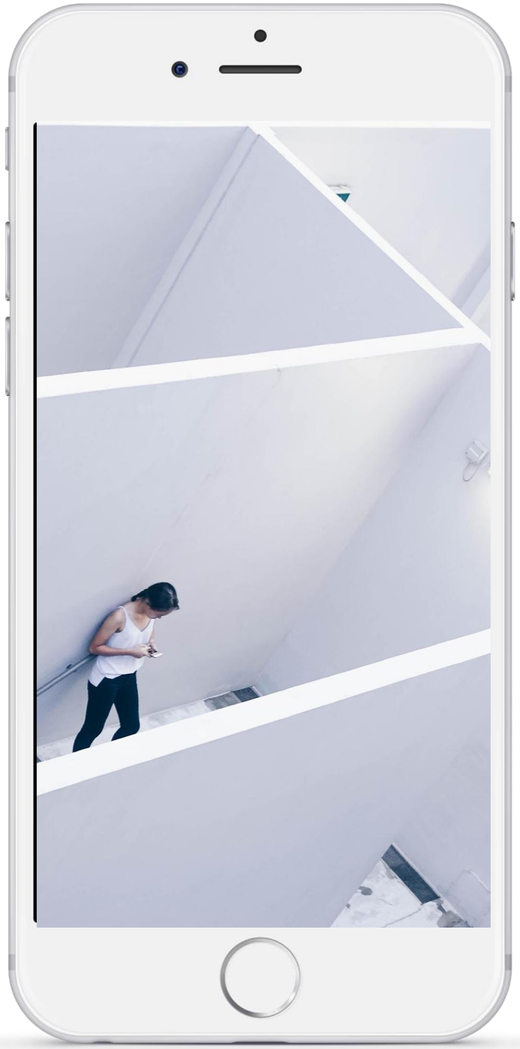


User Interface

User Interface







Human-Computer Interaction

Human-Computer Interaction (HCI) is a multidisciplinary field of study focusing on the design of computer technology and, in particular, the interaction between humans (the users) and computers.

Human-Computer Interaction

Interaction

phenomenon
do be
controlled

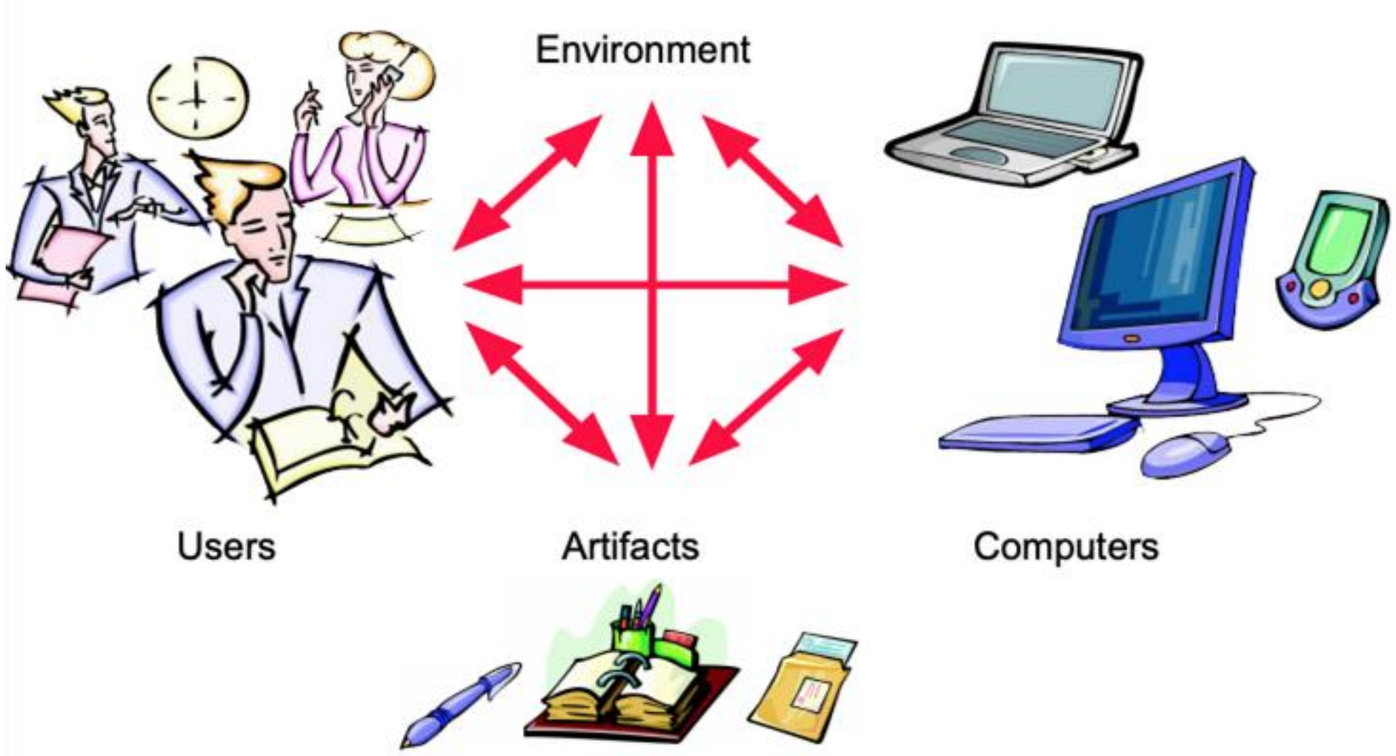
Capabilities: action,
perception, cognition

Capabilities: computation,
storage, input/output

Environment: physical, social,
organisational, cultural, etc.

Real world situation is complicated..

1. Interaction happens simultaneously
2. Interaction happens with more than 1 user
3. Interaction happens more than 1 way
4. User's focus is divided
5. User is interacting with are more than 1 artifact/computer



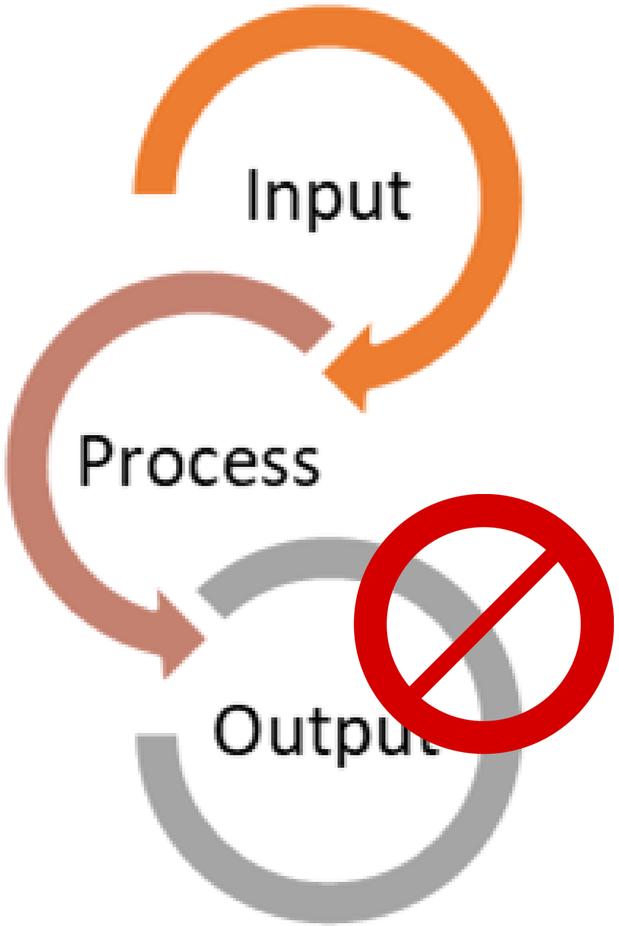
An interactive system is NOT

Interactive system is not an algorithmic system that:

- Reads input
- Processes it
- Writes results

Why?

- You cannot always predict human input
- Human don’t think sequentially
- Real world situation is messy

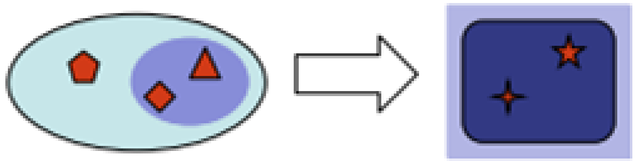


An interactive system is

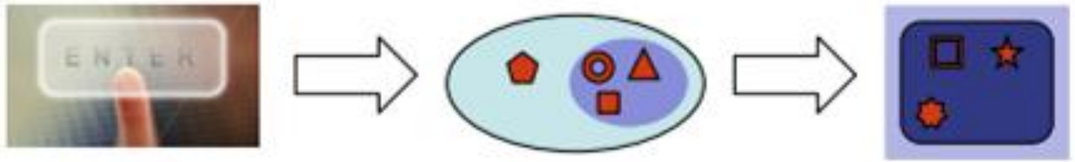
Interactive system is computer system that:

- Holds an internal state

- Creates perceivable representations of part of this state



- Reacts to input as soon as it arrives



Properties of interactive system

Reactive:

U provides input to S,

S must process it immediately and generate output to U

Open:

dependencies between S's output

and U's future input are unknown to S

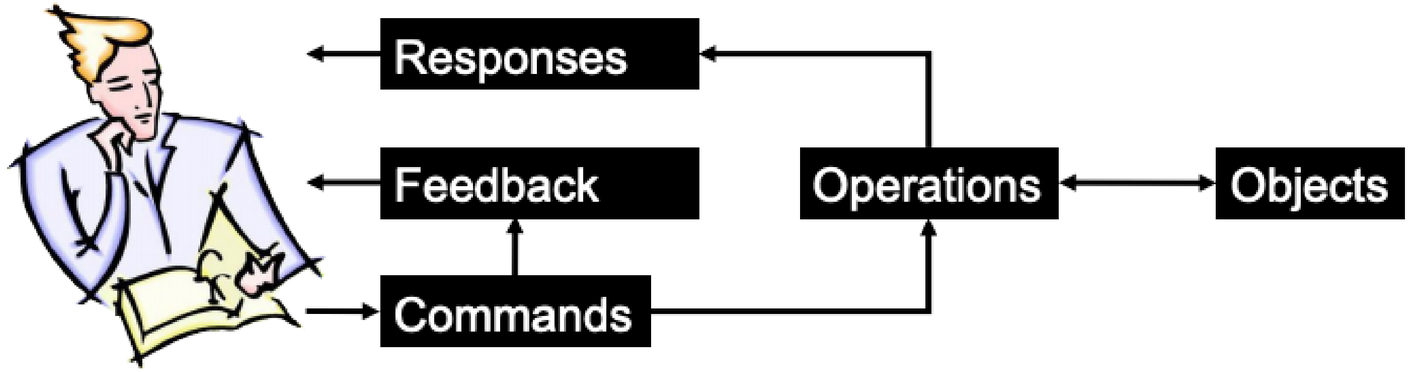
Asymmetry:

U does not have to react immediately to S

U likes to know the dependencies between S's input and output

Conceptual model

Model of how interactive system operates



Ideally, matches the *user's mental model*

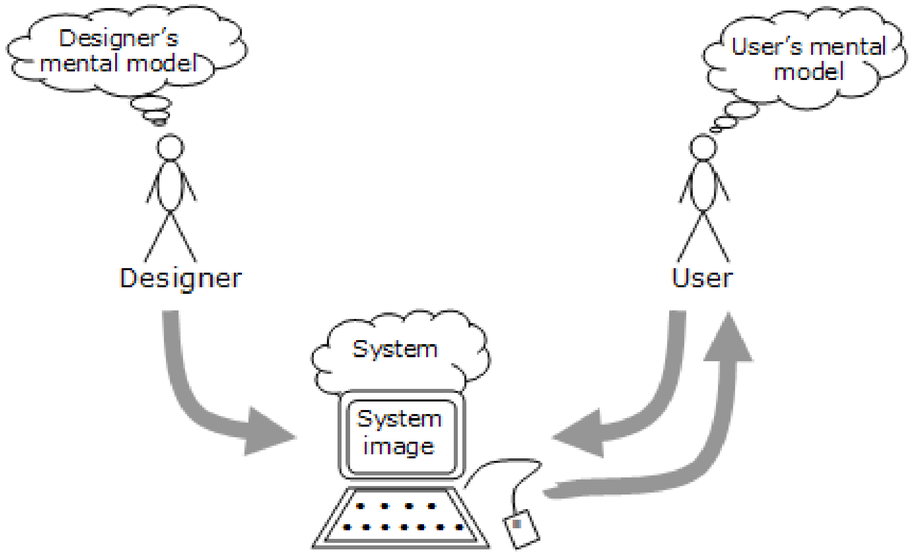
User’s Mental Model

A mental model is based **on belief, not facts**

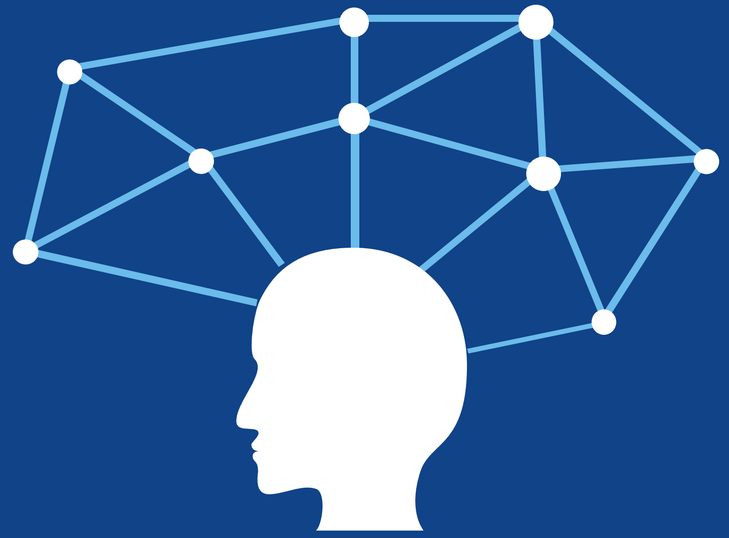
it's a model of what users know (or think they know) about a system such as your website.

Individual users each have their own mental model

The way user think **may** be different to what designers want the user to think! So **always test** your design!



History of Human-Computer Interaction



Why do we need to learn history?

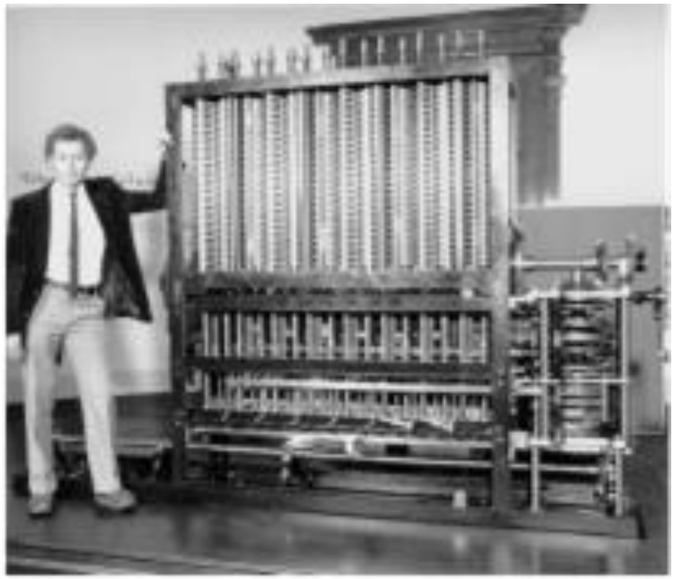
We need to know the important contributions in the field

We repeat what has been done in the past

There is no idea that goes straight to product

- Idea is refined, tested, adapted to get to the market
- Thus to develop product we need to see what research has been done in the past
- We could have INVENTED the products we see today, 20 years ago

History of Computer Science



Charles Babbage's computer

1810 - Charles Babbage & Ada Lovelace created first computing machine

1936 - Alan Turing introduced algorithm

1941 - first program-controlled hardware

1946 - von Neumann designed computer architecture

1948 - Shannon and information theory

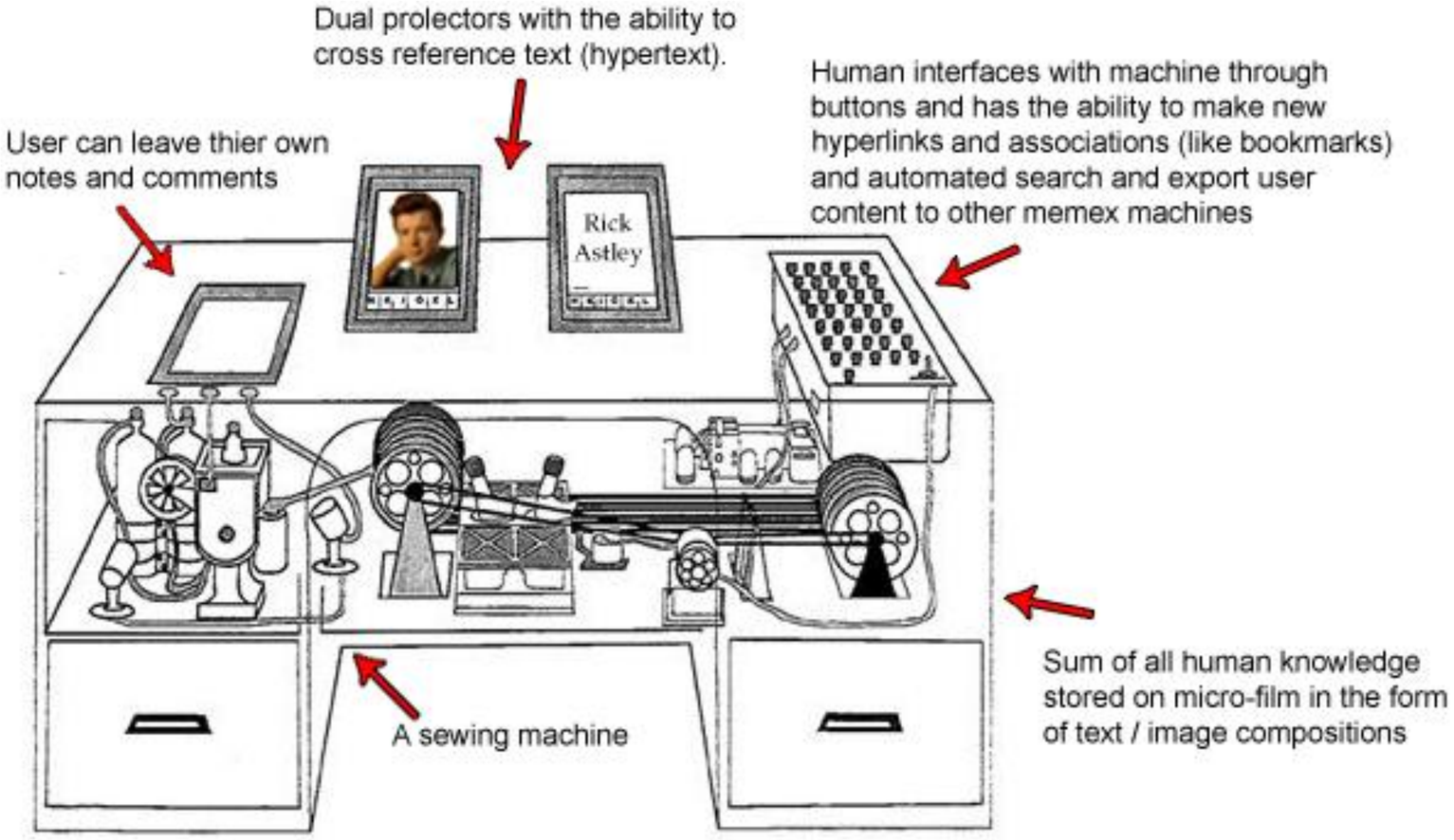
What about Human-Computer Interaction?

1963 - The invention of the mouse?

1973 - The invention of Graphical User Interface?

1985 - First multitouch device?

Memex by Vannevar Bush (1945)



Electromechanical system for “Memory and Index”

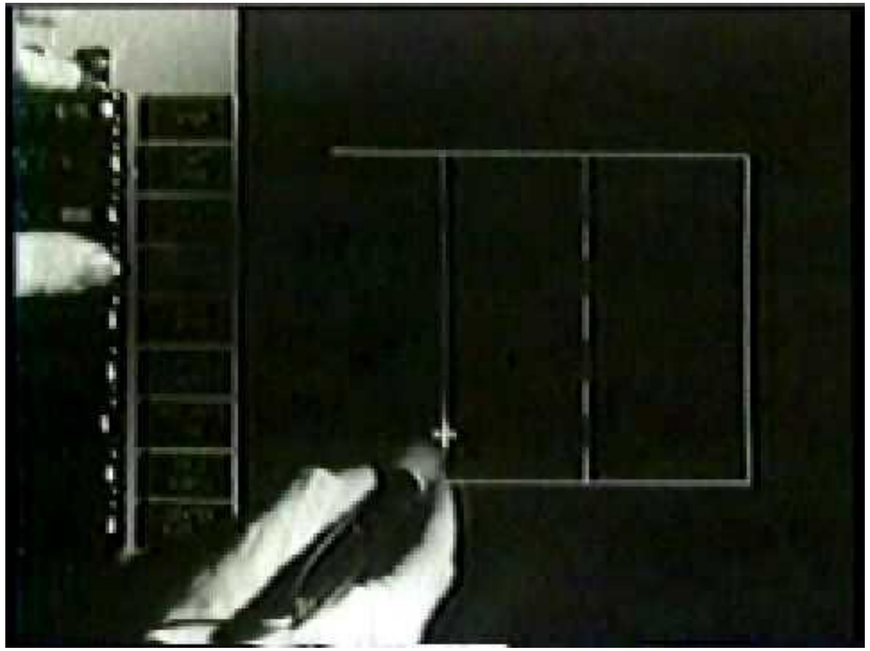
Vision for desktop information management system

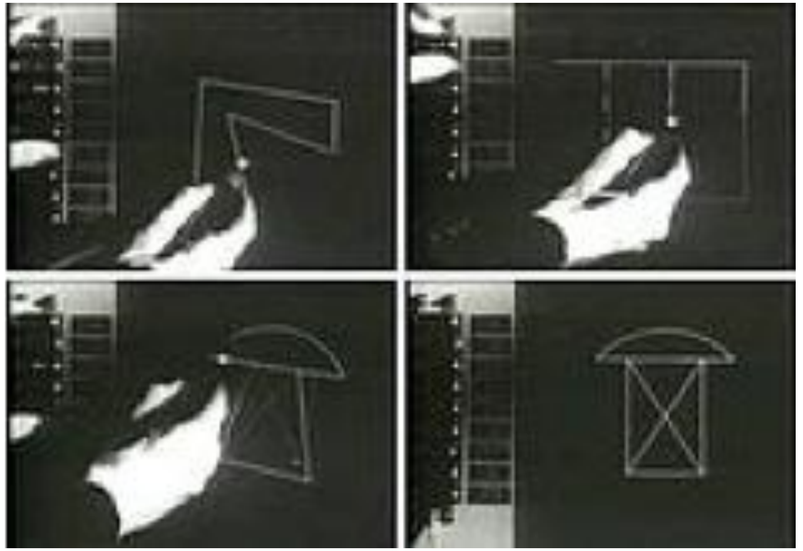
Open, edit, save, search, and store documents

Sketchpad by Ivan Sutherland (1963)

Direct manipulation geometric shapes

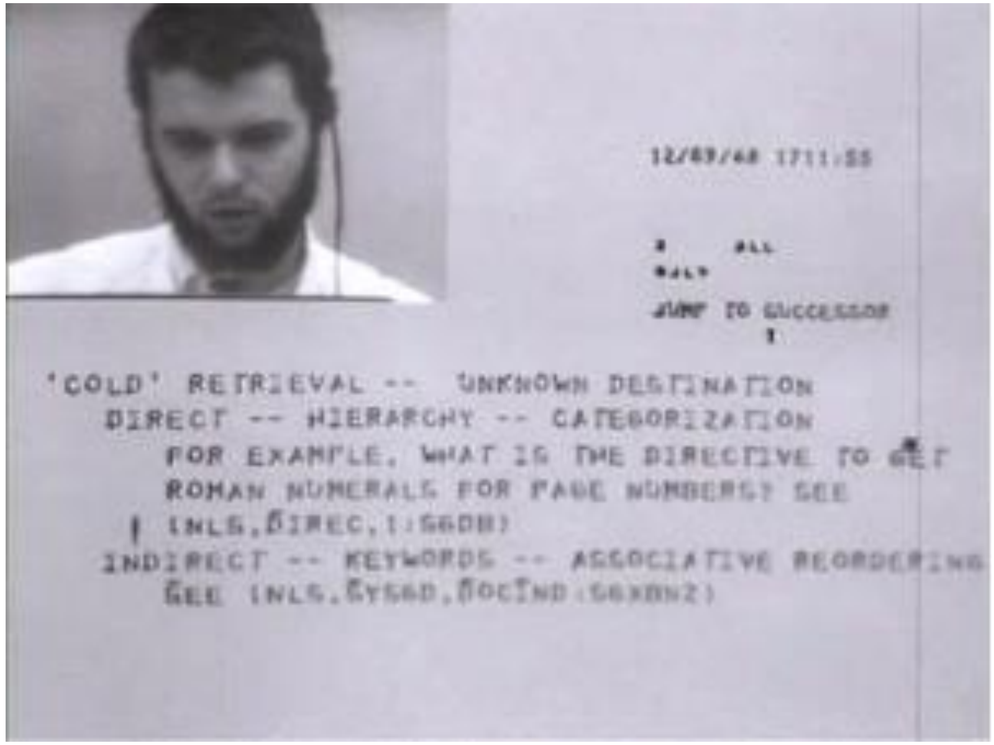
Zoom, click, drag -- just like today's touch screen/pen based screen





NLS/Augment Doug Engelbart (1968)

1. The mouse
2. Bi-manual interaction
3. Live text editing
4. Video Conferencing system



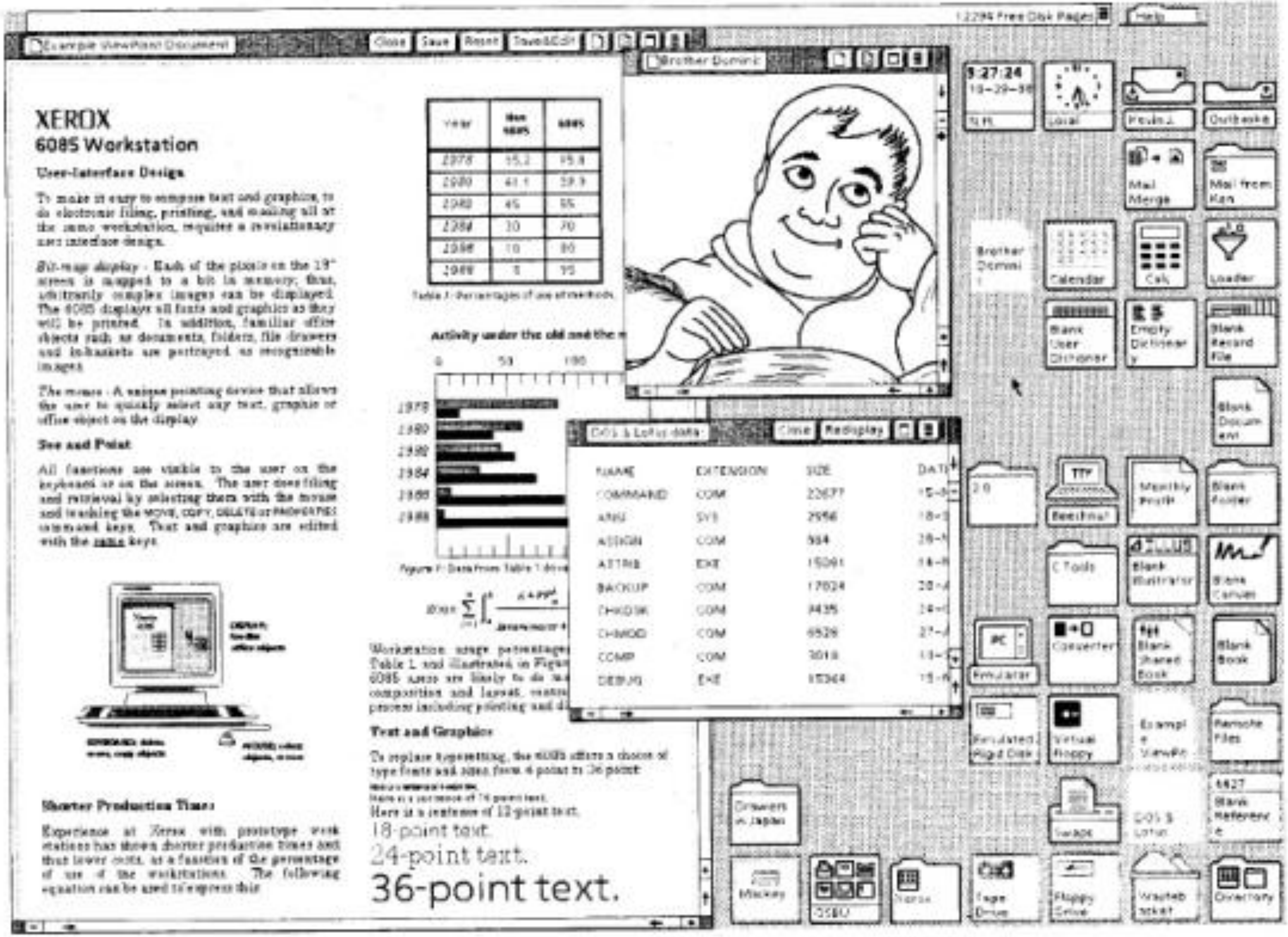
Harnessing collective intellect, facilitated by interactive computers, became his life's mission at a time when computers were viewed as number crunching tools.

--*Augmenting Human Intellect, Doug Engelbart*

Xerox Star - Xerox PARC (1981)

First graphical workstation

Document-centric approach



Example ViewPoint Document
Close
Save
Reset
Brother Dominic
XEROX
6085 Workstation
User-Interface Design
See and Point
Shorter Production Times
Text and Graphics
18-point text.
24-point text.
36-point text.
DOS & Lotus data
Close
Redisplay
NAME
EXTENSION
SIZE
COMMAND
COM
22677
ASSIGN
ATTRIB
EXE
BACKUP
CHKDSK
CHMOD
COMP
DEBUG
Help
9:27:24
Outbasket
Mail Merge
Calendar
Calc
Loader
Blank Document
Monthly Profit
Blank Folder
C Tools
Blank Illustrator
Blank Canvas
Converter
Blank Book
Emulator
Remote Files
Virtual Floppy
Drawers in Japan
Directory

Macintosh - Apple (1984)

Graphical personal computer til today

World-wide web - Tim Berners-Lee (1990)

Networked hypertext

Integrated browser + editor

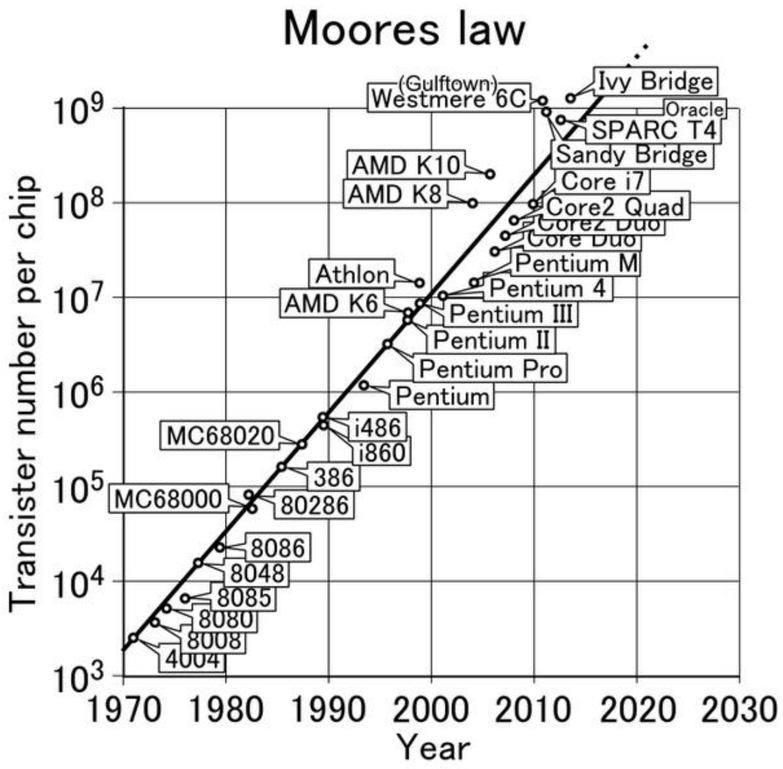
What does history tell you?

Vision of Human-Computer Interaction

NLS/Augment	Augmenting human intellect, cooperative work
↓	
Xerox Star	Personal use, document centric
↓	
Macintosh	Personal use, application centric
↓	
World-wide web	Networked, but poor user-interaction, browsing but not editing

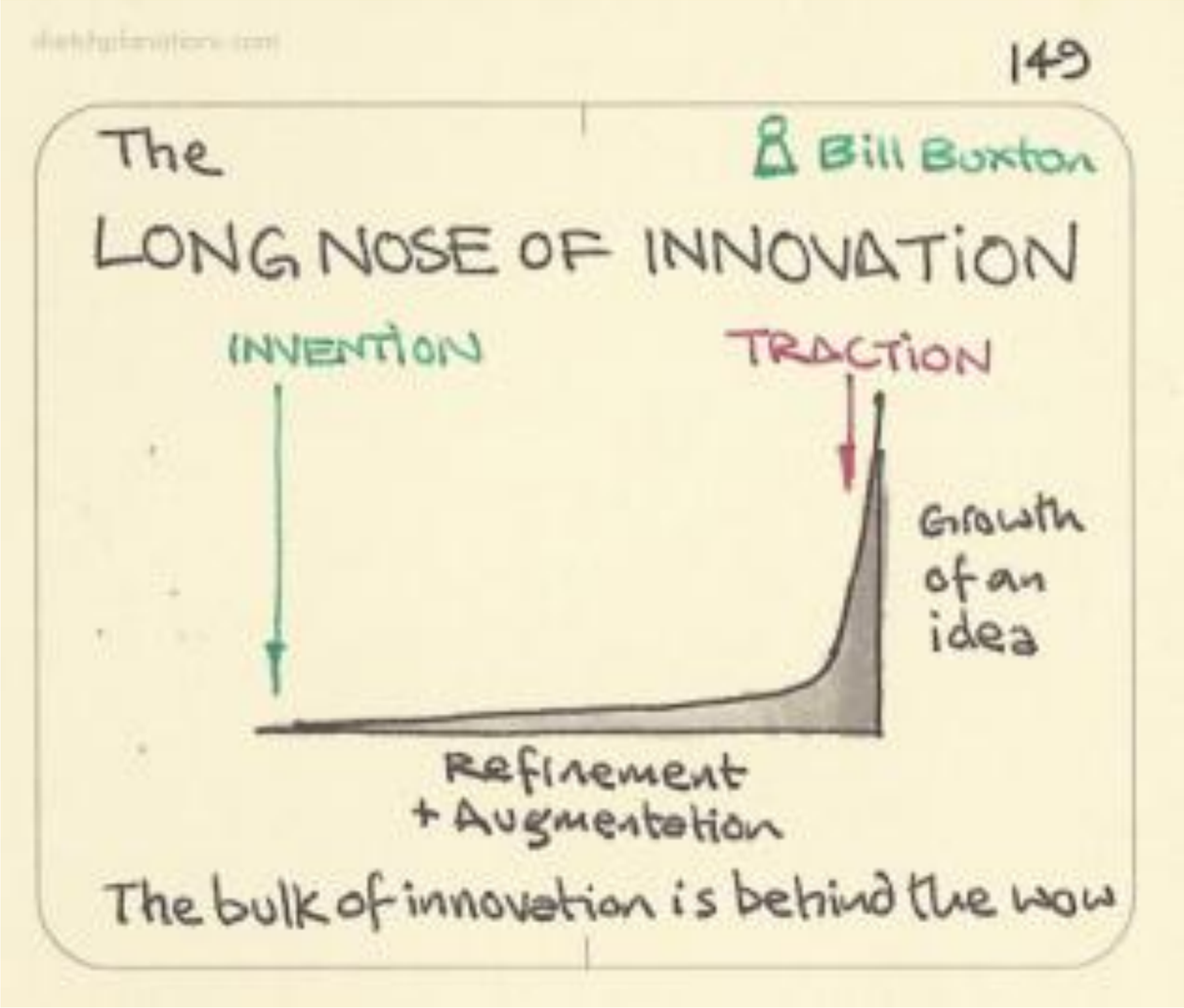
What do you think about the future?

HCI does NOT follow Moore’s Law



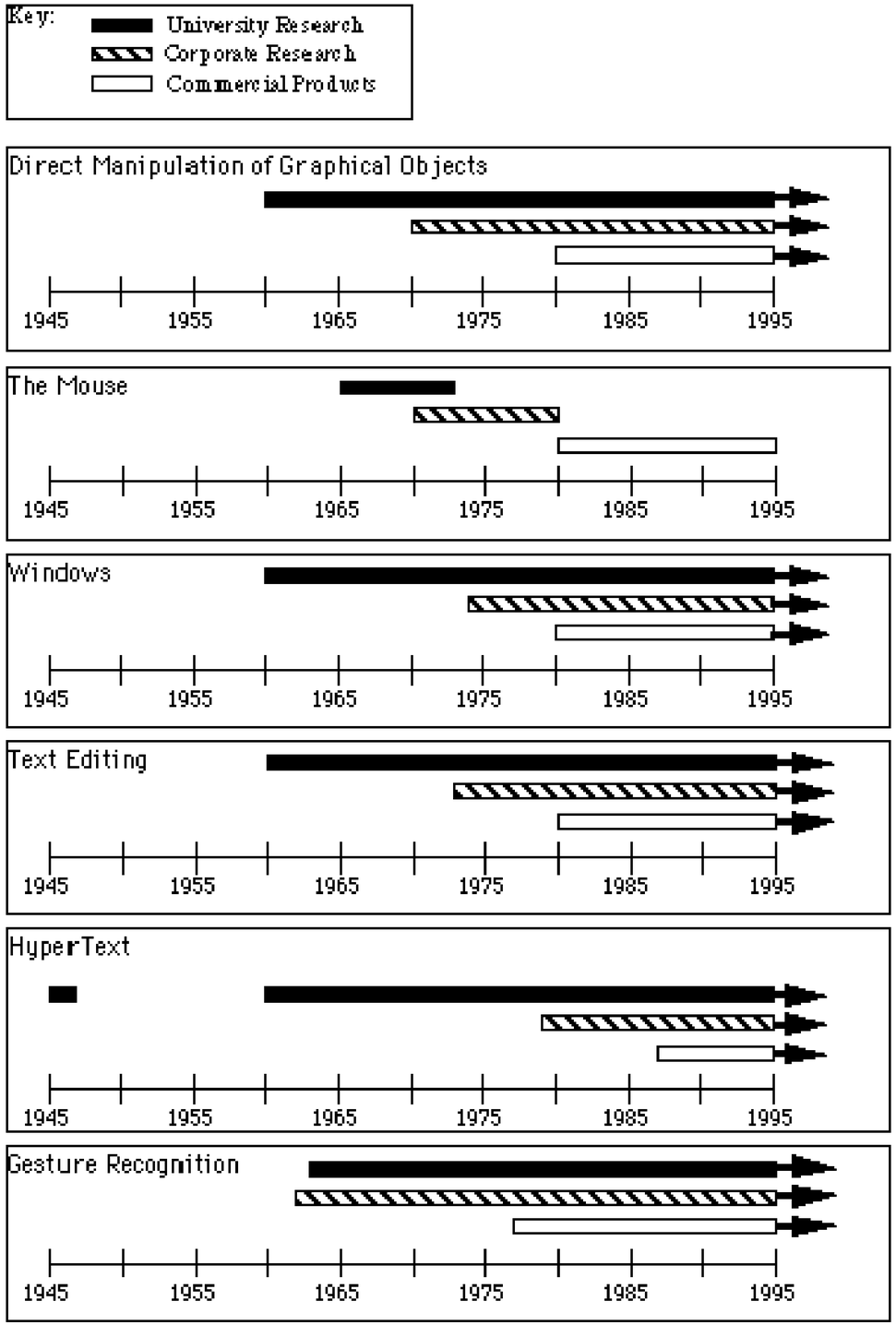
Original Macintosh		iMac 27"
January 1984 - $2500	x0.7	September 2012 - $1700
CPU 68000 - 0.7 MIPS	x214 000	CPU core i7 - 150 000 MIPS
RAM 128 kB	x31 250	RAM 4 GB
Floppy 400 kB	x2 500 000	Hard drive 1 TB
9" n&b, 512x342	x3 / x21	27" colors, 2560x1440
Keyboard, mouse	same	Keyboard, mouse
WIMP desktop	same	WIMP desktop

?



The long nose of innovation

New technologies in the market has gone through many years of refinement and augmentation



Timeline of Interface technology development

Evolution of the desk

Future of Human-Computer Interaction

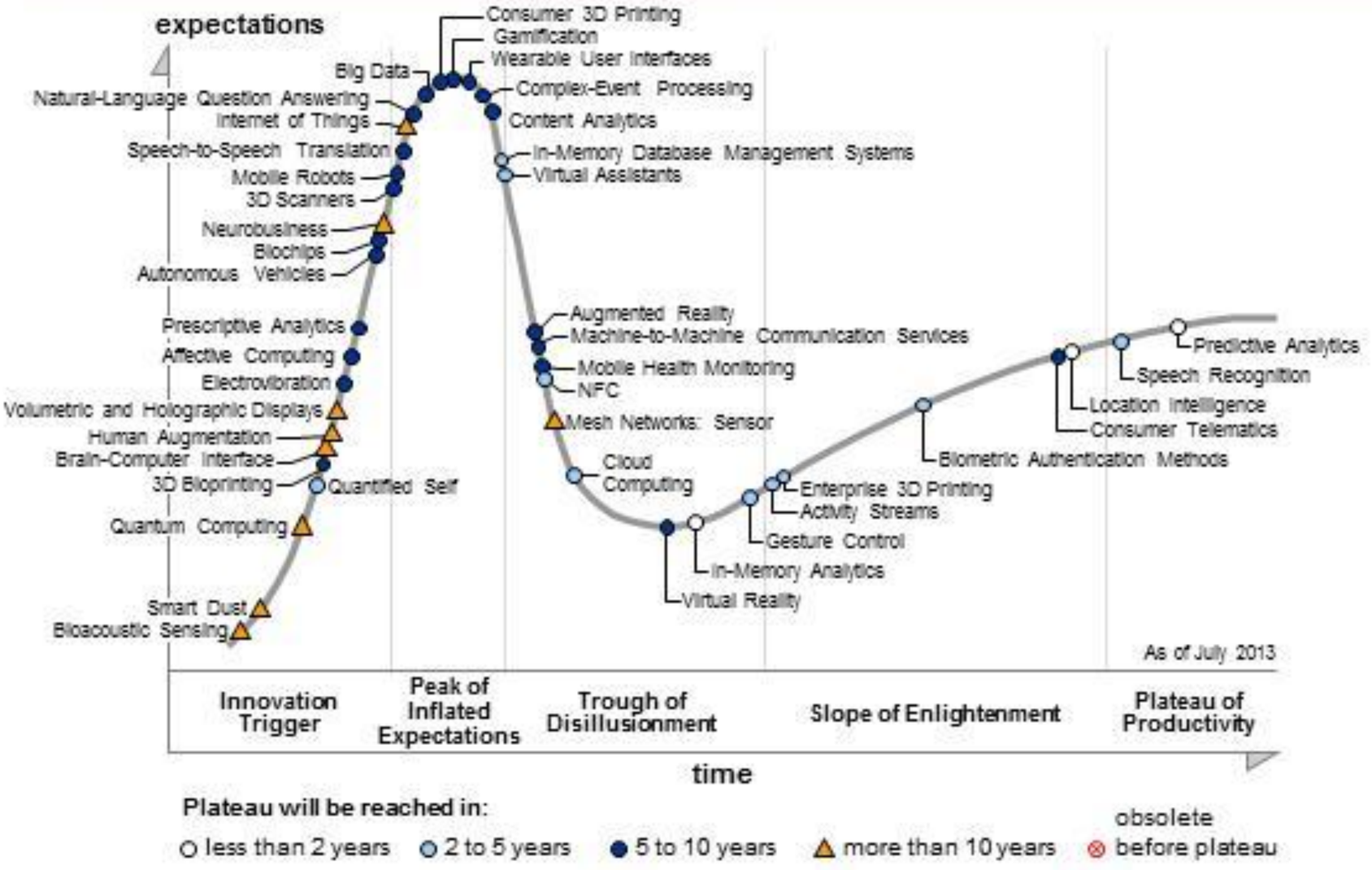
Things will move beyond desktop

- HCI is not only about things on the screen

Kick start innovation through inventions

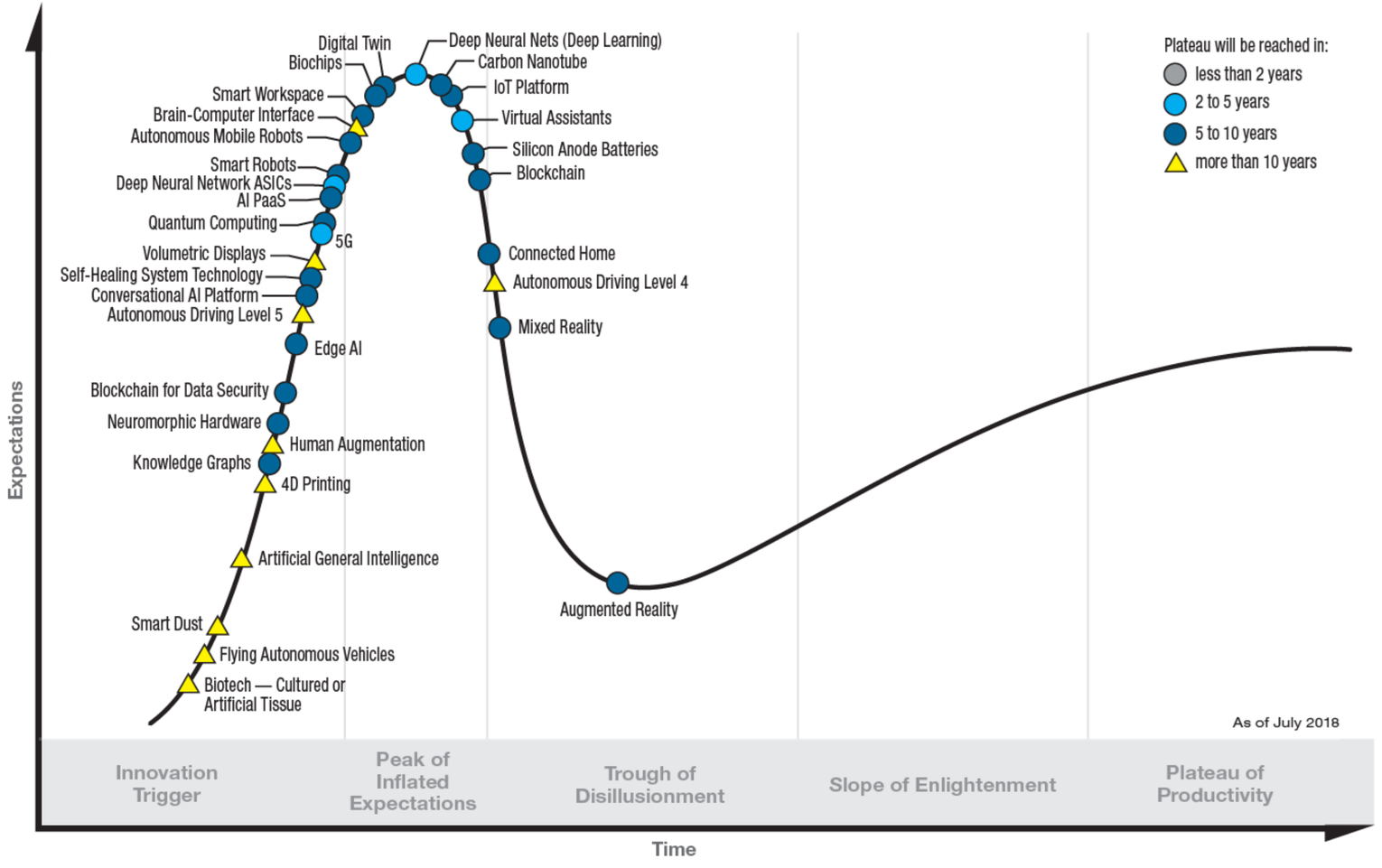
Multidiscipline approach

Emerging Technologies Hype Cycle, 2013



Gartner

Hype Cycle for Emerging Technologies, 2018



gartner.com/SmarterWithGartner

Source: Gartner (August 2018)

Gartner

Design 2

video

Definition of Design

A Discipline

A discipline that explores the dialogue between products, people, and contexts.

A Process

A process that defines a solution to help people achieve their goals.

An Artifact

An artifact produced as the result of solution definition.

Design is..

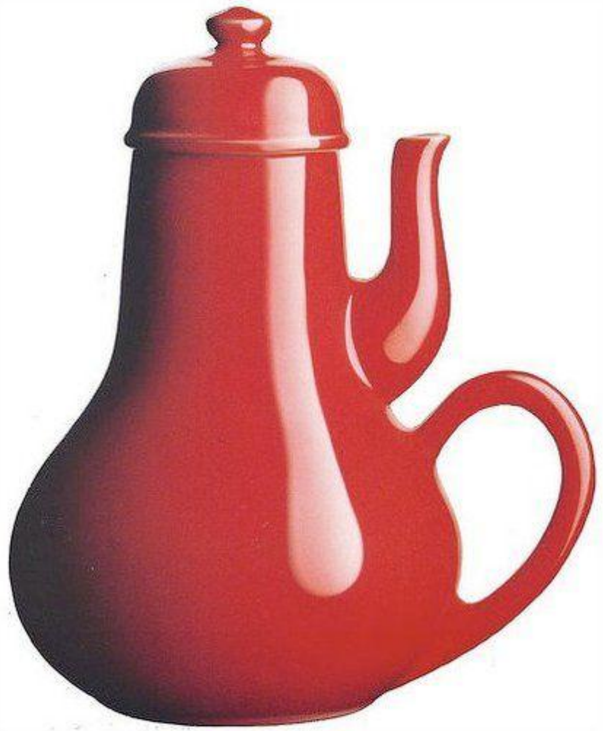
Communication

Design is communicating a message to the user. Users need to receive the message clearly from the system by the design.

Problem-Solving

Design is solving a user’s problem. We do design in the first place because there is a real problem that needs to be addressed.

Why Design?



l'oggetto del desiderio: una originale caffettierà del masochista. Deisgn: Jacques Carelmann

Why Design?

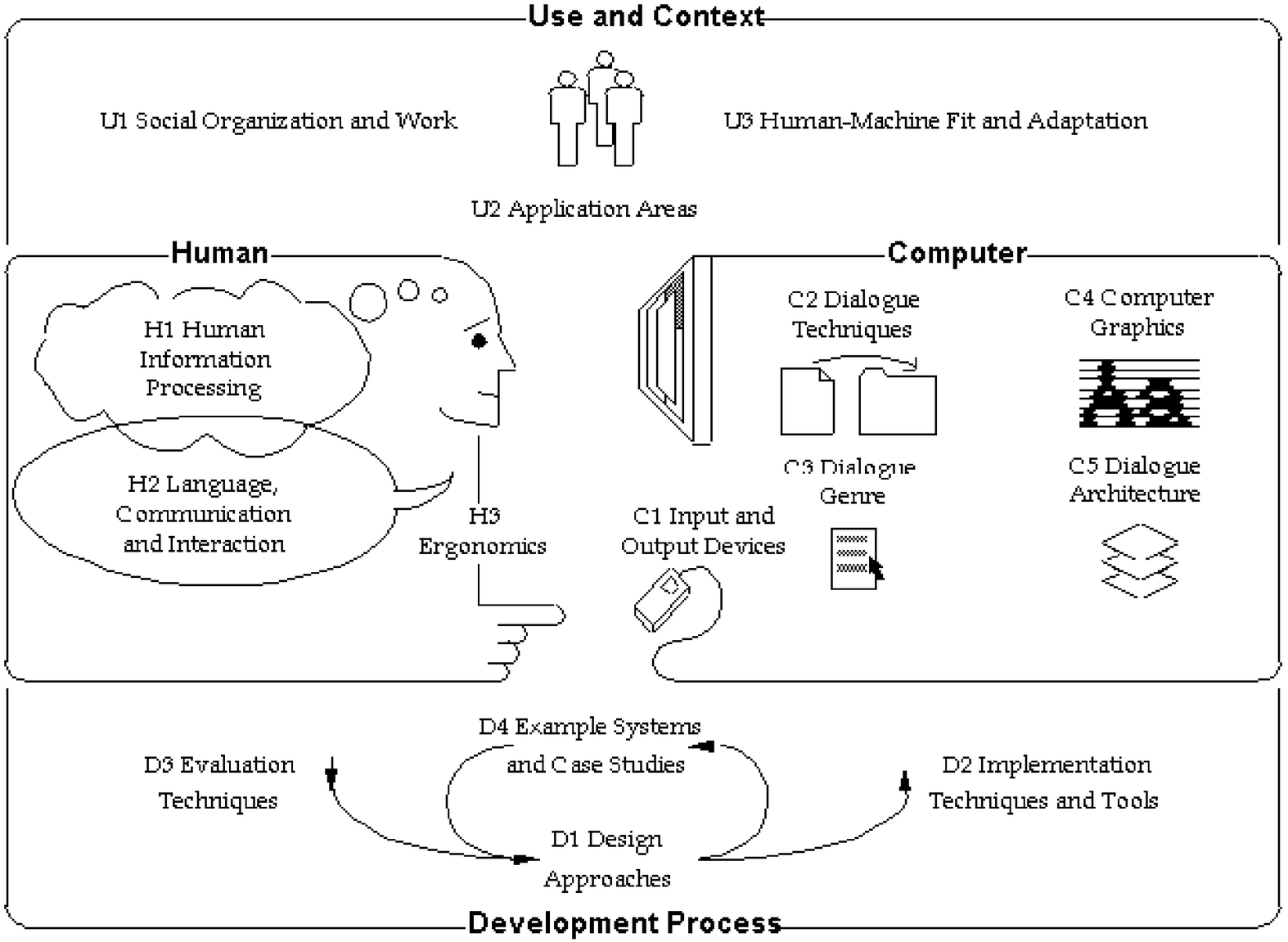

Black & Gold
Fly & Insect Killer
PINE
Quality Assured
300g NET
Black & Gold
Canola Cooking Spray
Quality Assured
400g NET
© Boredpanda.com


Don't
BE
HAPPY
worry

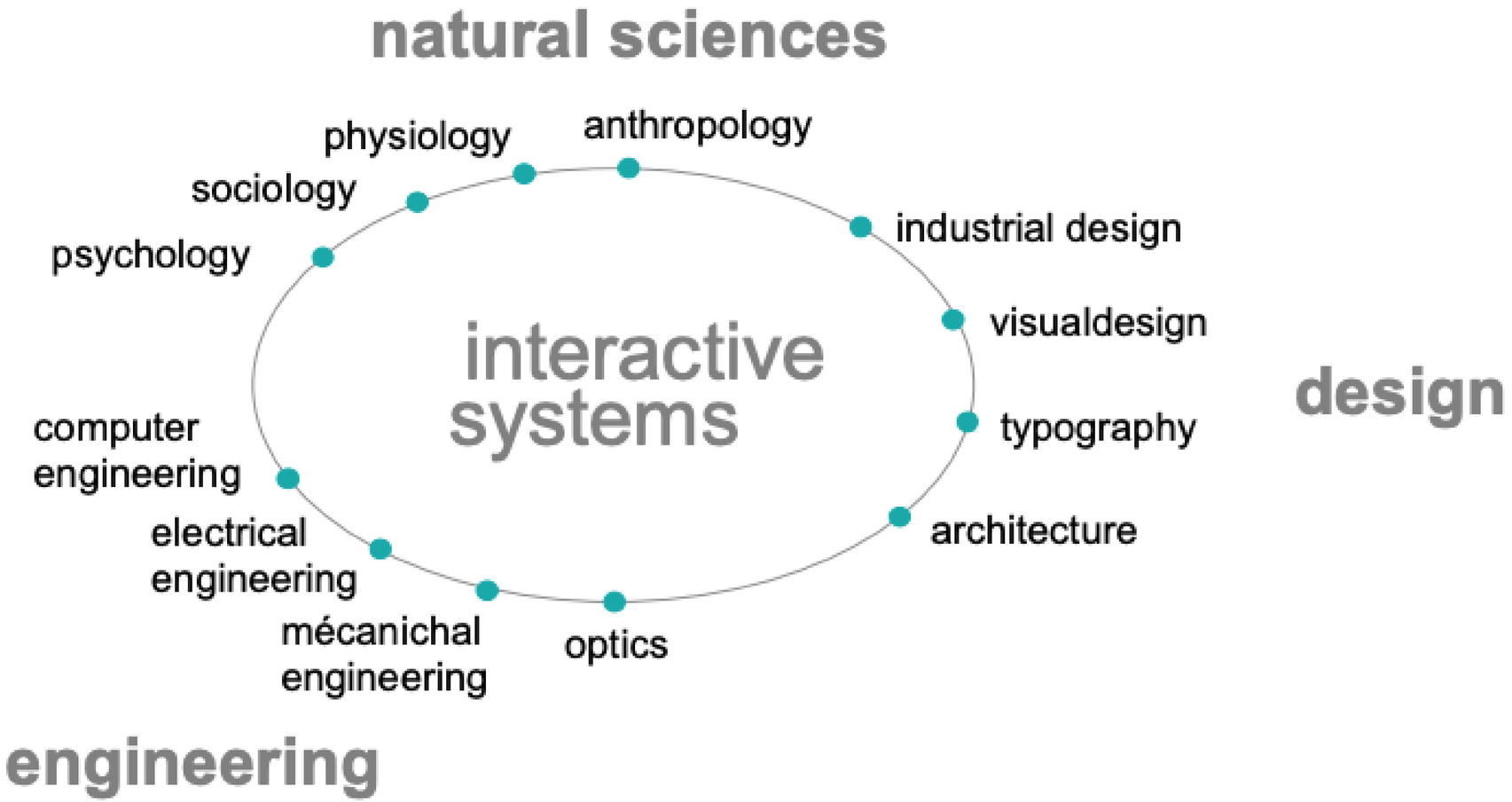
Benefits of Good Design

- Shorter learning time
- Higher productivity
- Fewer errors
- Safer
- More enjoyable
- More profitable! $$$

Multidisciplinary Approach



Multidisciplinary Approach



Design Key Stages

Learn

To build a design we need to first learn about the user and the problem they have. After we have a design we can do evaluation of our design.

Methodologies:

- User research (interview, observation, survey)
- Usability Testing
- Persona

Design

The actual design process can include diverging and converging between ideas, do design reviews among designers and build the prototype.

Methodologies:

- Brainstorming
- Sketching
- Wireframing
- Paper prototyping
- High fidelity prototype

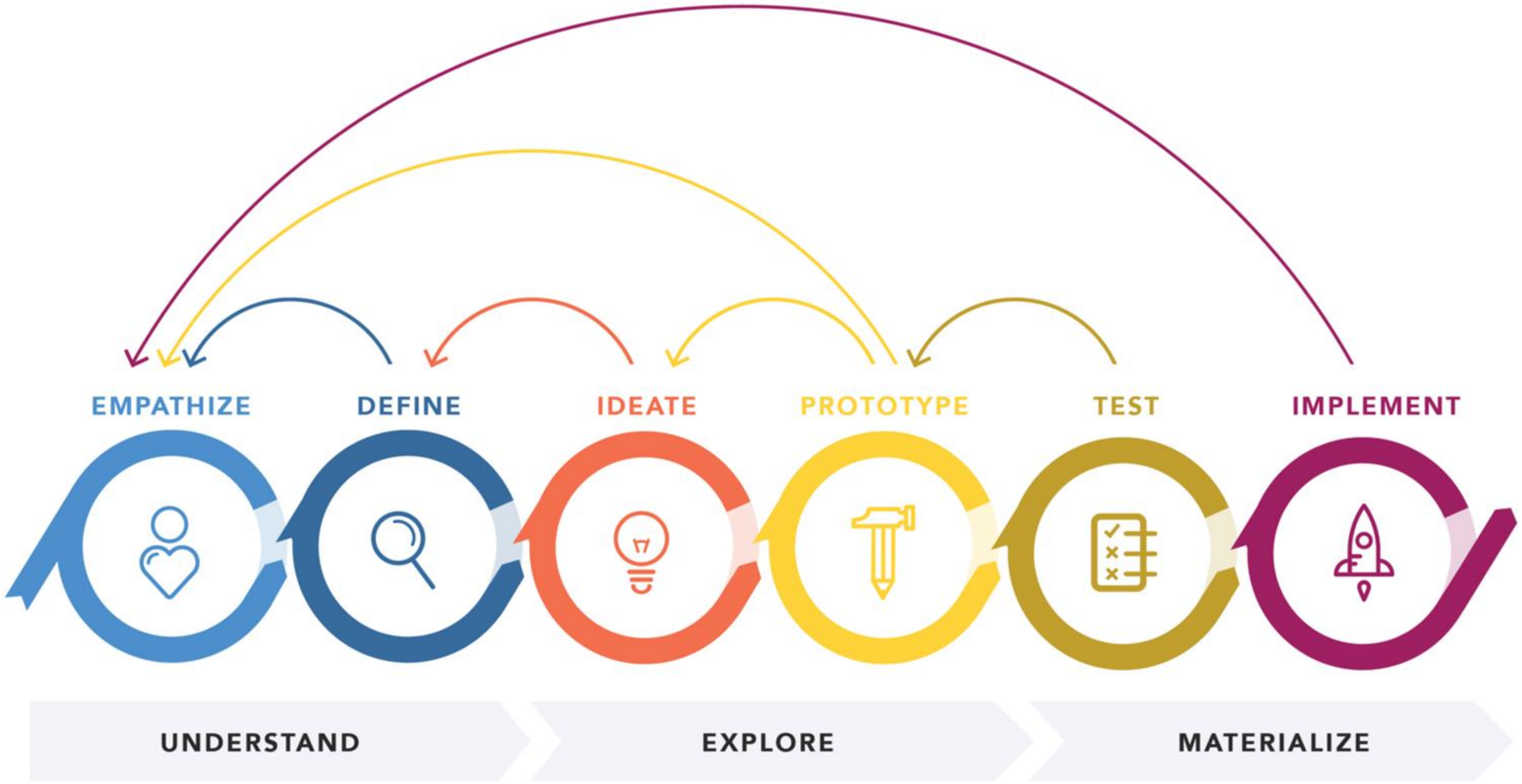
Common Design Processes

Design Thinking

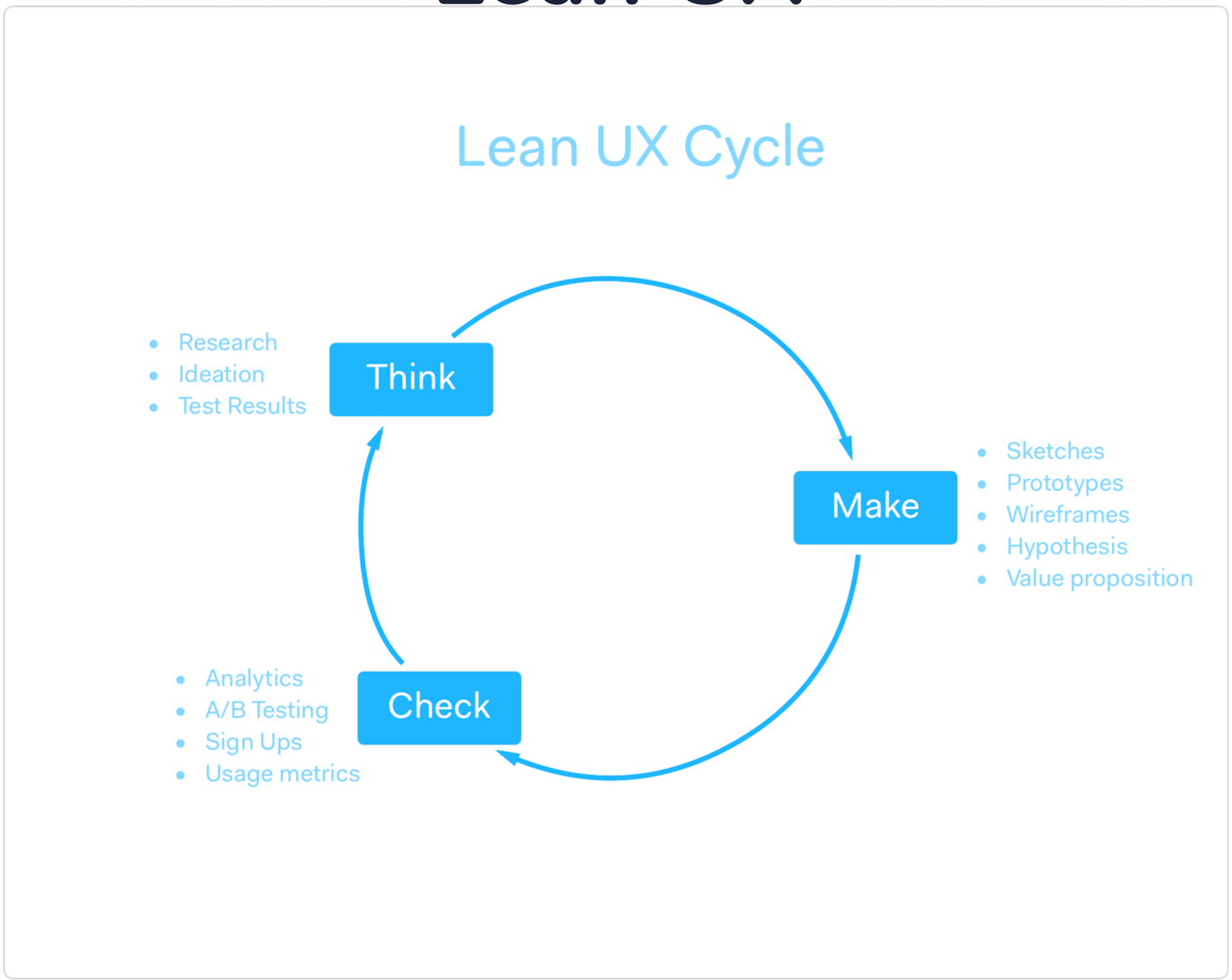
Lean

Agile

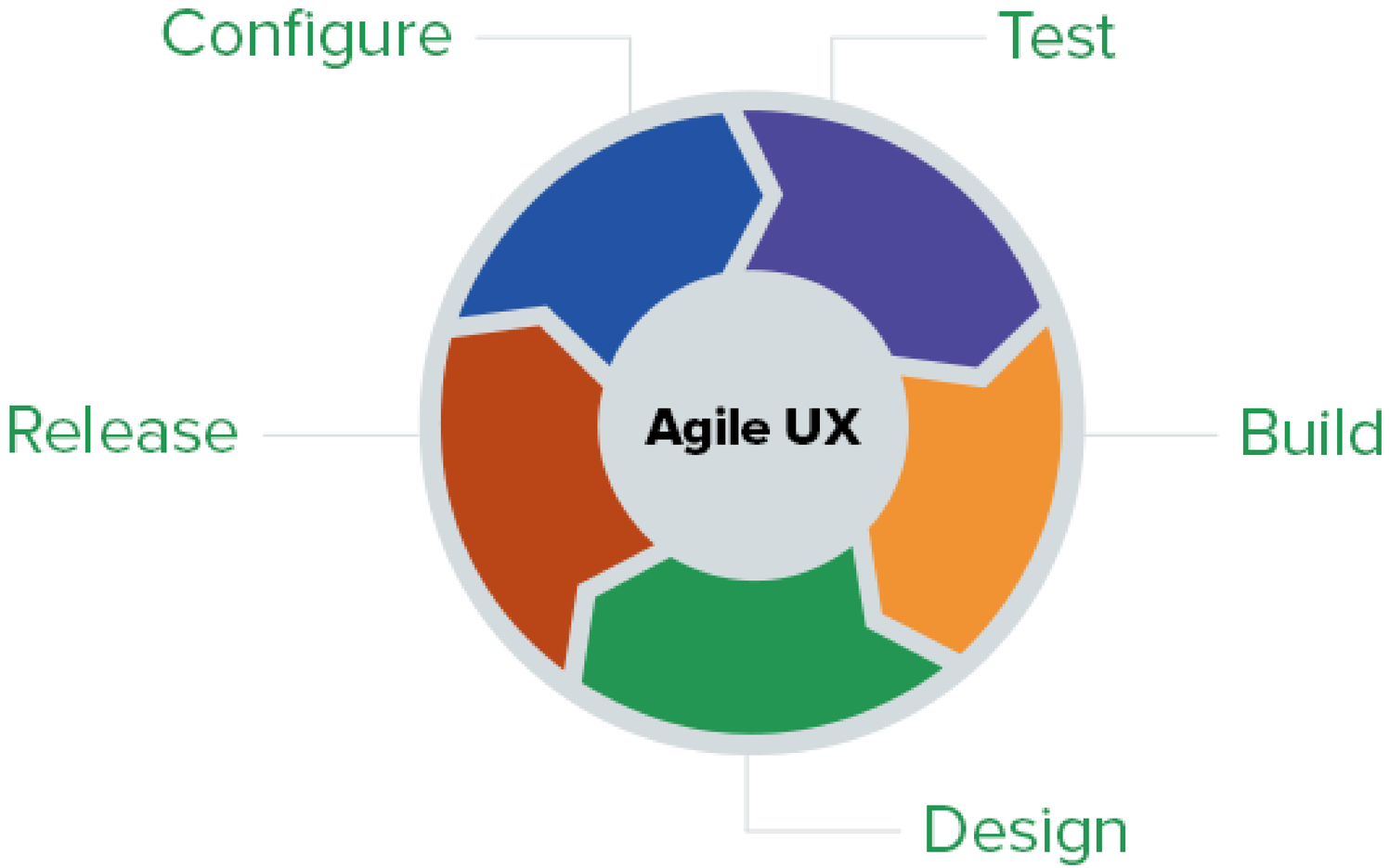
Design Thinking



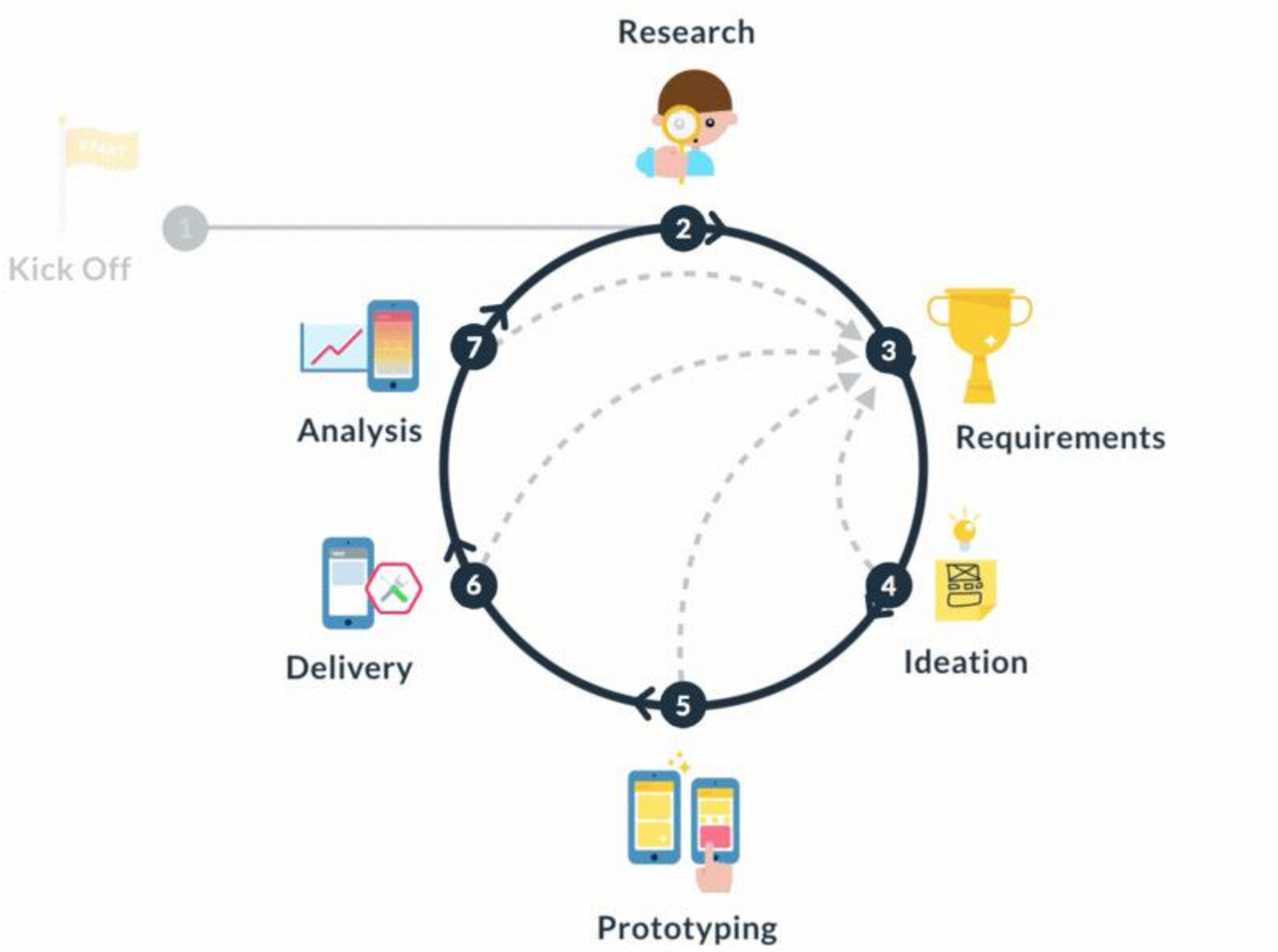
Lean UX


Lean UX Cycle
Research
Ideation
Test Results
Think
Make
Sketches
Prototypes
Wireframes
Hypothesis
Value proposition
Check
Analytics
A/B Testing
Sign Ups
Usage metrics

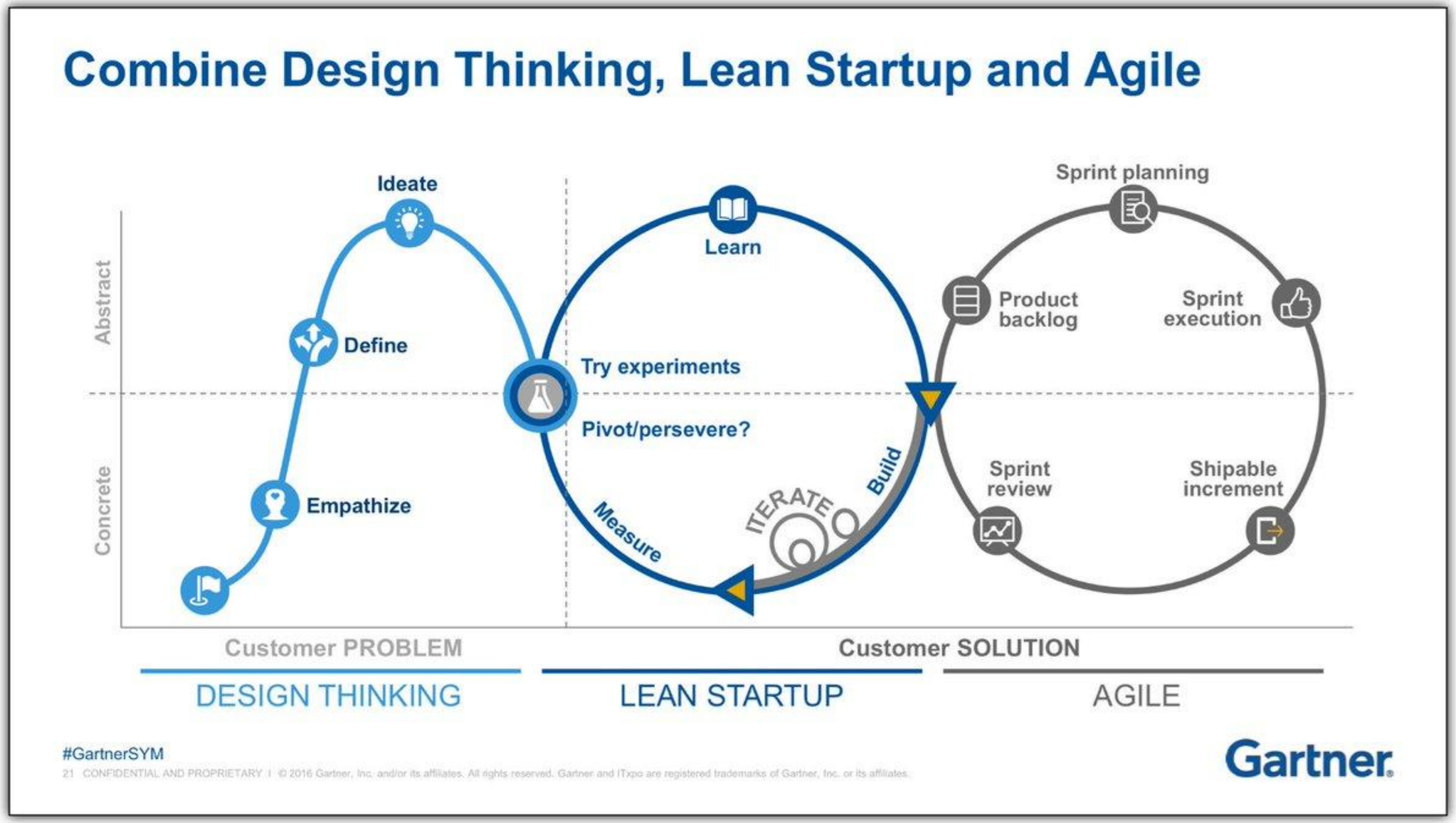
Agile UX



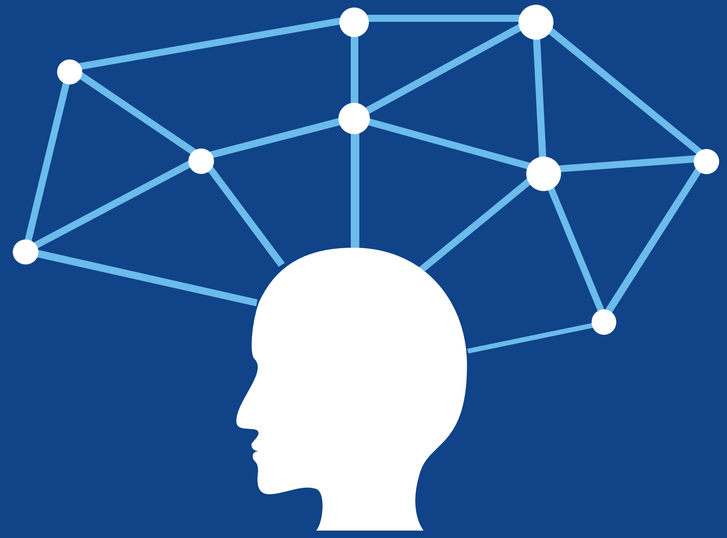
Modification, example XD Studio



Modification, A Combination



Common terms in the field

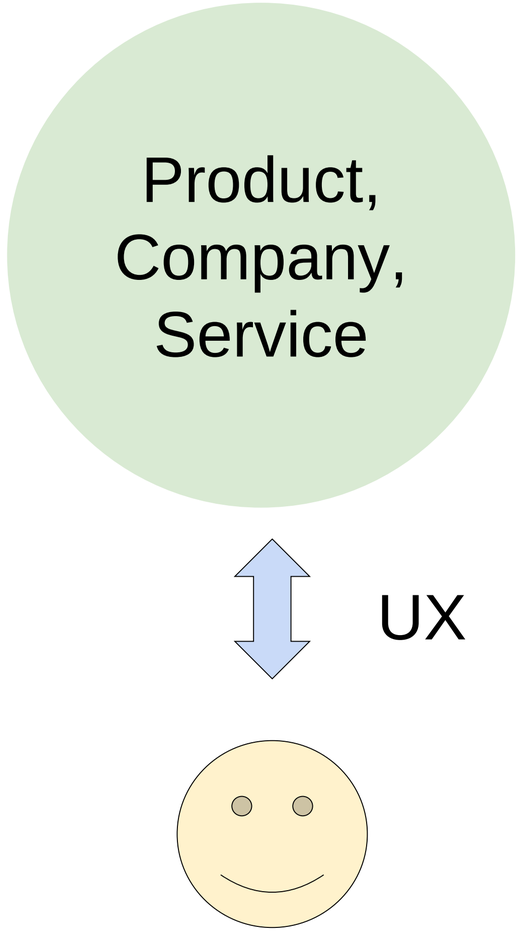


1.User Experience (UX)

“

"User experience" encompasses all aspects of the end-user's interaction with the company, its services, and its products.

- Nielsen Norman Group



UX Designer?

Good UX is a **GOAL** of the whole company

To have a **good UX** needs **good product, good brand, good strategy, good marketing, good service, and so on**

Designers' job usually is to build the system, product and service that allowed those different experiences to happen. Experience is the built from **all** product, system, or service in the company.

Try to **not** use the term UX Designer unless you do everything yourself! :)

UX Research

Yes! **UX can be observed** and thus researched!

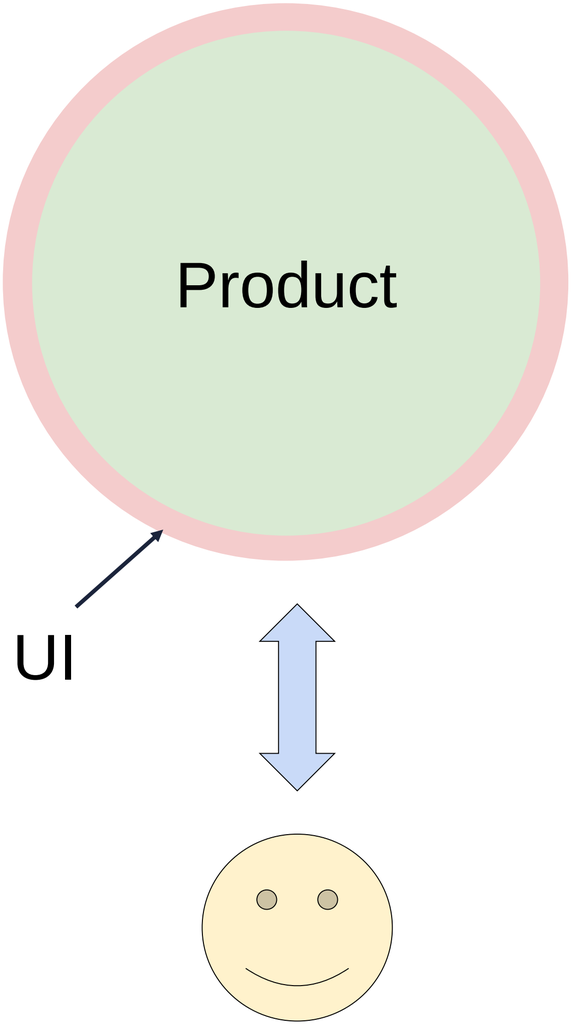
UX Researcher’s job is to find out how is the experience user or customer have from a product, service, or system.

But again sometimes the term UX is too broad, usually researchers do more specific tasks like user research, market research, product research, design research, ...

2. User Interface (UI)

“

A computer-mediated means to facilitate communication between human beings or between a human being and an artifact.



UI Designer?

A UI Designer works on **good layout/flow** as well as **pretty visuals**.

But pretty UI design is **not** always good design!

UI Designer **today** usually have skills from Visual Design or Graphic Design.

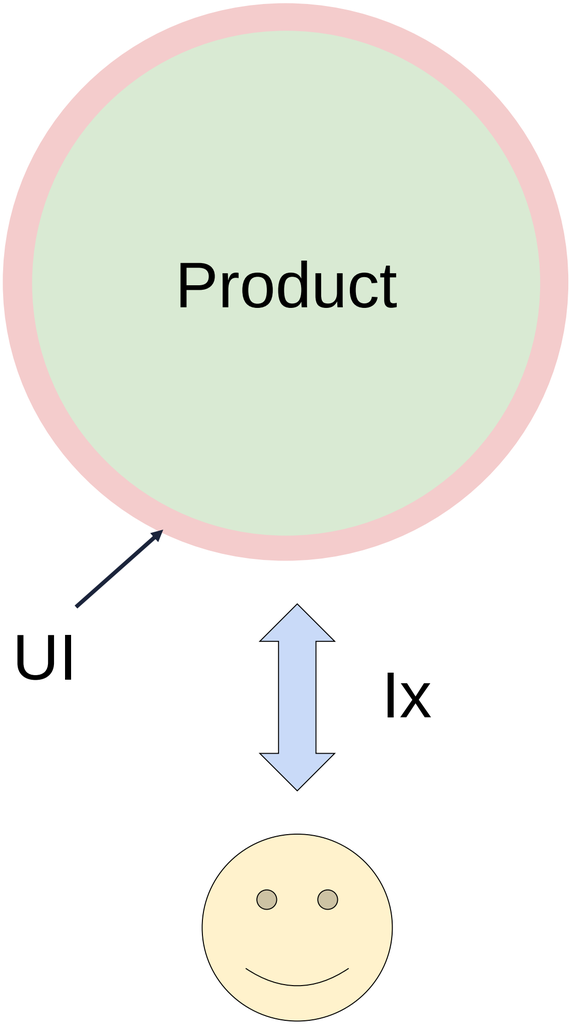
What skills should UI Design **in the future** have? Remember user interface is also evolving...

3. Interaction Design (Ix)

“

Ix defines the structure and behavior of interactive systems, to create meaningful relationships between people and the products and services that they use.

(Ix Design Association, 2003).



Interaction Designer?

Interaction designer usually **goes beyond the user interface**.

They need to understand user’s behaviour, what motivates user to do things.

They are concerned also about content, engagement, logic, and usability.

4. Product Design?
5. Product Experience?
6. Service Design?
7. Customer Experience?
etc

Similar! but usually the **scope** is the different

Thanks!

Any questions?