Iterative Design

No screens

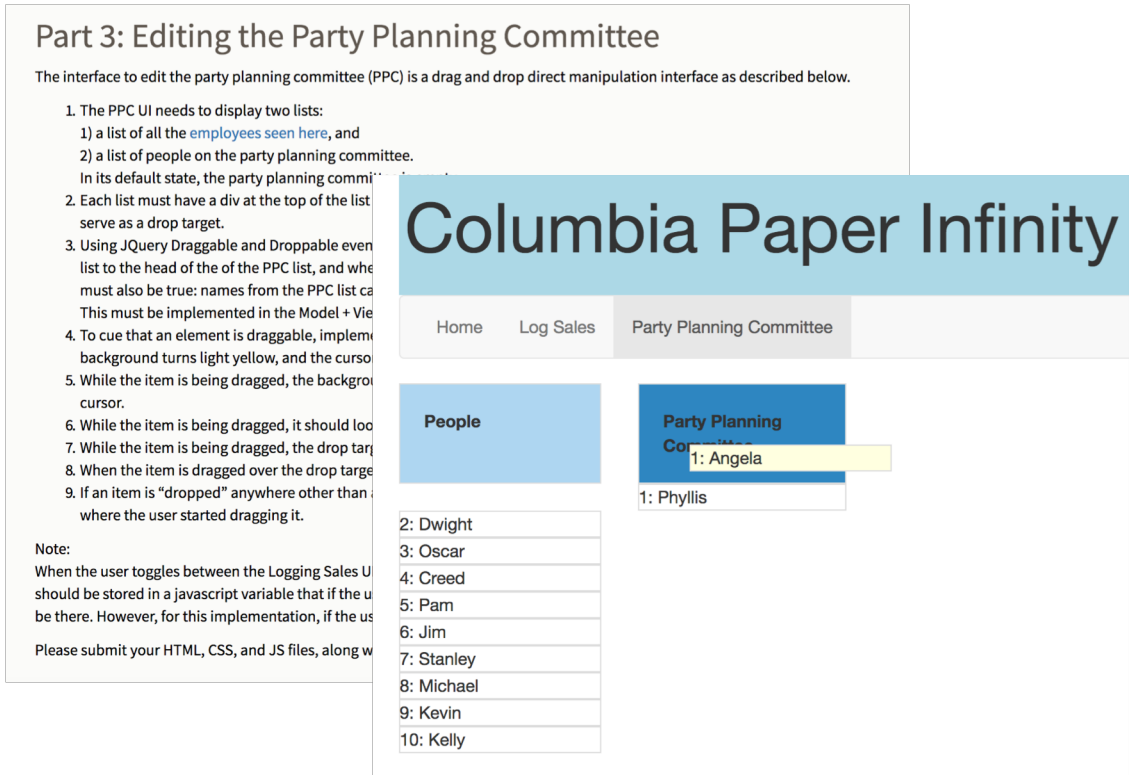
Prof. Lydia Chilton

COMS 4170

27 March 2019

Goal 2

When the needs and abilities of users are unclear, design systems by **learning from iteration** and experimentation.



Keep a list of the party planning committee

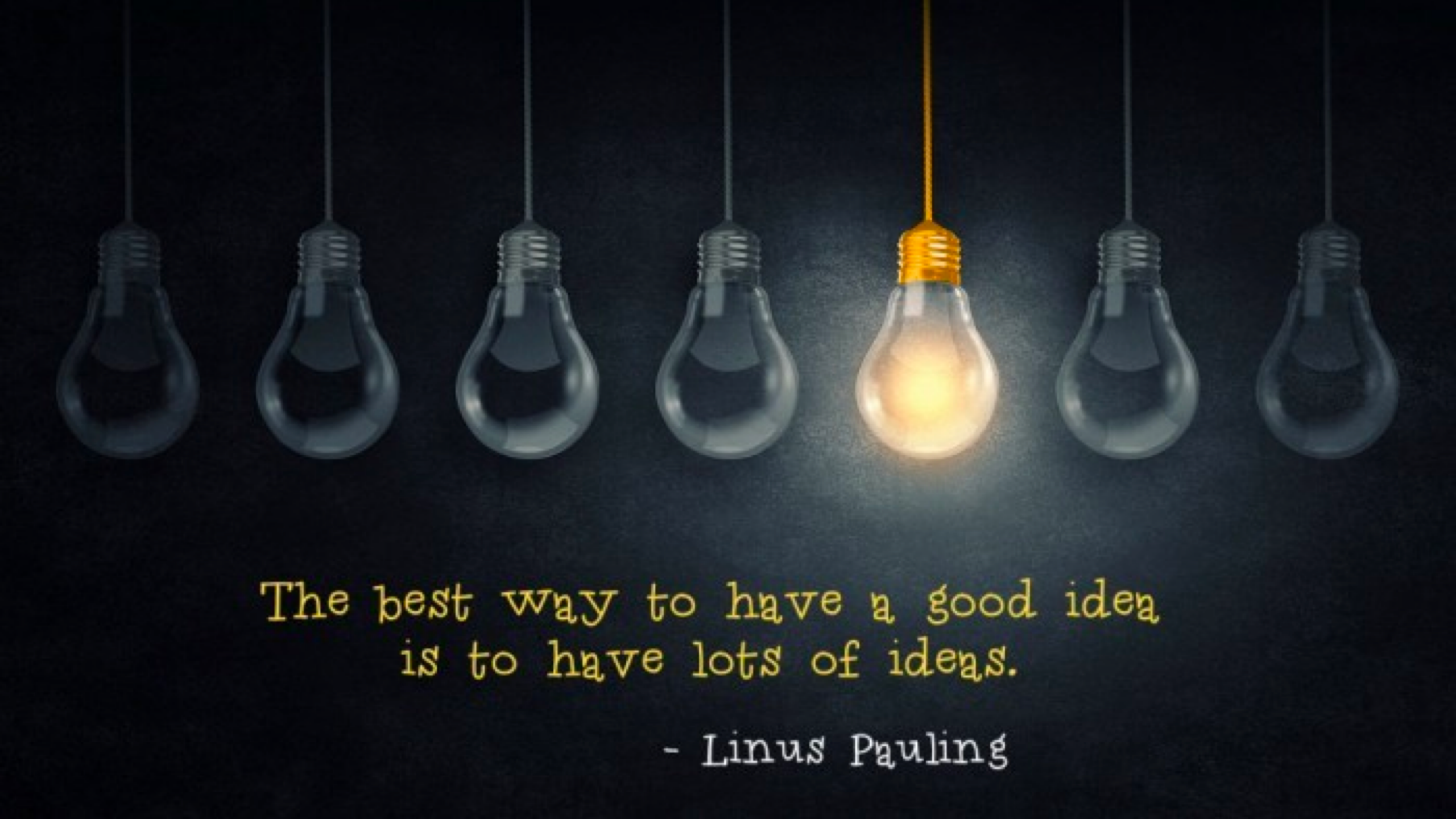
Clear needs, abilities, goal

Unclear needs, abilities, goal

Final Project

- Build a **web** application
- That allows a user to **interact** with media
- Within a **domain**
- To achieve a **specific user goal**
- Where the output of the goal must be **visible** within the app.

- The goal and interaction must be more complex than simply searching the data.


The best way to have a good idea
is to have lots of ideas.
- Linus Pauling

Homework 9:
Brainstorm 10 possible projects.

- What **person** this will benefit?
- What **media** will they interact with?
- What **interaction** will they have?
- What **goal** will they achieve? (This goal must be more than just searching data)
- What **will they see** in order to know that their goal is achieved within in app?

Examples

Domain: NBA

Specific goal: Help casual NBA fans recognize plays like the ‘pick and roll’ during games, by first seeing the play broken down into pieces, then seeing it in games.

what **person?**	Casual NBA fan
uses what **media?**	video
Interacts with it in what way?	? Play and pause the video?
to achieve what **goal?**	Learn to recognize pick-and-roll
How is it **visible**?	? Take a quiz

Domain: Language learning

Specific goal: Tonal languages like Chinese and Vietnamese can be challenging to learners whose native languages don't have tones. For example, the Vietnamese ma means "ghost," but with different tones, má can mean "mother" while mà means "but." An interface can have videos for each of the different tones grouped by vowel to help language learners distinguish between tones. This can help students familiarize themselves with tones, and quiz themselves on the tones.

what **person?**	Beginners learning Vietnamese
uses what **media?**	Audio (maybe sound wave?)
Interacts with it in what way?	Plays them.. organized in a grid
to achieve what **goal?**	Learn to recognize 4 tones in 8 different syllabus (ma, shi, ji, chi)
How is it **visible**?	Take a quiz

Domain: Fitness

Specific goal: For a person trying to create a regimented workout routine: allow the user to save workout videos to a calendar so that he/she can see each day of the month and select the folder on that day that will contain the exercises to be completed. allow the user to add notes indicating the number of reps, amount of time, and weight to use for each exercise. Every check off whether you did it or not. At the end of the week, they want to know if they met their fitness goal.

what **person?**	Serious fitness person
uses what **media?**	Videos, calendar
Interacts with it in what way?	Drags videos into calendar spots
to achieve what **goal?**	Plan “balanced” workouts? And see if you did them.
How is it **visible**?	Can see the success percentage at the end of the week

Domain: Musicians

Specific goal: Musicians learning a song that has been covered by multiple artists need to be able listen and compare each version at multiple sections without needing to restart the video each time in order to understand the different ways the track can be interpreted.

what **person?**	Guitar player learning a song… Hotel California?
uses what **media?**	Video
Interacts with it in what way?	Selects the same elements in two different recordings
to achieve what **goal?**	Find the major interpretative differences
How is it **visible**?	The list of differences, and perhaps which one he wants to build on (or none of them)

Domain: Health

Specific goal: Visualizing disease progression…
Allow users to upload daily images of disease progression. After a month of uploading, patients want to see side-by-side progressions for every week, and for the entire month to see if the progress is worse.

what **person?**	A person with a visually disease (eczema)
uses what **media?**	Images, calendar?
Interacts with it in what way?	Upload them, sees them side by side
to achieve what **goal?**	Track progress – is the disease better or worse after 1 week? 1 month?
How is it **visible**?	Can see the visual summary at the end of each week.

Domain: Education

Specific goal: Columbia has many outreach programs and they collect data on what activities and outcomes have been achieved over time. They want to know, over time, what the the most and least active areas of our outreach, and where we have overlooked.

what **person?**	Columbia Outreach Office Program manager
uses what **media?**	Map, xls file of outreach
Interacts with it in what way?	Queries, and compares two maps over time
to achieve what **goal?**	Figure out if outreach is rising or falling in regions of NYC
How is it **visible**?	Comparing two maps – plus, maybe a numerical difference

Domain: Education

Specific goal: Help people memorize music pieces for a Music Hum class.

what **person?**

uses what **media?**

Interacts with it in what way?

to achieve what **goal?**

How is it **visible**?

?

All the needs are very specific and can be generalized

Specific Need	Generalize to
Recognize pick-and-roll	Other basketball offensive plays, Other Defensive set ups Referee hand gestured for calls Other sports stuff..?
Learning tones in Chinese	Tone combinations Phrases Characters
Differentiate types of Jazz in MusicHum	Differentiating other types of music subgenres Differentiating types of Art for ArtHum … literature passages for LitHum

(and drawn from domains familiar to that person)

Where are you stuck?

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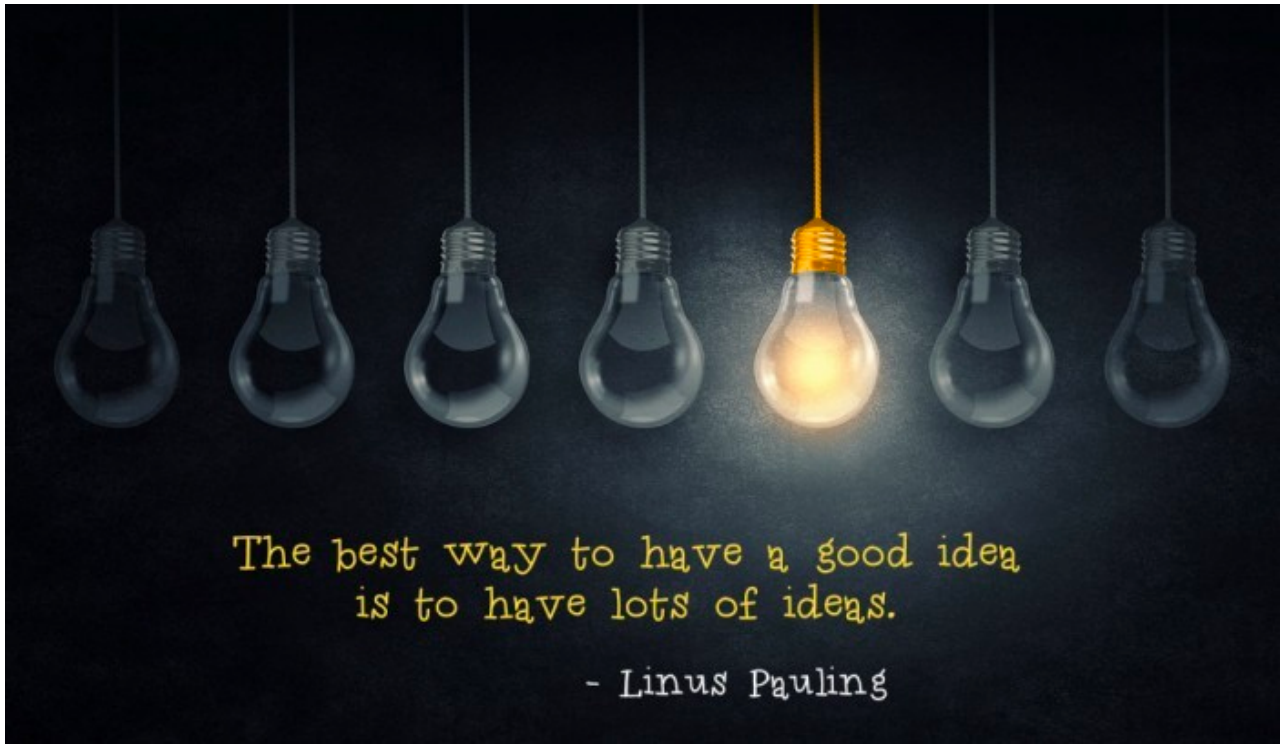
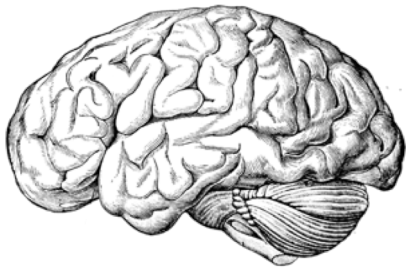
So far, you have brainstormed ideas



Ideas are a good starting point.
But ideas are cheap
Let people steal your ideas.

Execution is all that matters.

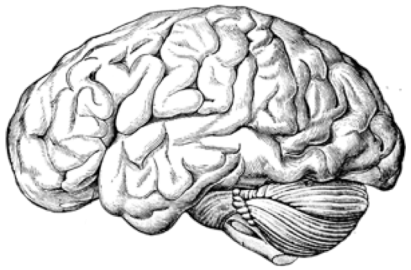
How do get from idea to product?



Idea

Product

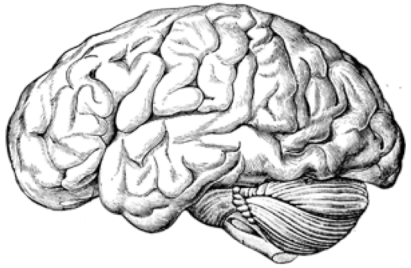
How do get from idea to product?
What I **expect**:



Idea

Product

How do get from idea to product?
What it's like:



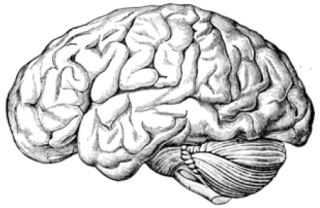
Idea

Product

Two Design Processes

The waterfall model, and iterative design

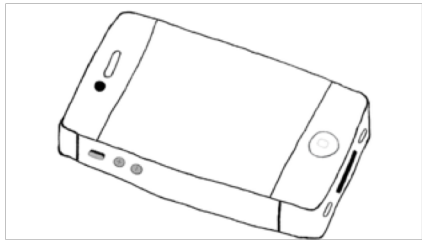
The Waterfall Model



Idea

Requirements

- One button
- Touch screen
- Soft keyboard



Design

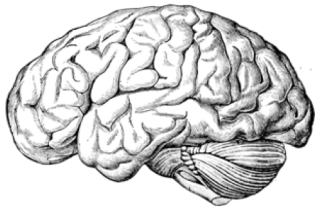
Implement

Fix bugs

Ship it

Product

The Waterfall Model: What's good about it?



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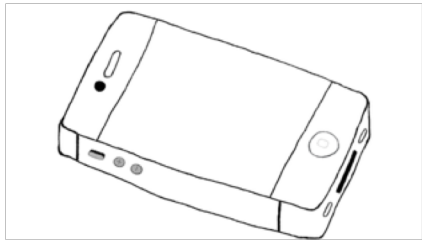

Implement

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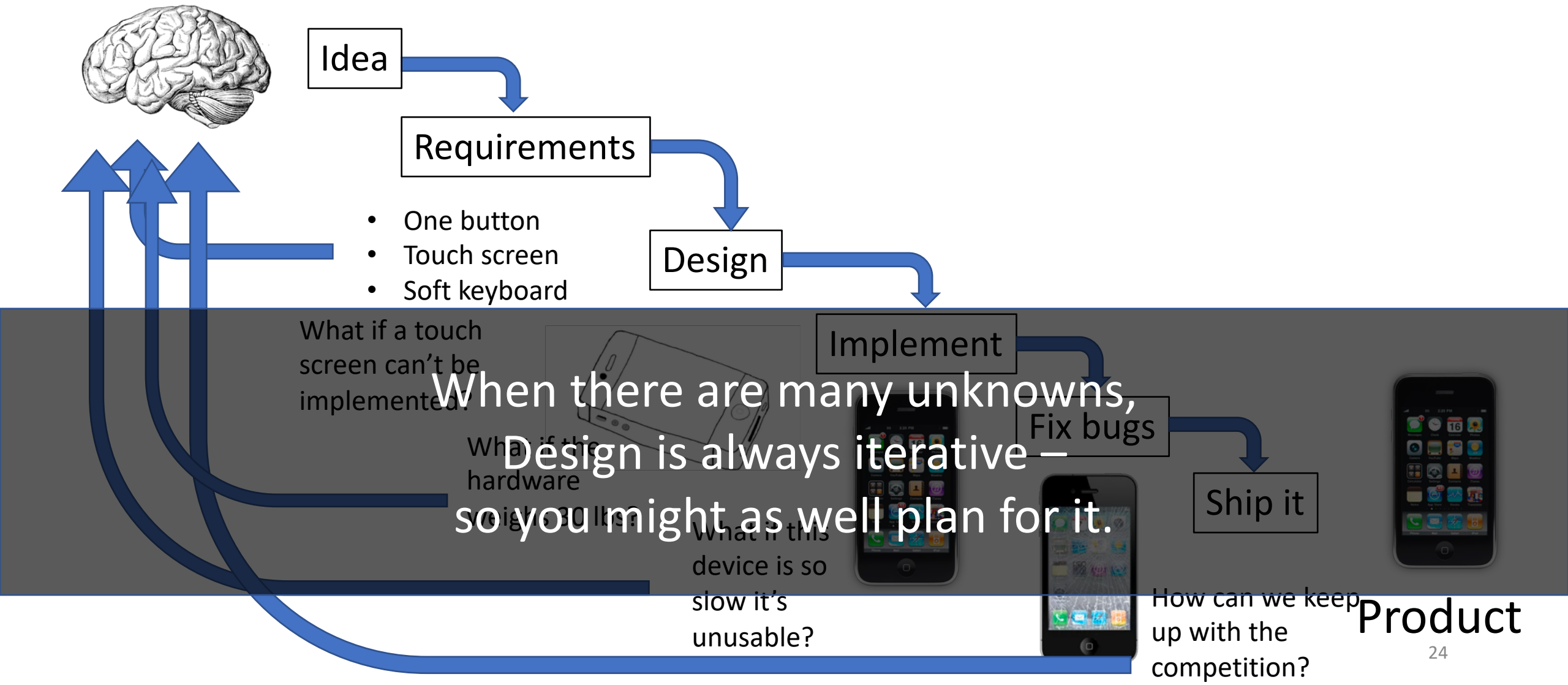
Product

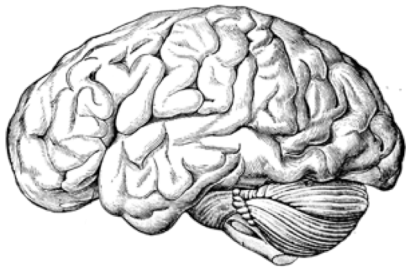
It's simple, linear, and the steps are certain

The Waterfall Model: What could go wrong?



When there are many unknowns,
Design is always iterative –
so you might as well plan for it.

Iterative Design



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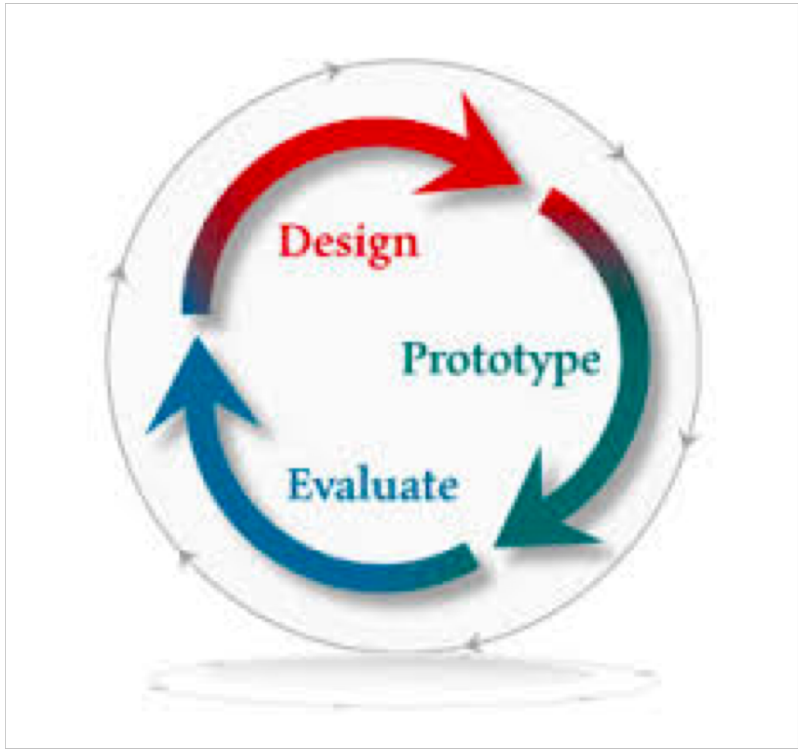
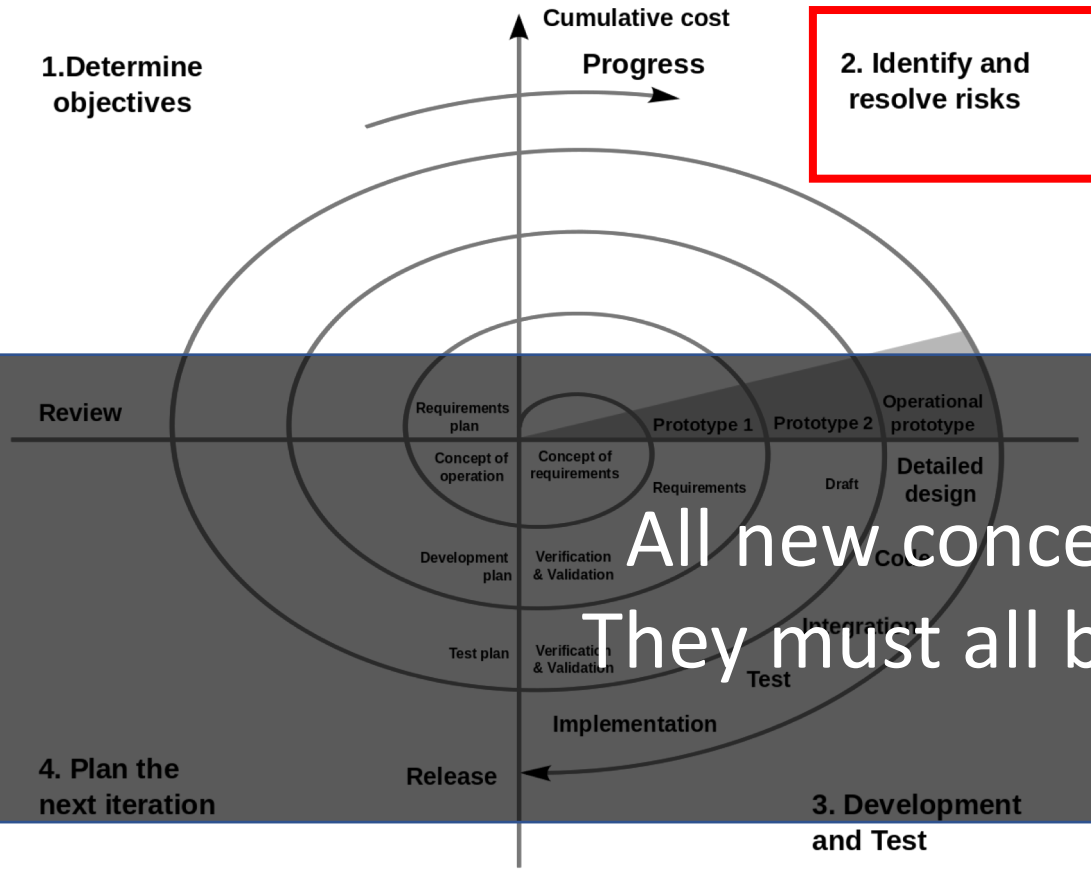


Product

Iterative Design origins:
Spiral Model of software engineering (Barry Boehm, 1988)

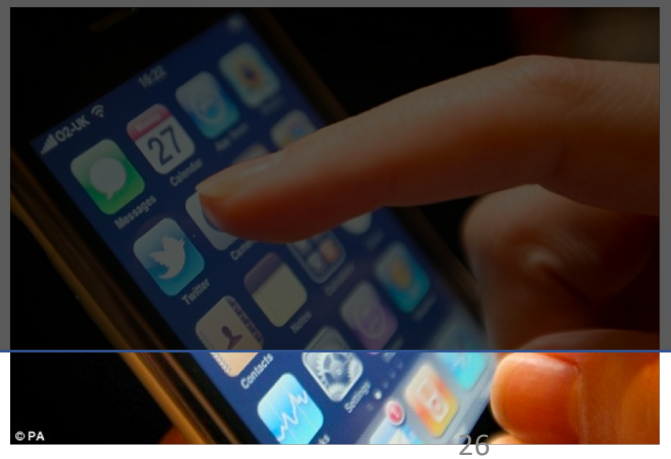


Every iteration should experiment with the next biggest risk.

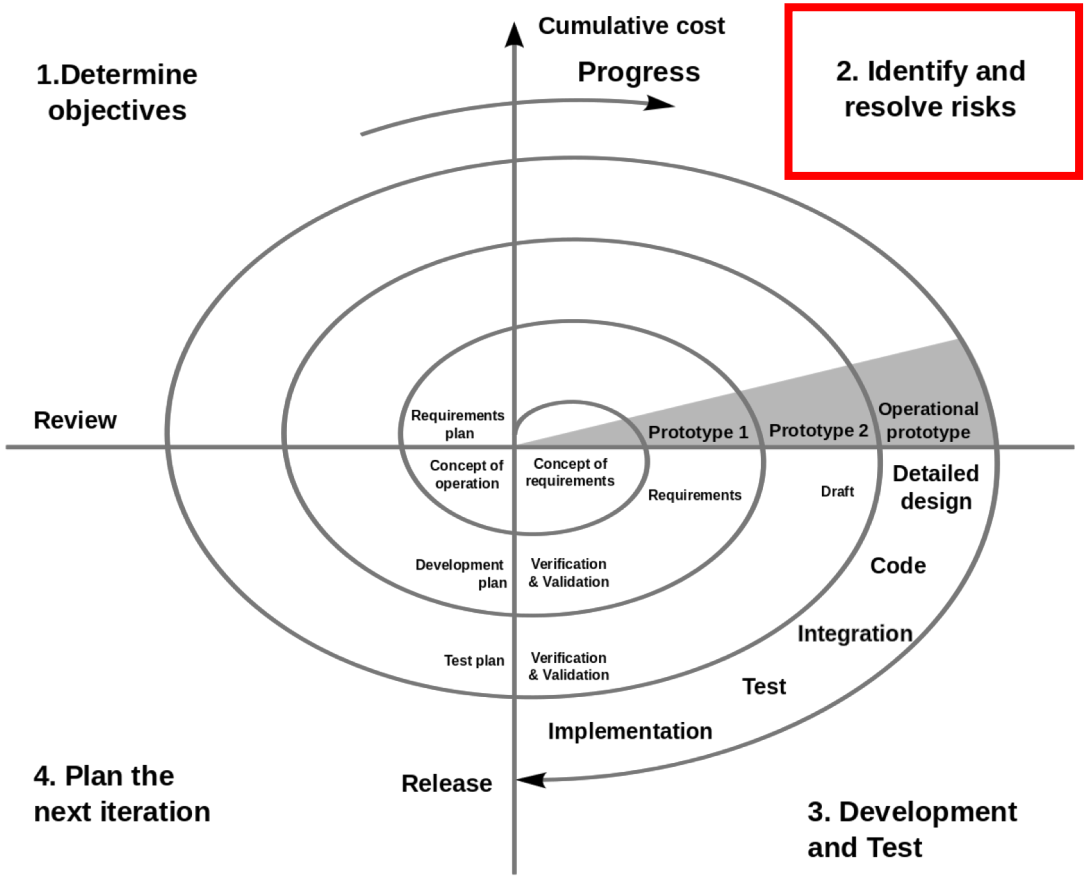
How to achieve the perfect gradient on app icons?

Does touch work?

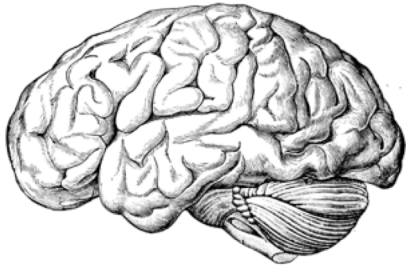
All new concepts are risks.
They must all be prototyped.



Iterative Design is good because it minimizes risk



Iterative Design: what's hard about it?



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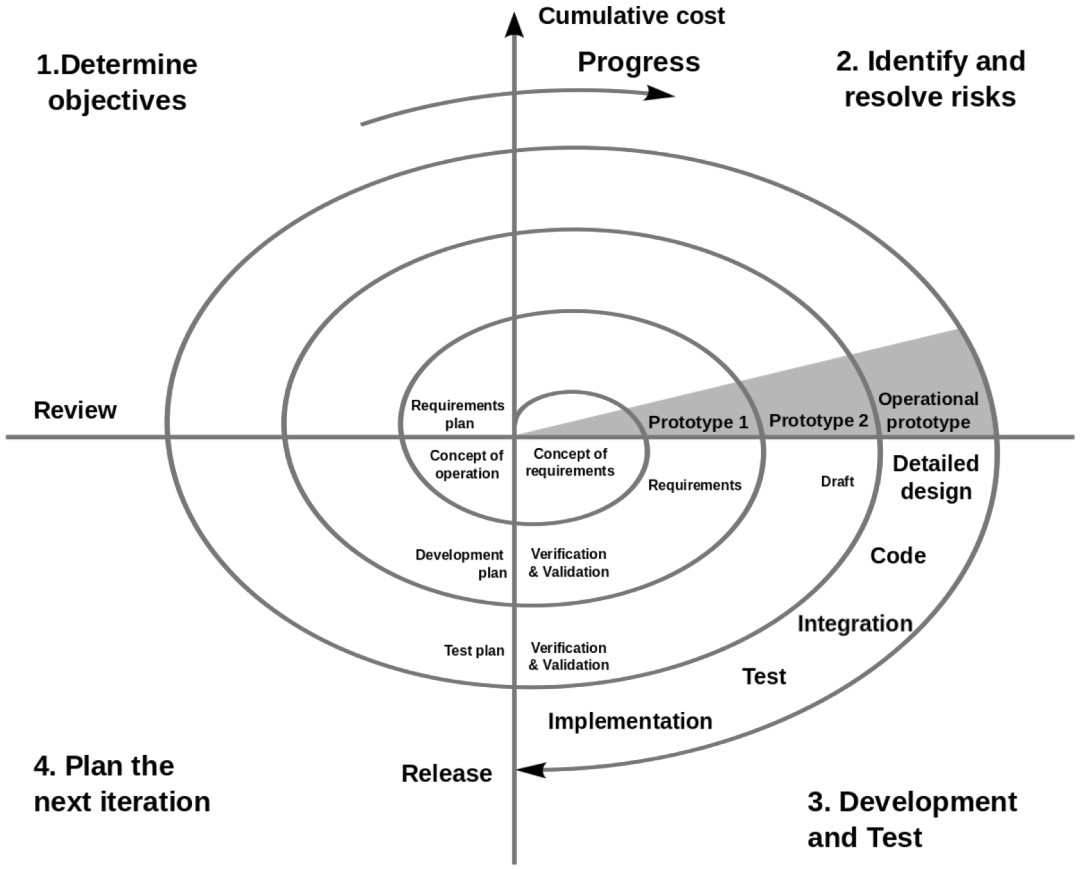
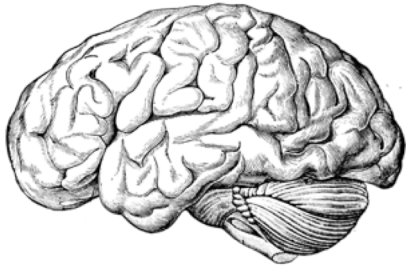


Product

The steps aren't certain from the start.

To minimize risk on novel designs, Use iteration on each risky aspect of the design



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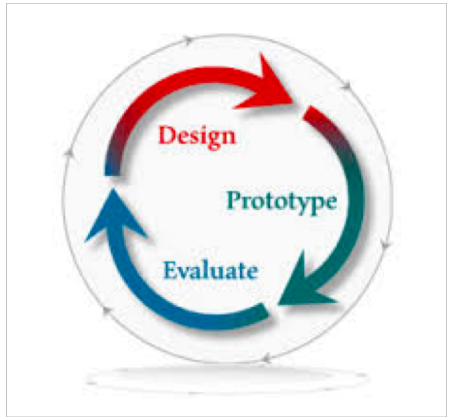
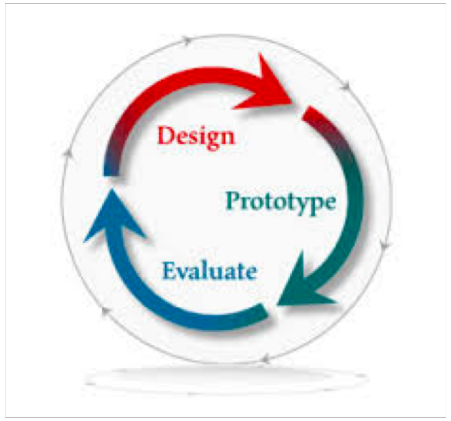
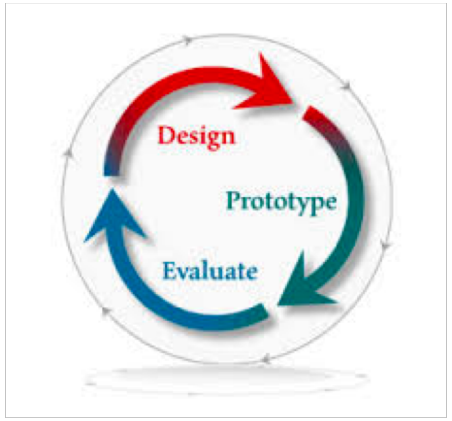


Touch screen



Soft keyboard



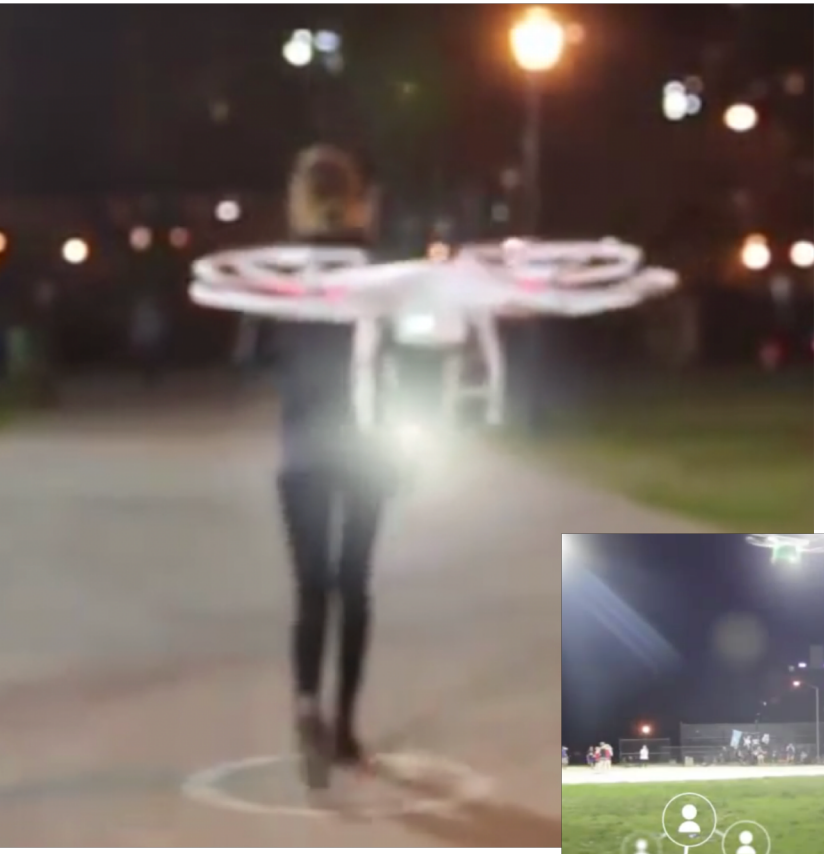
One button

Product

In this video,
what are new concepts?

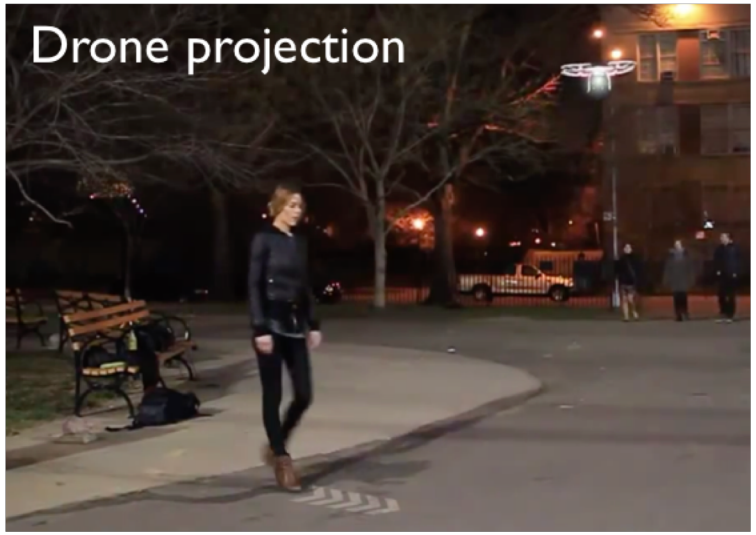
Write them down now, we will list them together after the video

What new concepts should we prototype?



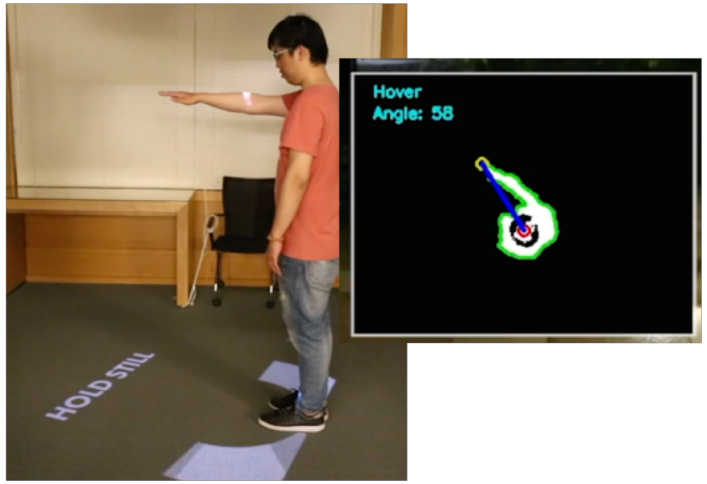
Initial Prototype:
What did they prototype and how?

What new concepts did they prototype? And How?



Can the drone carry the stuff?

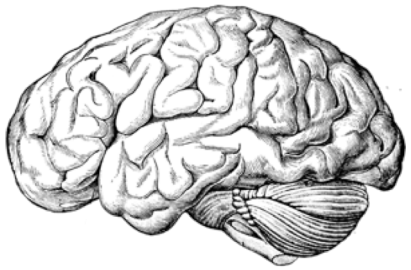
Can the drone detect hand position?



What was the biggest new risk they discovered during prototyping?

Summary

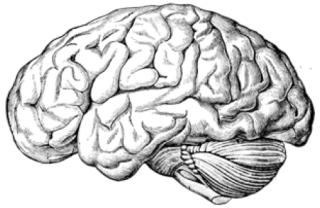
Developing an idea into a product involves **risk**.



Idea

Product

The Waterfall Model is simple and linear, *but …*



Idea

Requirements

Design

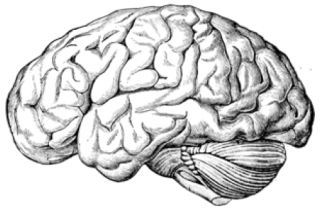
Implement

Fix bugs

Ship it

Product

The Waterfall Model is simple and linear, *but* it breaks when there are risks.



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Design

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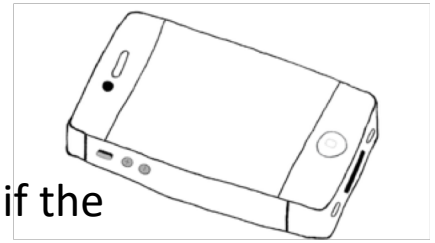
Product

What if a touch screen can't be implemented?

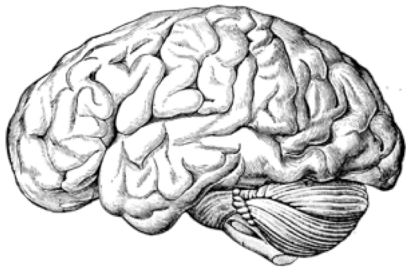


What if the hardware weighs 30 lbs?

What if this device is so slow it's unusable?

How can we keep up with the competition?

Iterative Design is less straightforward



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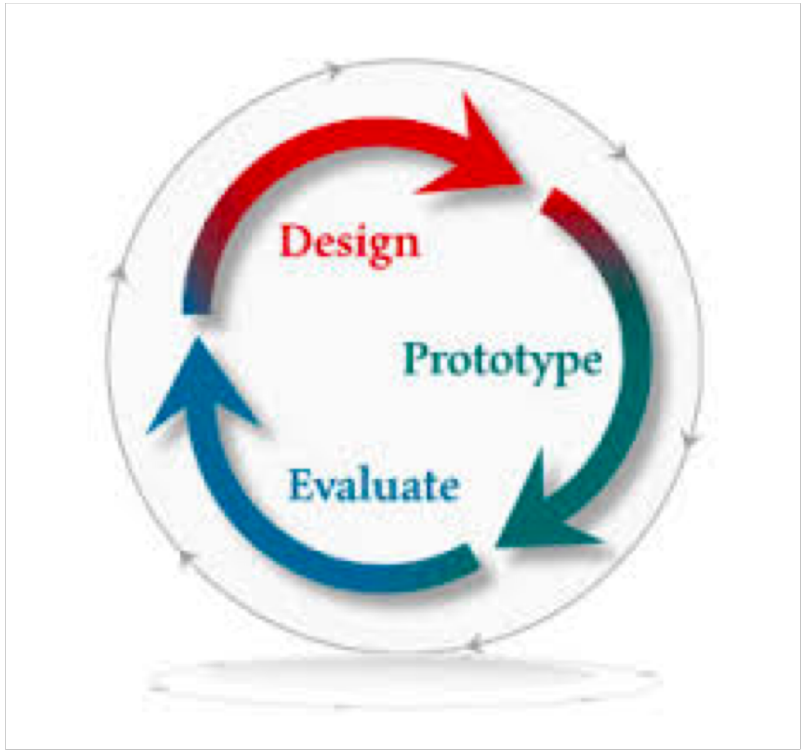
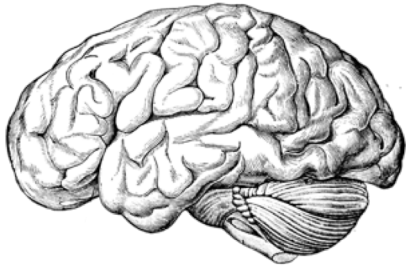


Product

Iterative Design mitigates risk by iteratively prototyping and testing risking features



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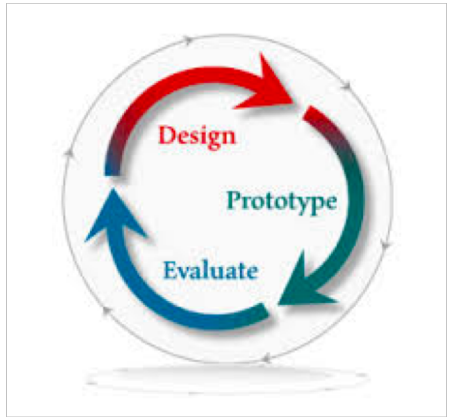
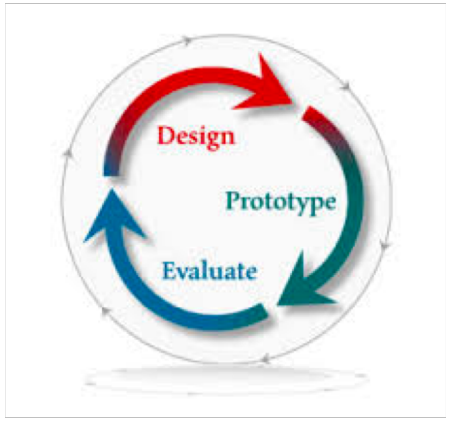
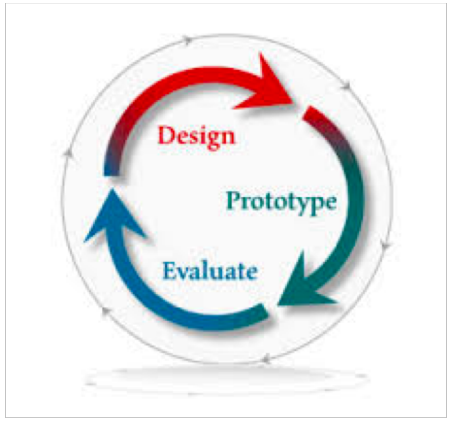


Touch screen



Soft keyboard



One button

Product

Sometimes you find “showstopping” problems.
It sucks, but at least you can fail fast and move on.