Snippets

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MARCH 2021

Meetings (Part 1)

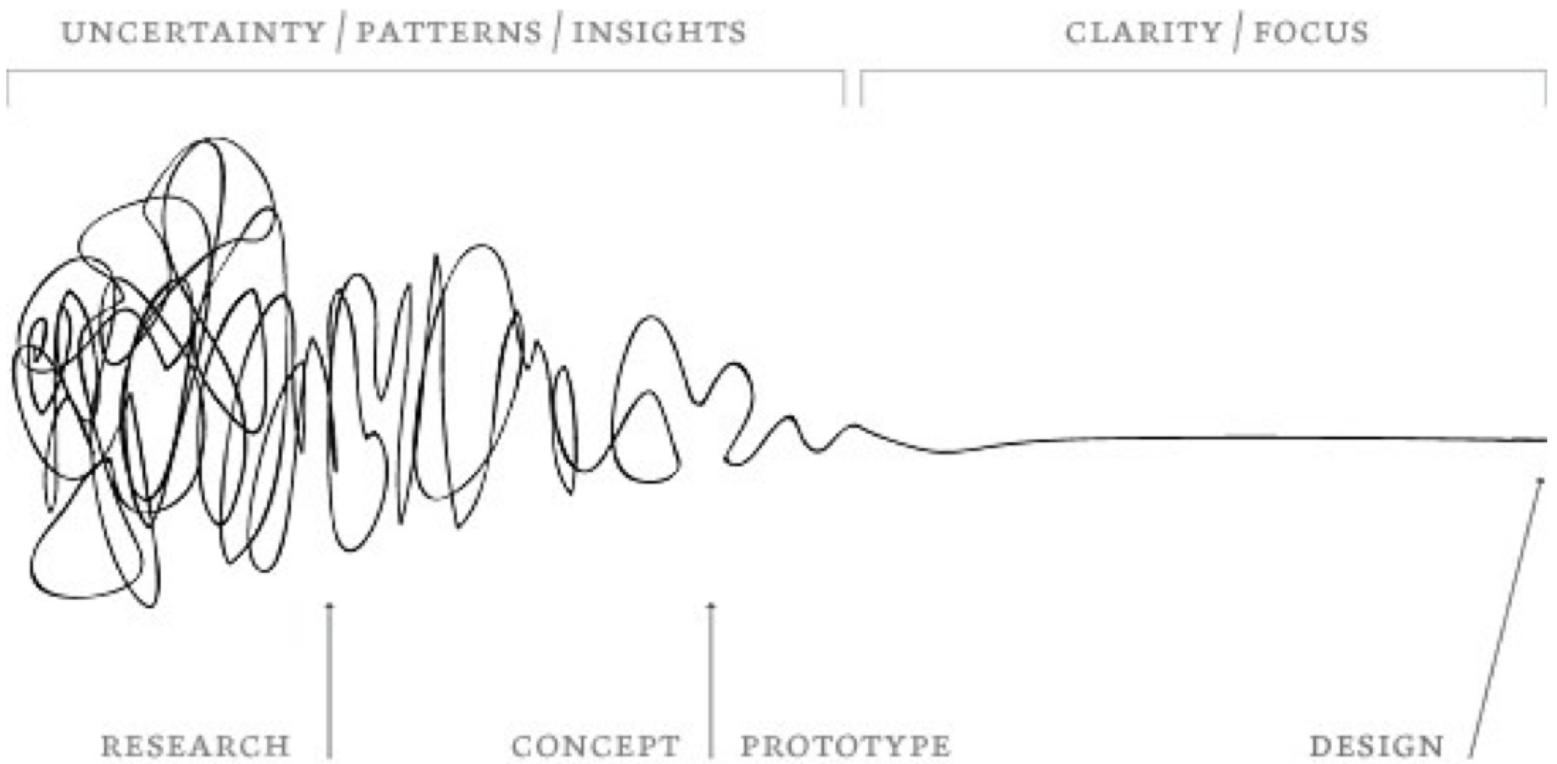
- Who needs to attend?
- Send out a meeting request.
- Use Doodle Poll
- Send out a Calendar Invite
- Include all the meeting information

Meetings (Part 2)

- Date, Place & Who
- What happened at the last meeting
- Agenda
- What needs to happen
- Date, Place, Time

What the Hell is Design?

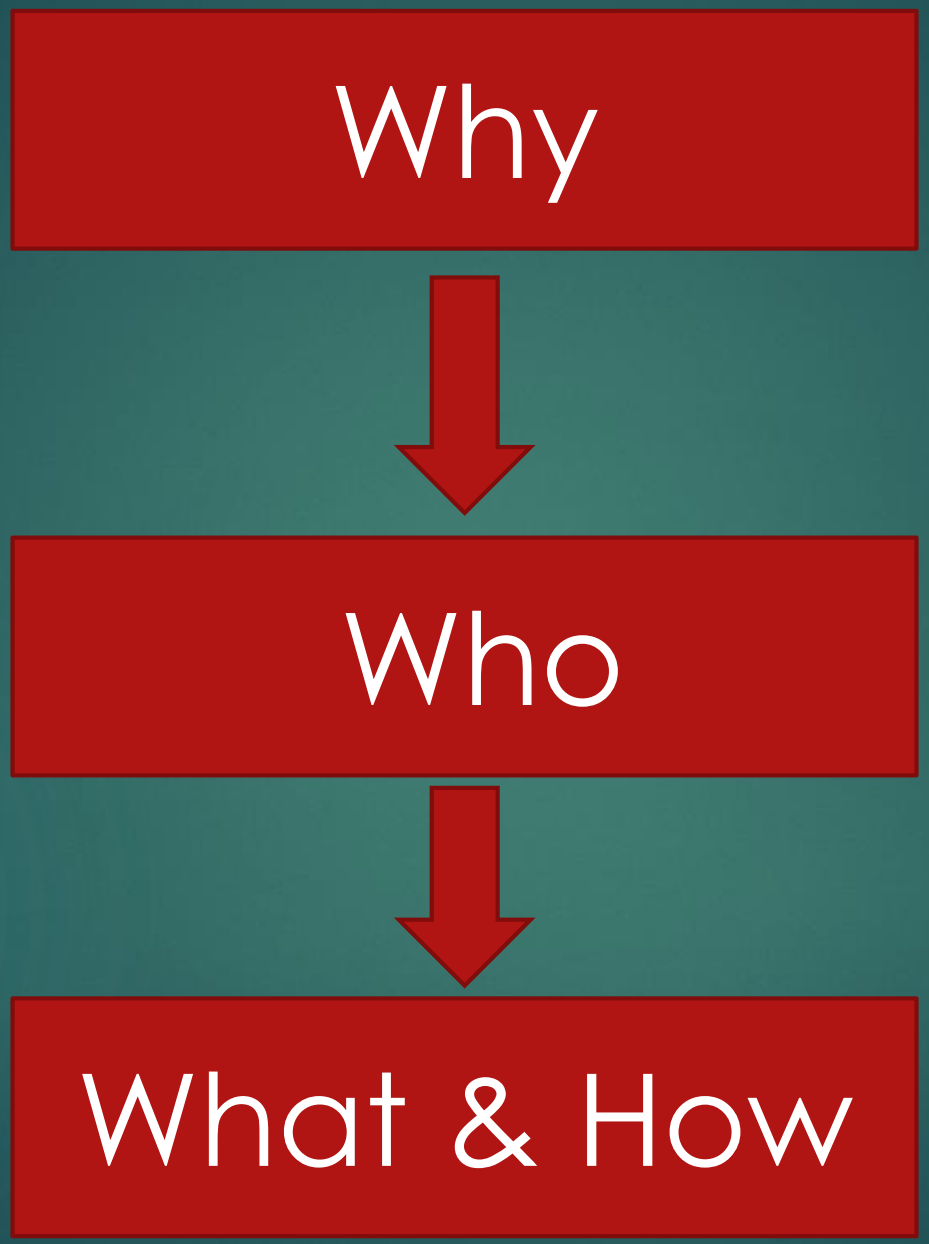
You are trying to solve a problem!


UNCERTAINTY / PATTERNS / INSIGHTS
CLARITY / FOCUS
RESEARCH
CONCEPT
PROTOTYPE
DESIGN

Design Thinking

- *Why* are you designing a solution. (Purpose Statement)
- *Who* are you designing a solution for.
- *What does the user need the solution to do?*
- *How are you going to do it?*

What happens when you don't understand Why, Who, What & How



General audience, emphasis on a broad understanding

Specific audience, emphasis on detail and precision

What has two Sides:

User Requirement

Technical Specification

User Requirements

- Can be used for telephone calls
- Can send standard text messages
- Can be carried in a pocket
- Accesses the internet
- Updates a street map fast enough to be useful for navigation.

Specifications

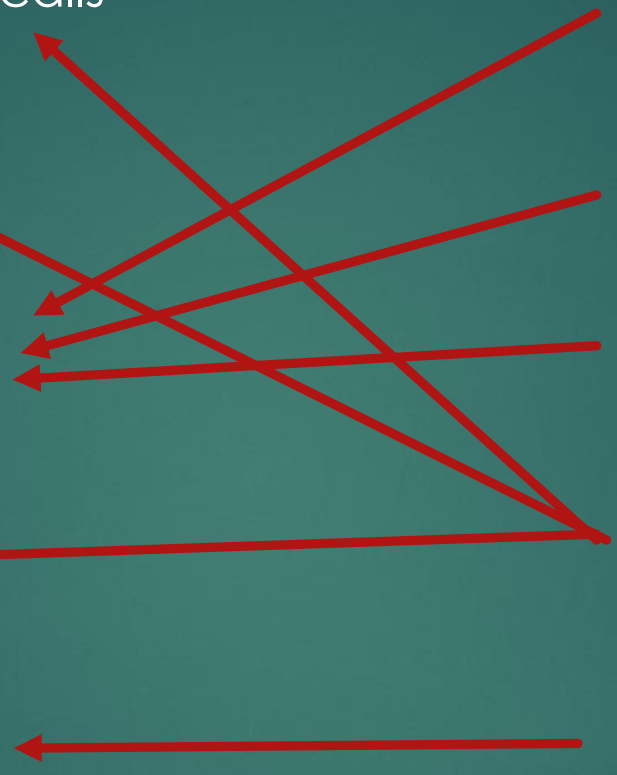
- Weighs less than 150g
- Corners radius 5mm
- Not to exceed 150x 80 x 8mm
- 4G network compatibility
- Screen refresh of map in less than 2 seconds when 3 G cellular signal strength > x dBm.
- Screen meets standard xyz for scratch resistance.

Requirements

- Can be used for telephone calls
- Can send standard text messages
- Can be carried in a pocket
- Accesses the internet
- Updates a street map fast enough to be useful for a passenger to navigate by.

Specifications

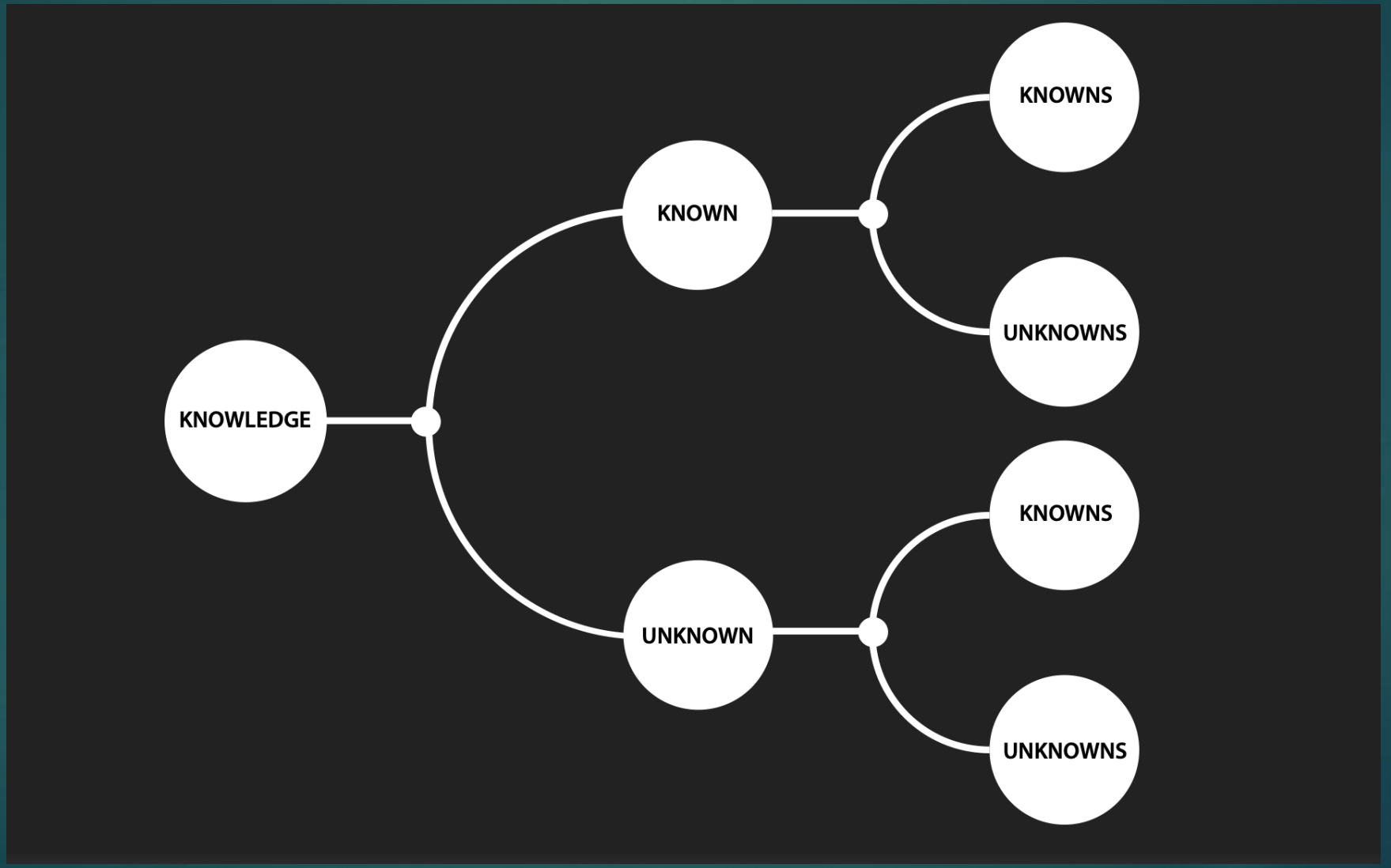
- Weighs less than 150g
- Corners radius 5mm
- Not to exceed 150x 80 x 8mm
- 4G network compatibility
- Screen refresh of map in less than 2 seconds when 3 G



Why, who, what and how…

- As a designer you must understand this clearly!

What you don't know!



US politician building a case for war

Minimum Viable Product

Build something simple so you can **show** people.

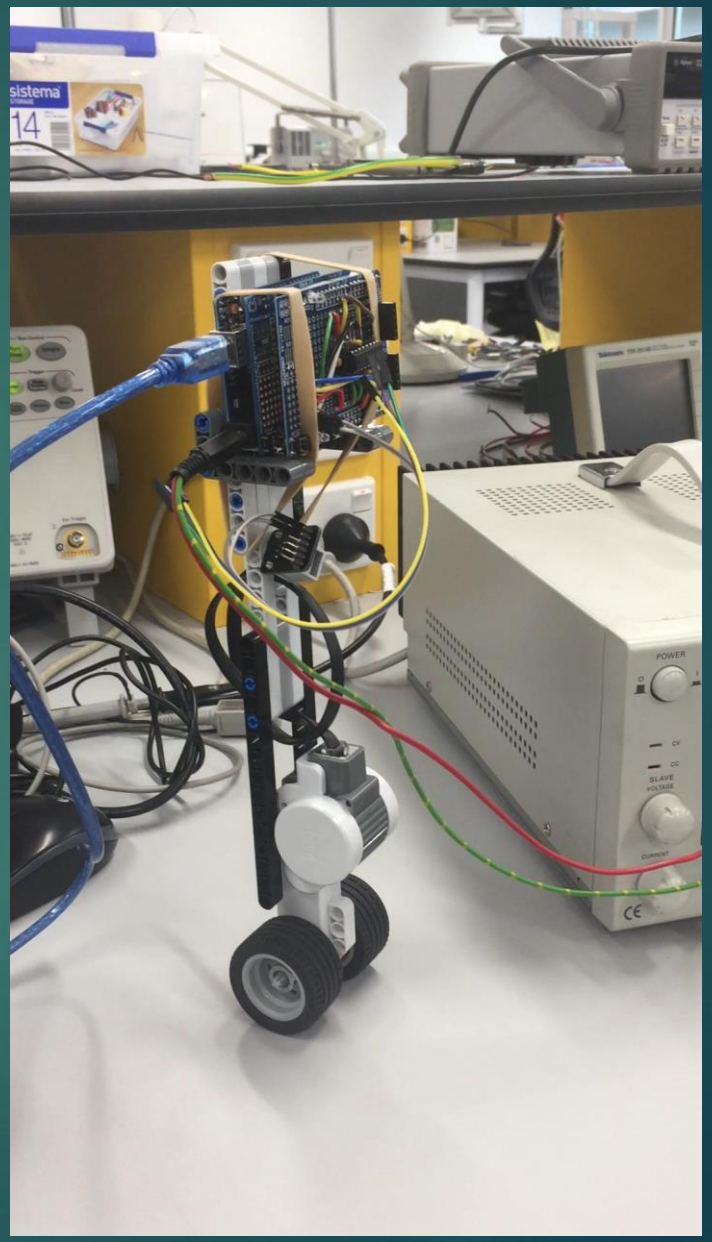
It came out of software engineering

e.g. INCIS police computer project

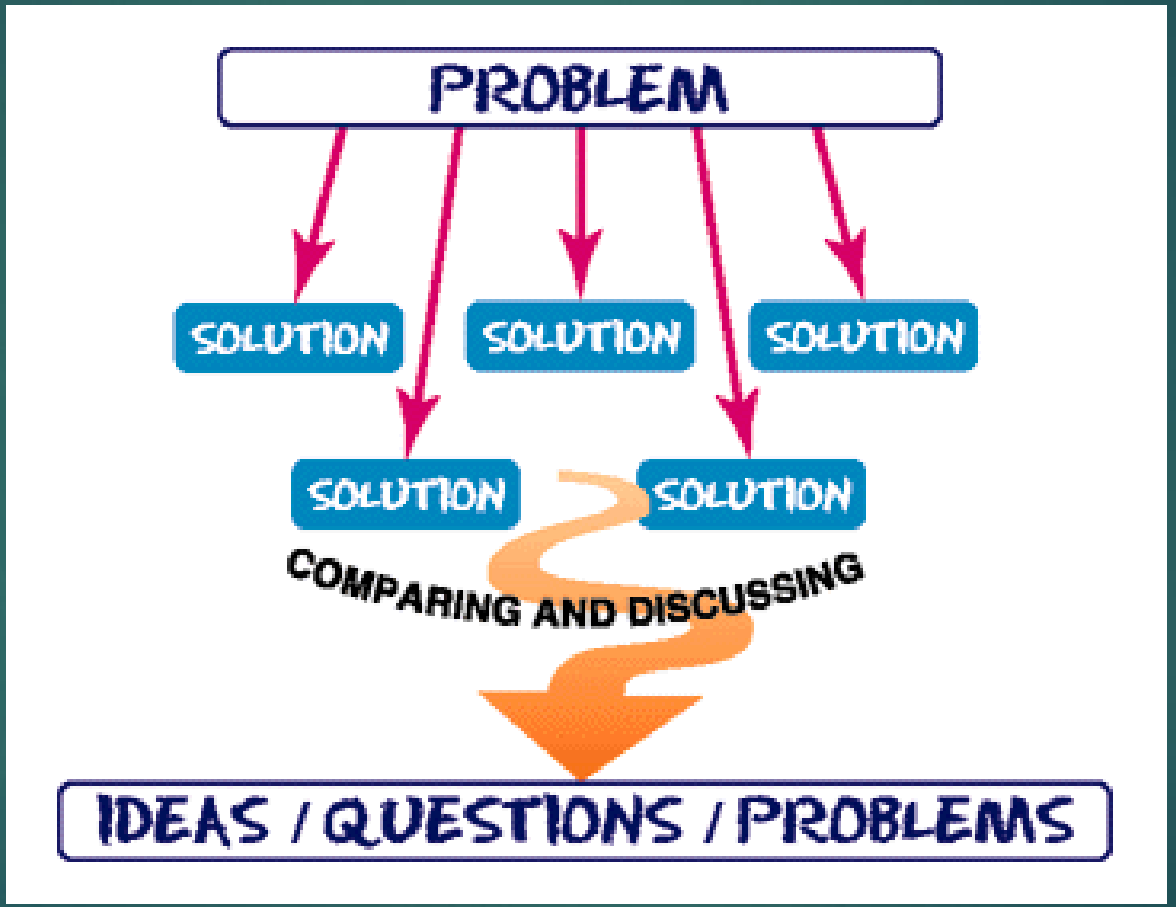
Minimum viable product (MVP)

- You want to define the minimum product that could potentially be sold, so keep the requirements down to the essentials.
- Build it as quickly as possible
- Obtain feedback
- The apps on your phone are built this way….

Self balancing robot



Open Problems



Open problems into Closed problems.

User Requirement ----Device needs to operate for 12hr.

Open Problem

- Mains power
- Fuel cells
- Super capacitors
- Generator
- Batteries

Divide and conquer

Top down design

- The basic idea is to divide a bigger problem into a number of smaller problems.

Example - Going to the moon

Designed for going between the earth and the moon

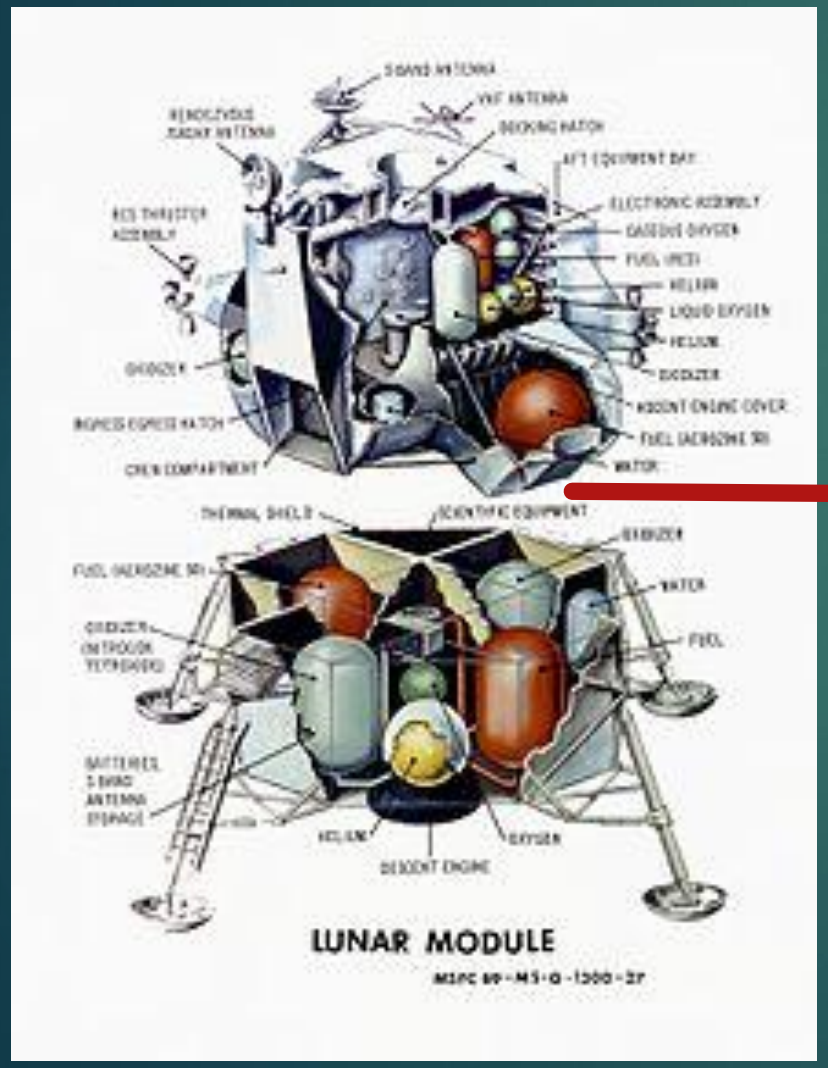
North American Aviation

Designed for landing on the moon

Grumman Aircraft

Interface

Landing on the moon



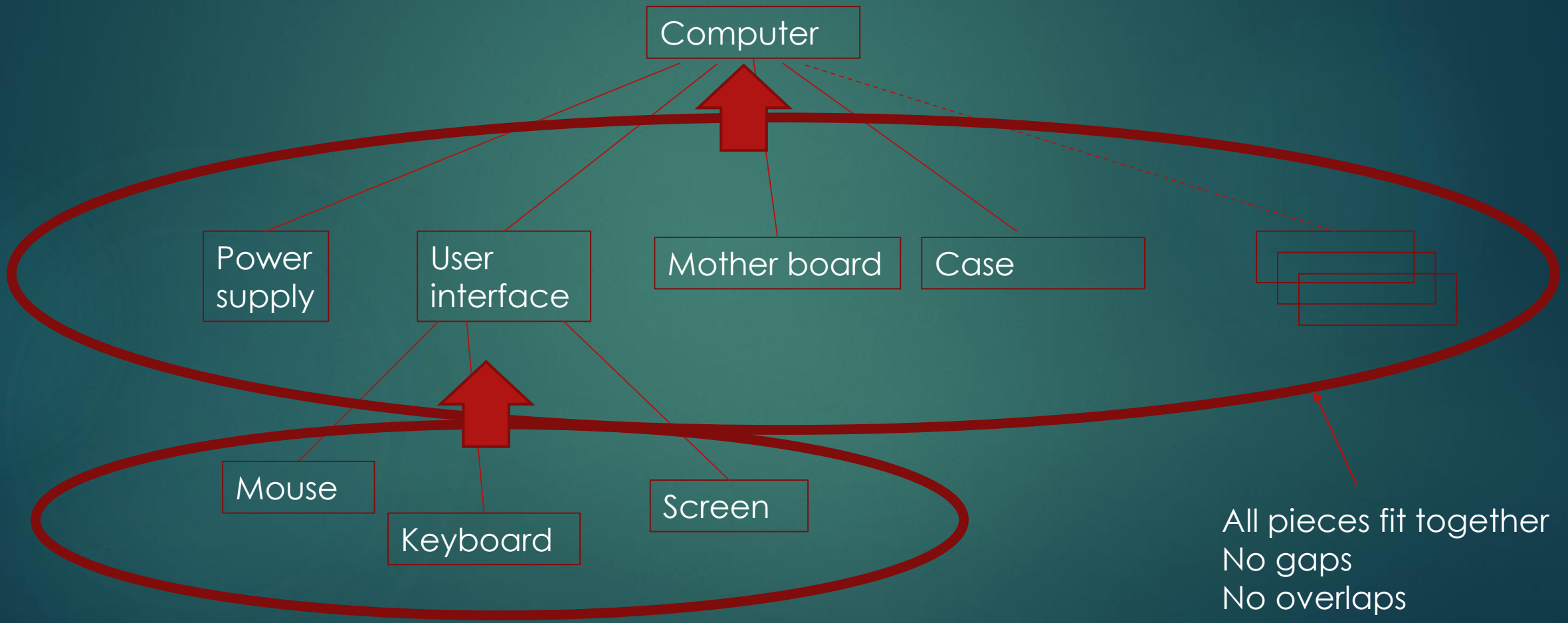
Taking off from the moon

Interface

Landing on the moon

Problems included how do you deal with the landing controls changing how they work depending on which direction you move in?

A common example of a design division



Power supply

You need to specify the interface with rest of the system:

- What the power supply must provide voltages, currents etc.
- Connectors
- Physical requirements (Mounting and airflow…)
- ….

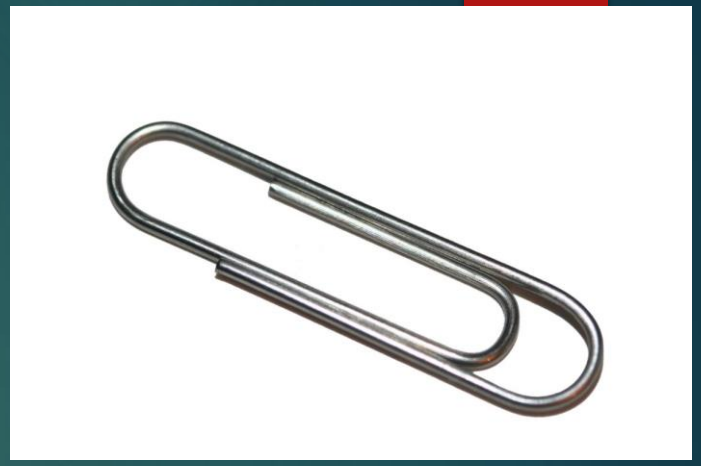
What are the advantages?

- Large projects
- Difficult problems.
- Future Improvement.
- Leverage prior knowledge.
- Work can be divided.
- Can be challenging.

What are pitfalls?

- Unforeseen interactions
- Interface issues
- Stifle creative solutions
- Wrong division
- Optimized too early
- Losing perspective of the total project (Battery monitor)

Occam's Razor and KISS



PERFECTION IS ACHIEVED, NOT WHEN THERE IS NOTHING MORE TO ADD, BUT WHEN THERE IS NOTHING LEFT TO TAKE AWAY." – ANTOINE DE SAINT-EXUPERY

Summary

- What is Design
- Design Thinking
- Why
- Who
- What
- How
- What you don’t know
- Open and closed problems
- Divide and conquer
- Occam’s Razor and Kiss