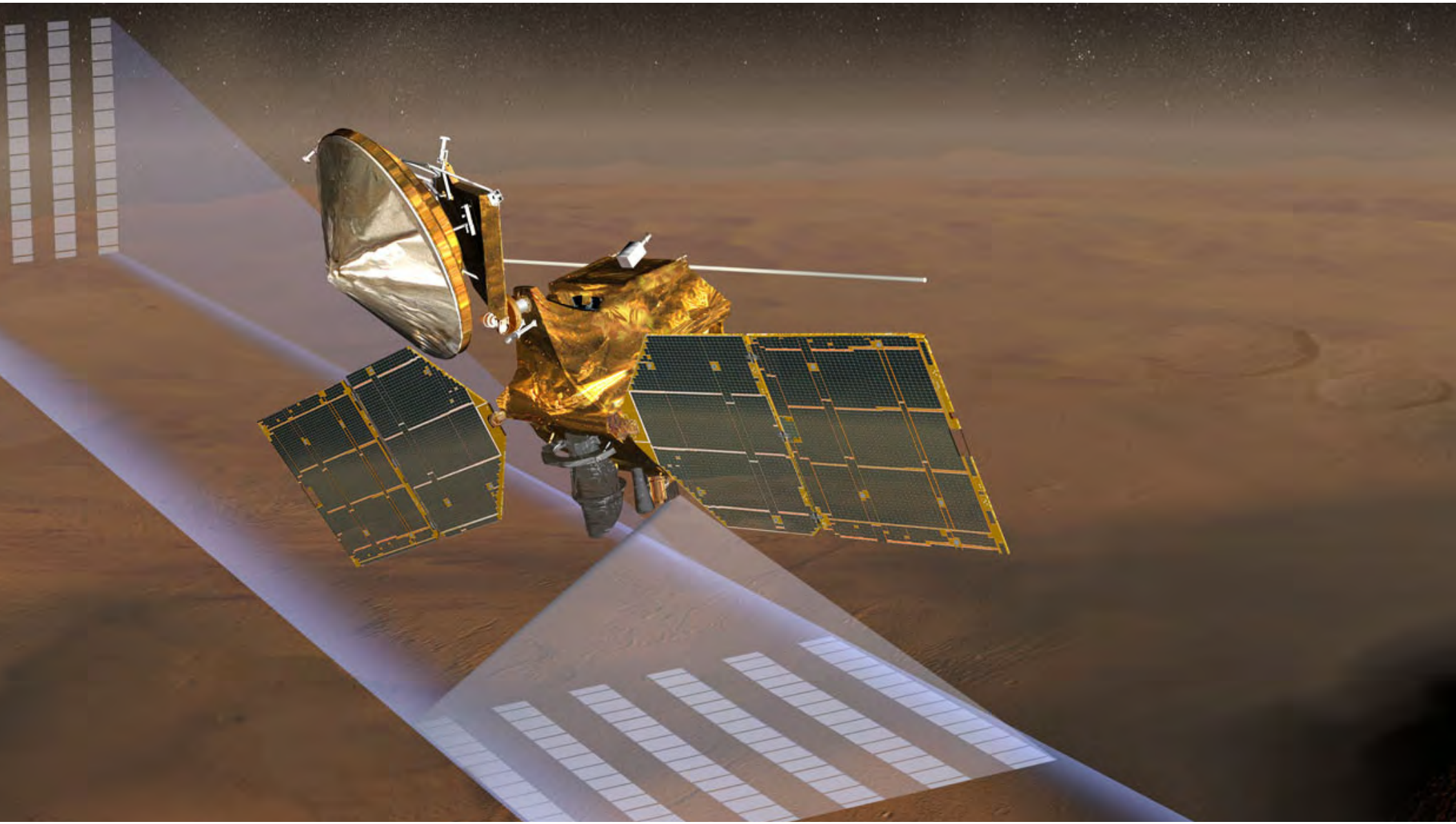
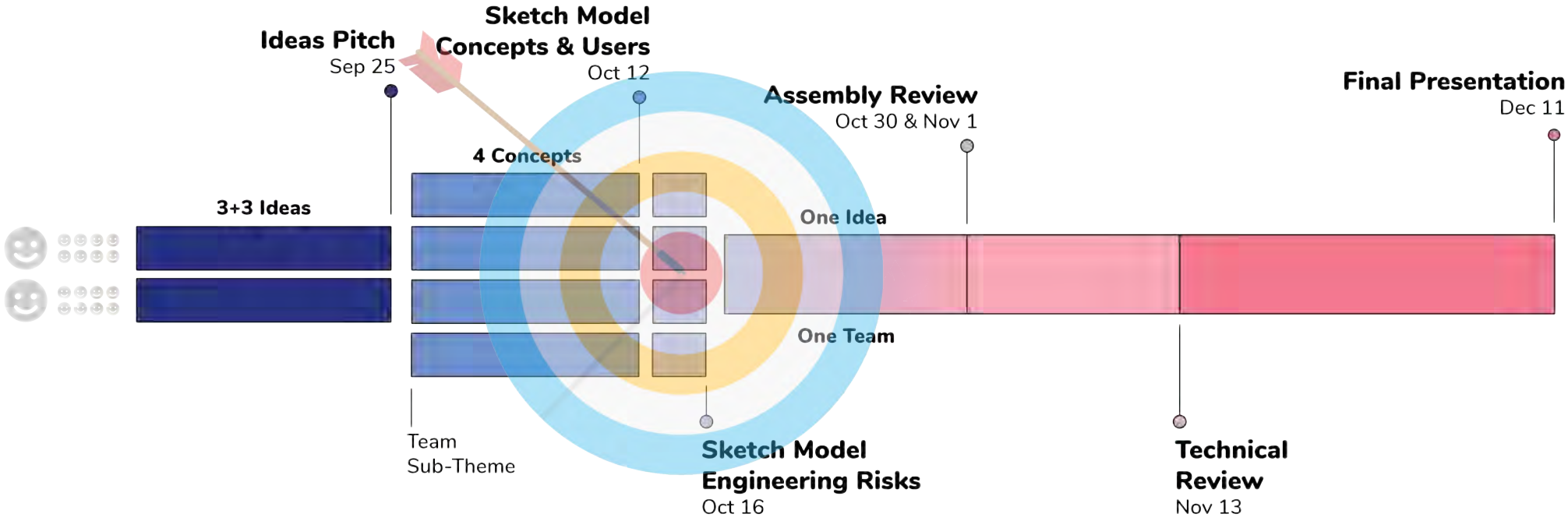
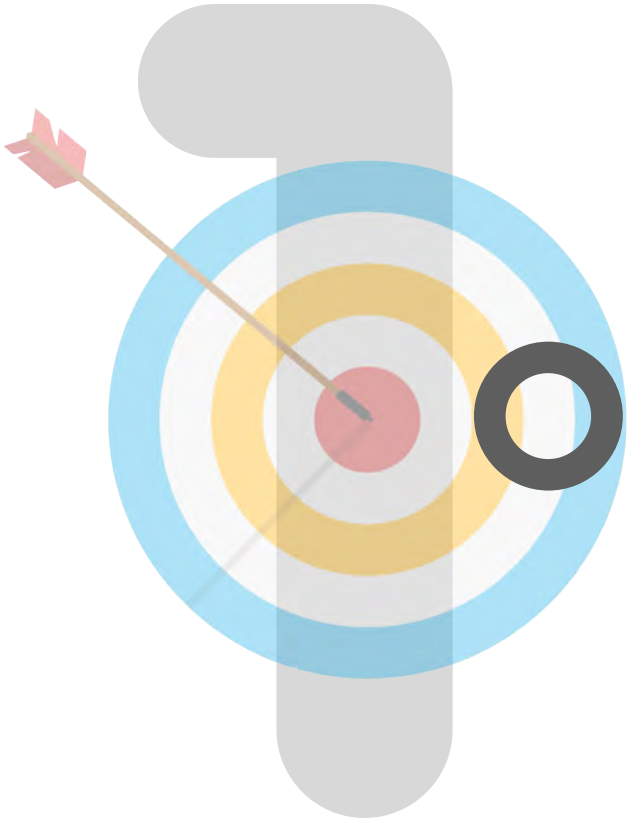

I always **wanted to be** someone,
I should have been **more specific**
Lily Tomlin
1939-present, actor-comedian





Process

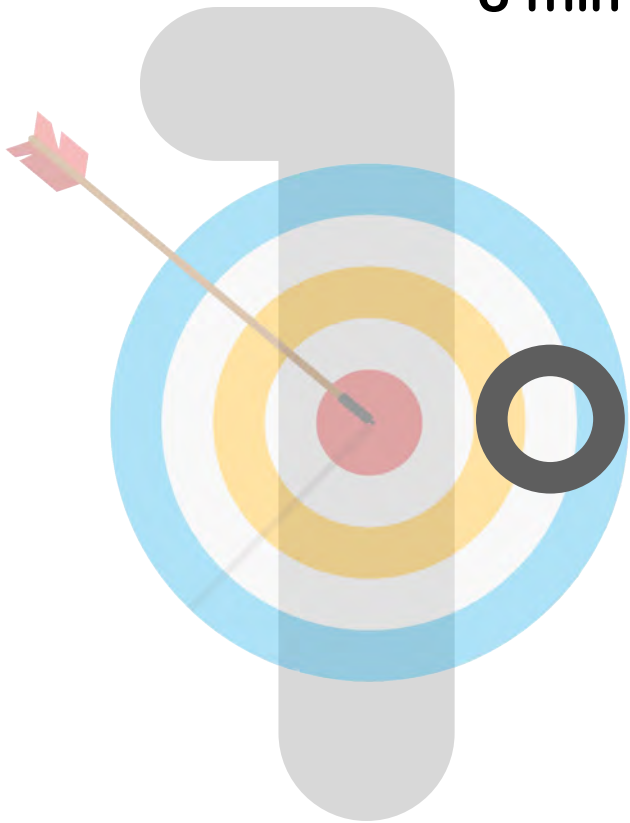
concept generation phase



October 12

sketch models part 1

6 min per section, 2 Q&A

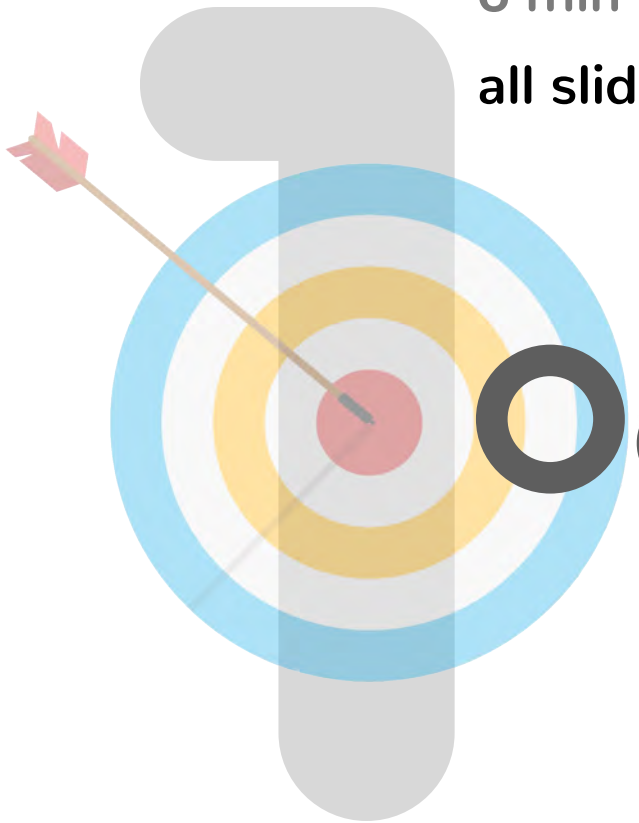


October 12

sketch models part 1

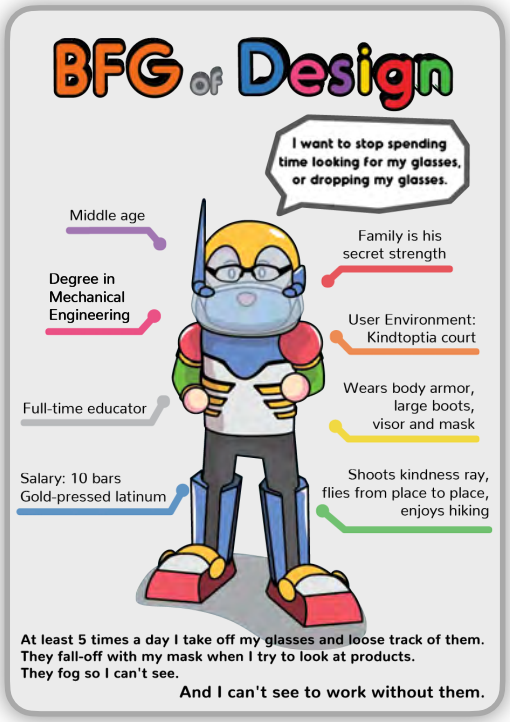
6 min per section, 2 Q&A

all slides on presentation computer



October 12

sketch models part 1



6 min per section, 2 Q&A

all slides on presentation computer

who is the user?

October 12

sketch models part 1

6 min per section, 2 Q&A

all slides on presentation computer

who is the user?

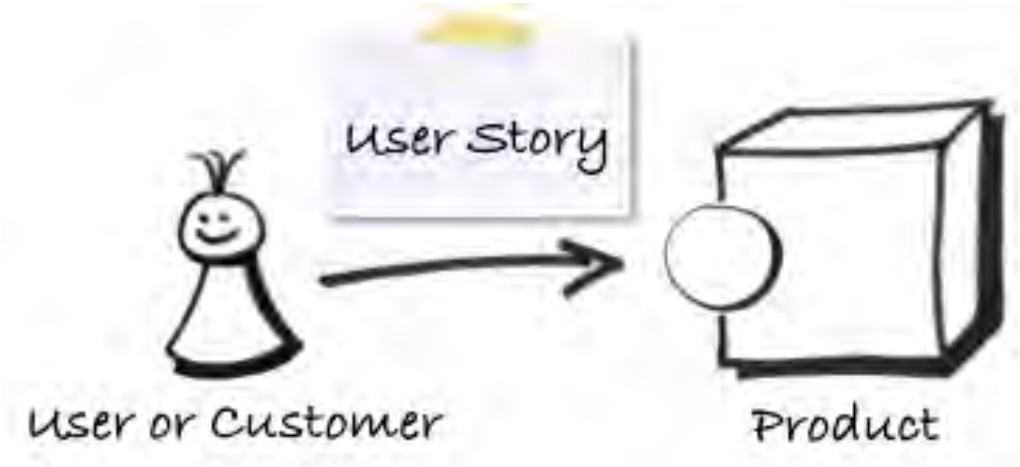
what is the user's need?

October 12

sketch models part 1

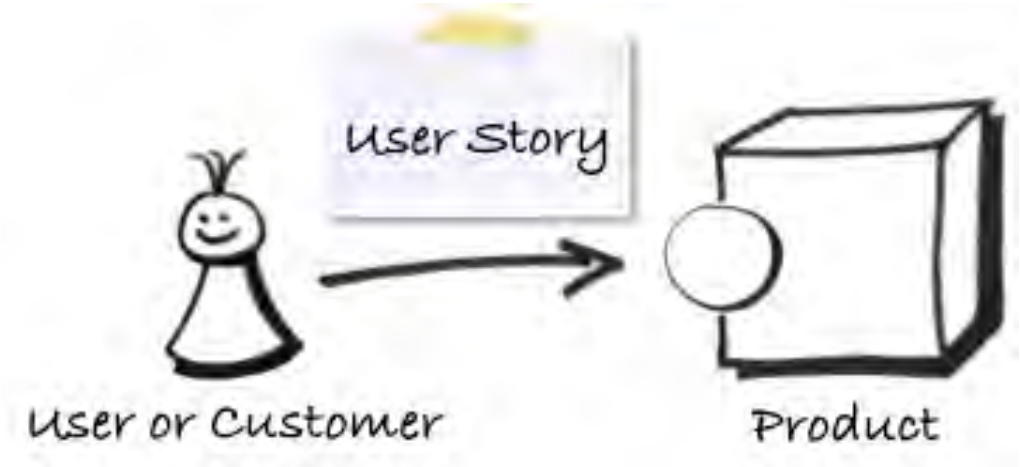
tutorial: **understanding users**

Thursday at 7:30 PM



tutorial: **user empathy**

Tuesday at 7:00 PM



6 min per section, 2 Q&A

all slides on presentation computer

who is the user?

what is the user's need?

October 12

sketch models part 1

6 min per section, 2 Q&A

all slides on presentation computer

who is the user?

what is the user's need?

October 12

what is the concept and vision?

sketch models part 1

6 min per section, 2 Q&A

all slides on presentation computer

who is the user?

what is the user's need?

October 12

what is the concept and vision?

sketch models part 1

6 min per section, 2 Q&A

all slides on presentation computer

who is the user?

what is the user's need?

October 12

what is the concept and vision?

how is it used?

sketch models part 1

user need	product attribute(s)	engineering specification(s)
can be easily transported	weight	total weight less than 40 lbs
is easily stored in the home garage	size	less than 24" x 24" x 24" in smallest configuration
can handle most repair situations	lifting capability	more than lift 15 cycles for a 3000 lb automobile with external power
can be used on many uneven surfaces	stability	3000 lb vehicle raised 16 inches will not tip under 400 lb side loading

6 min per section, 2 Q&A

all slides on presentation computer

who is the user?

what is the user's need?

October 12

what is the concept and vision?

how is it used?

what are your key specifications?

sketch models part 1

user need	product attribute(s)	engineering specification(s)
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6 min per section, 2 Q&A

all slides on presentation computer

who is the user?

what is the user's need?

October 12

what is the concept and vision?

how is it used?

what are your key specifications?

sketch models part 1

6 min per section, 2 Q&A

all slides on presentation computer

who is the user?

what is the user's need?

October 12

what is the concept and vision?

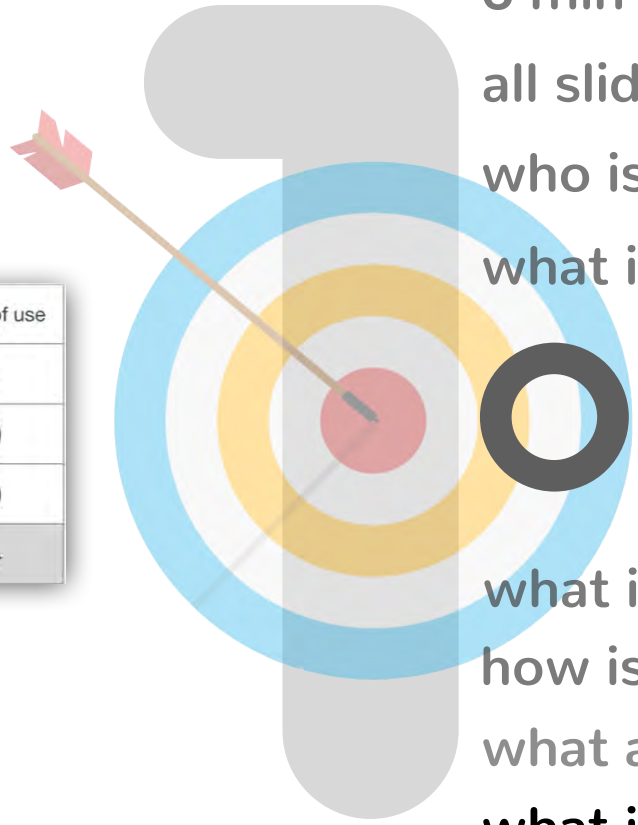
how is it used?

what are your key specifications?

what is your competition?

sketch models part 1

Product	Flexible	Storage	Ease of use
Chain	+	-	-
U-Lock	-	-	0
Folding Lock	+	+	0
You-Lock	-	+	+



6 min per section, 2 Q&A

all slides on presentation computer

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October 12

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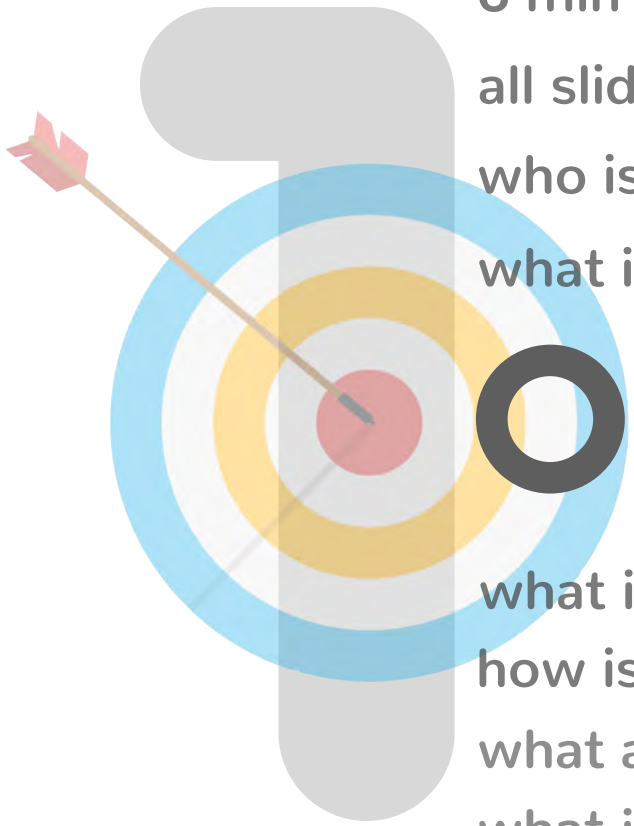
sketch models part 1



6 min per section, 2 Q&A

all slides on presentation computer

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October 12

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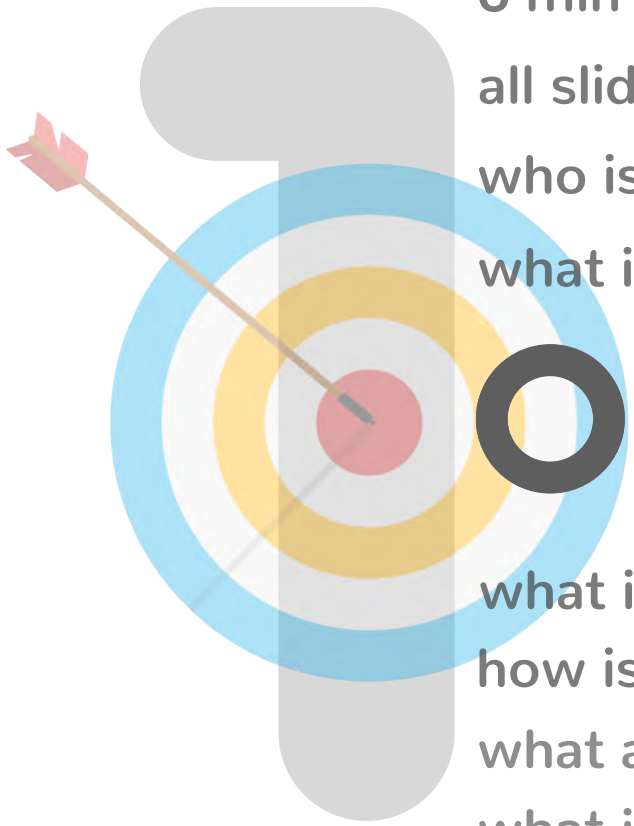
sketch models part 1



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all slides on presentation computer

who is the user?

what is the user's need?

October 12

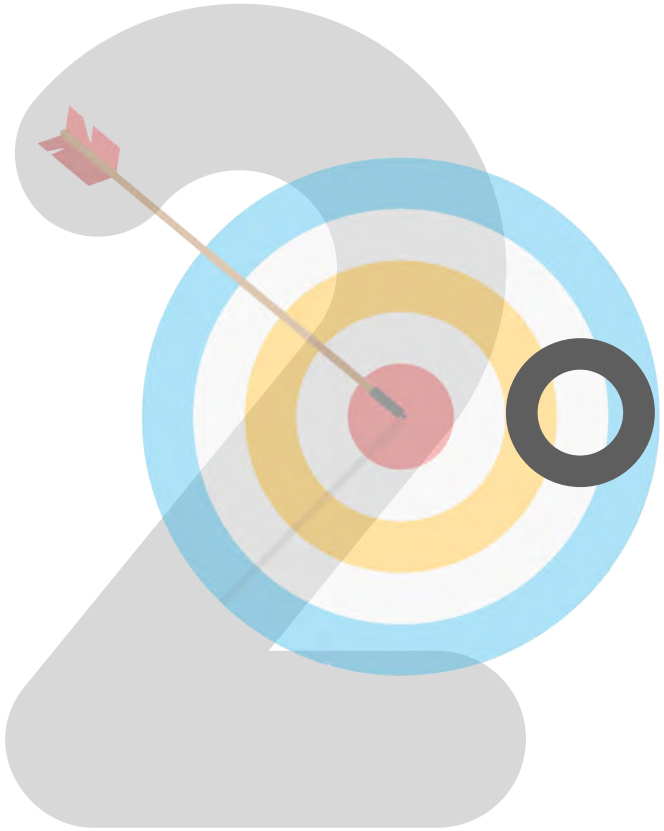
what is the concept and vision?

how is it used?

what are your key specifications?

what is your competition?

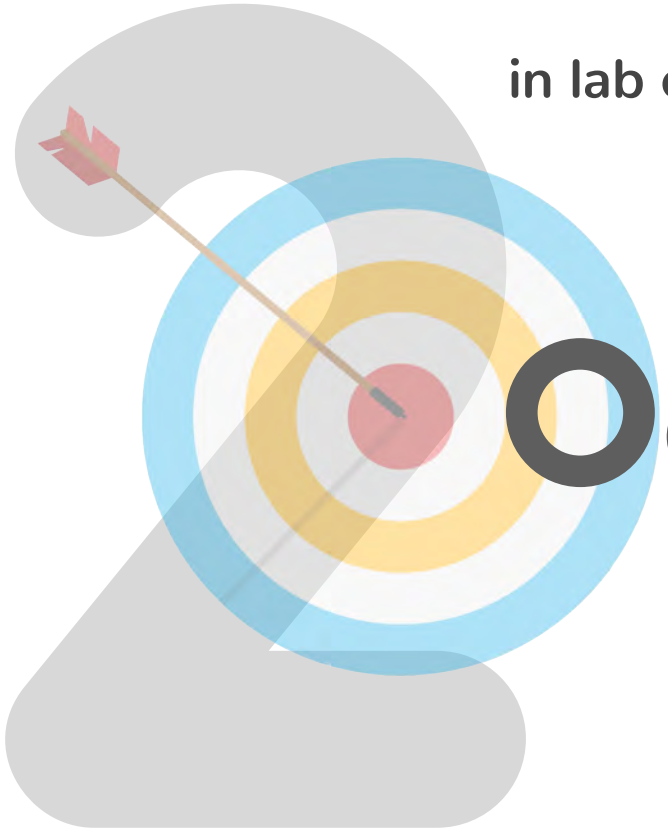
sketch models part 2



October 16

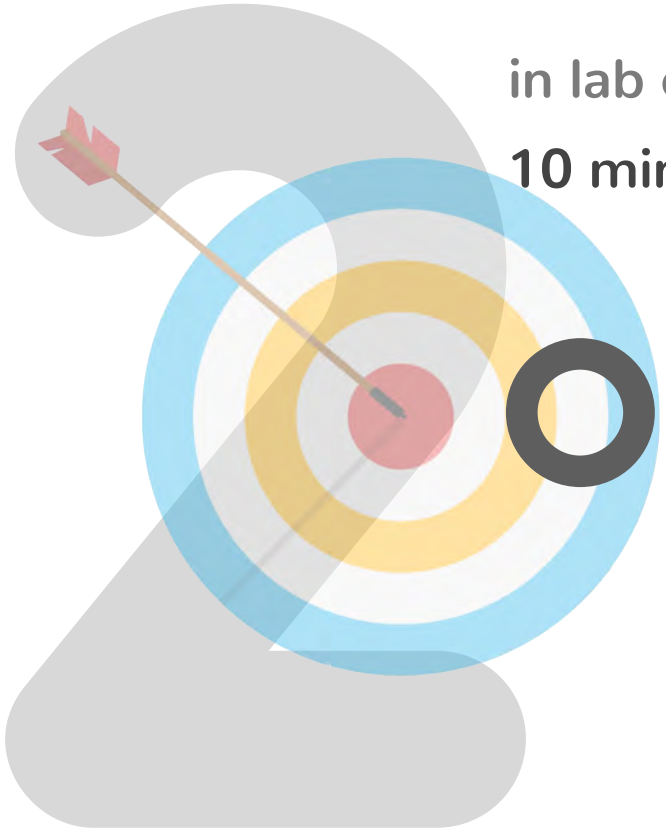
sketch models part 2

in lab or suitable testing area



October 16

sketch models part 2

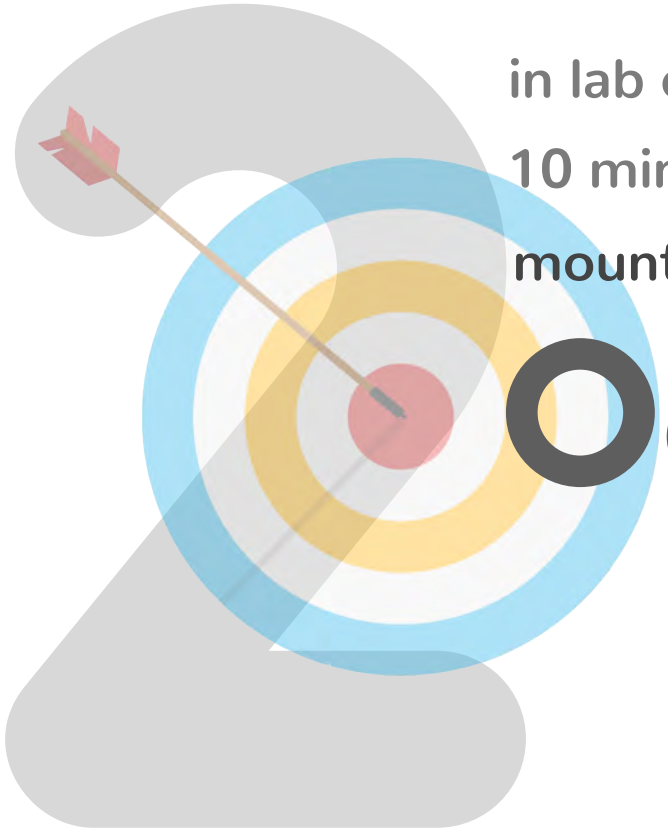


in lab or suitable testing area

10 minutes per section

October 16

sketch models part 2



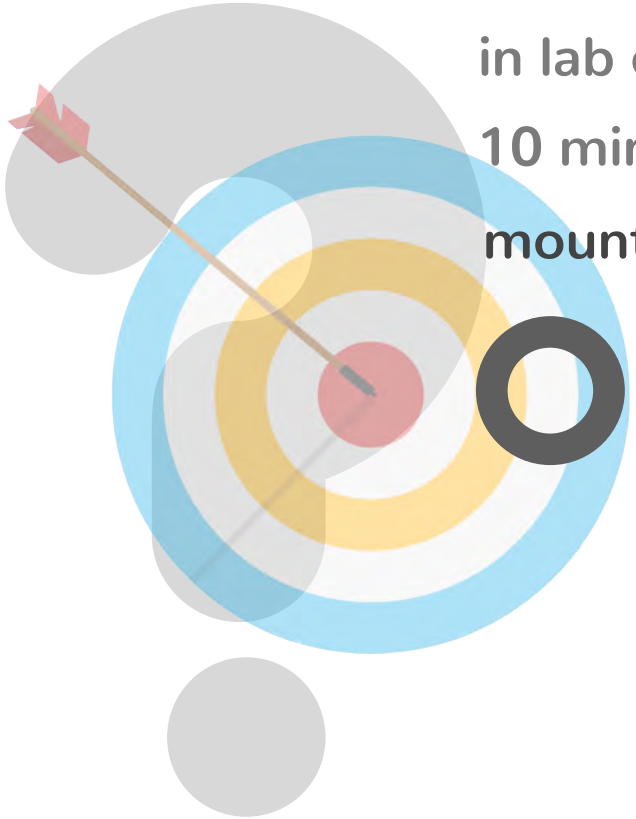
in lab or suitable testing area

10 minutes per section

mounted product contract

October 16

sketch models part 2



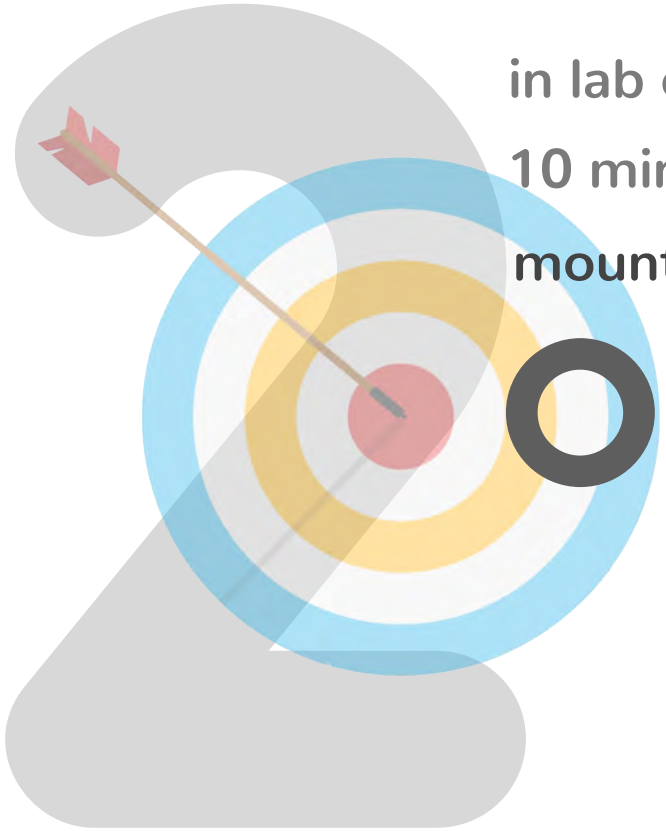
in lab or suitable testing area

10 minutes per section

mounted product contract

October 16

sketch models part 2



in lab or suitable testing area

10 minutes per section

mounted product contract

October 16

sketch models part 2

in lab or suitable testing area

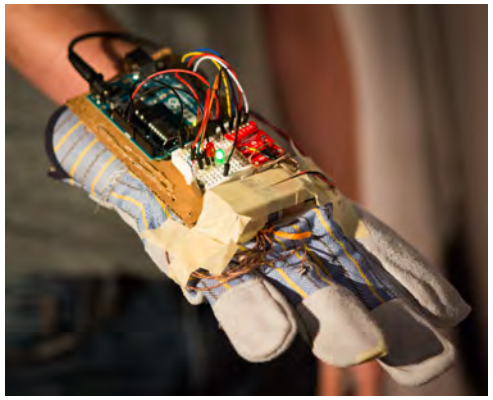
10 minutes per section

mounted product contract

October 16

three sketch models per concept

sketch models part 2



in lab or suitable testing area

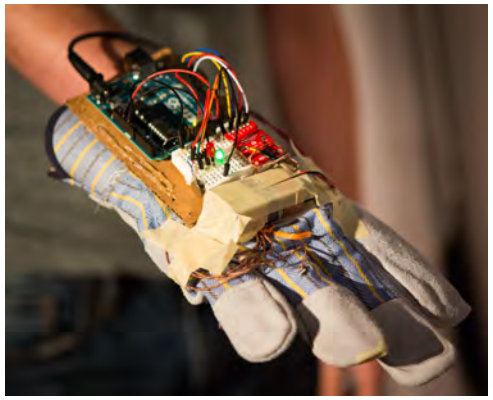
10 minutes per section

mounted product contract

October 16

three sketch models per concept

sketch models part 2



in lab or suitable testing area

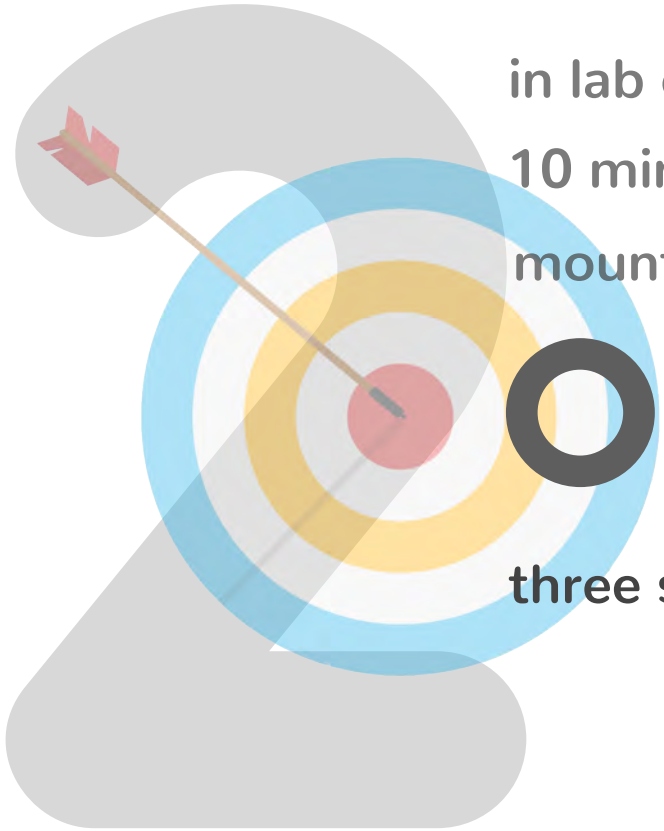
10 minutes per section

mounted product contract

October 16

three sketch models per concept

sketch models part 2



in lab or suitable testing area

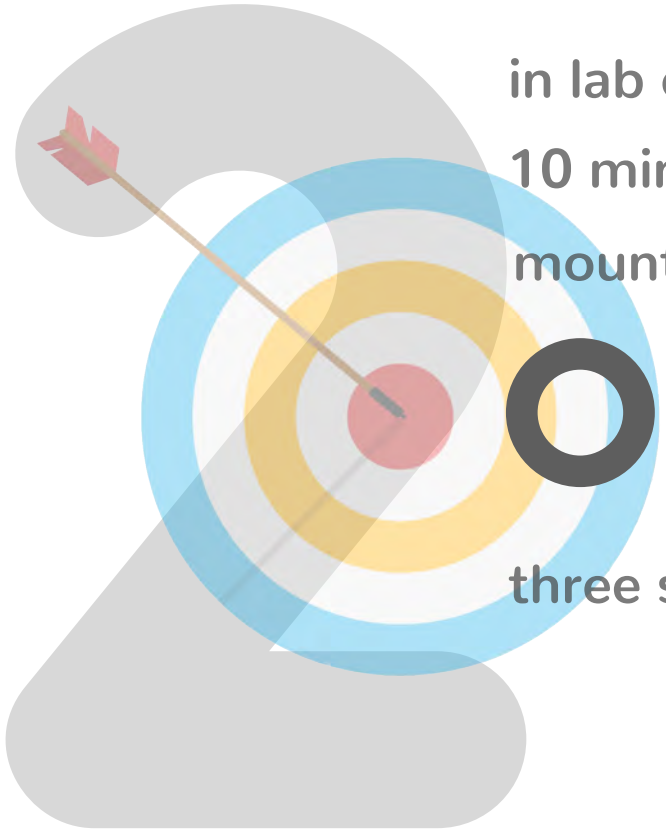
10 minutes per section

mounted product contract

October 16

three sketch models per concept

sketch models part 2



in lab or suitable testing area

10 minutes per section

mounted product contract

October 16

three sketch models per concept

sketch models part 2

specifications

user need(s)	product attribute(s)	engineering specification(s)

specifications

secondary research

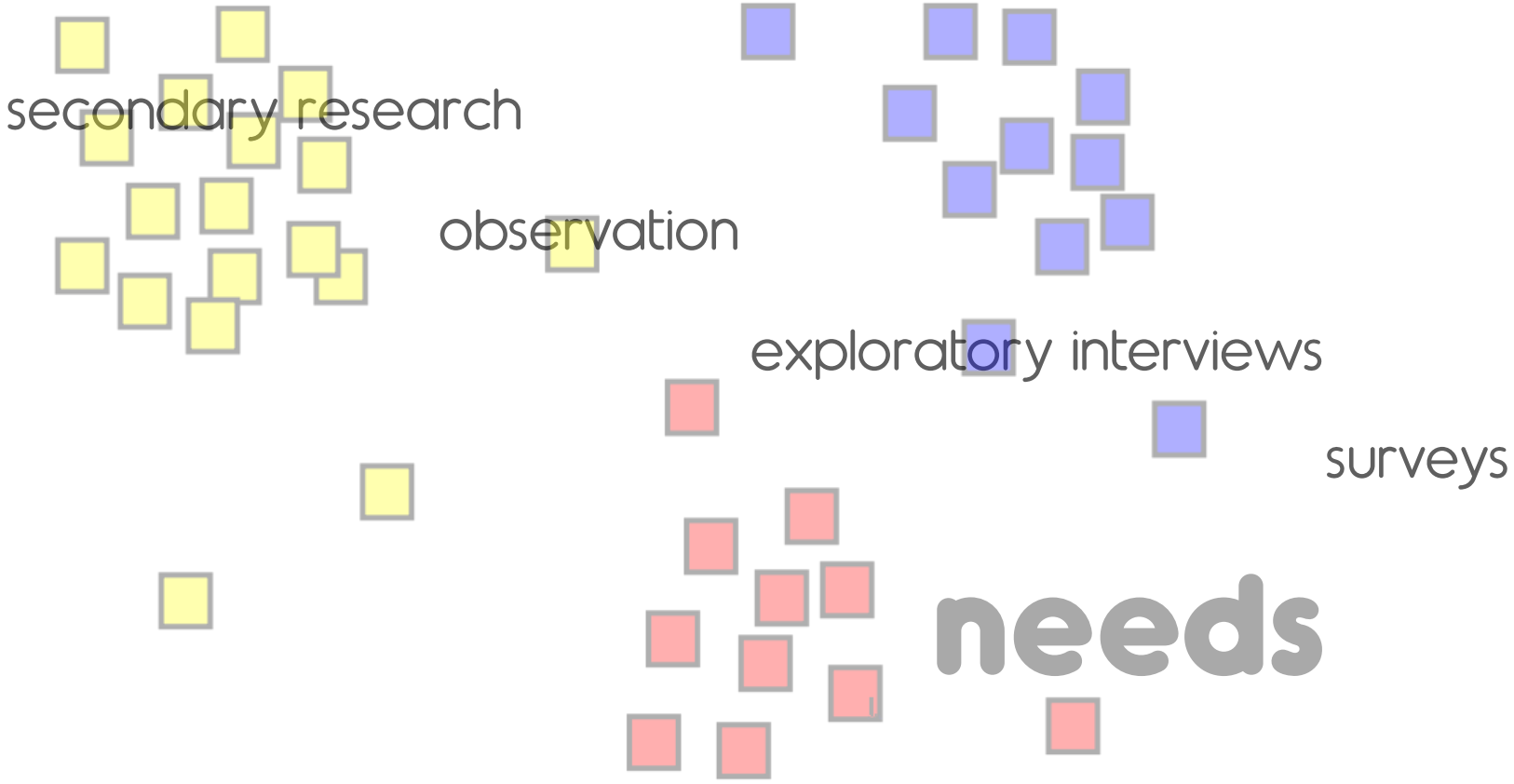
observation

exploratory interviews

surveys

needs

specifications



what, not how

user data

“put protective shields around battery contacts”

what, not how

user data	need (incorrect)
“put protective shields around battery contacts”	cover battery contacts with sliding door

what, not how

user data	need (correct)	need (incorrect)
“put protective shields around battery contacts”	protect batteries from accidental shorting	cover battery contacts with sliding door

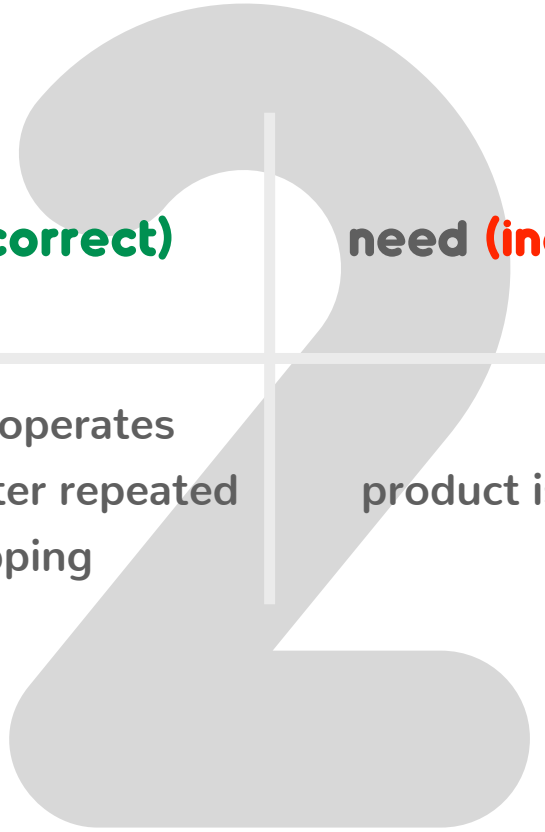
don't add or lose information

don't add or lose information

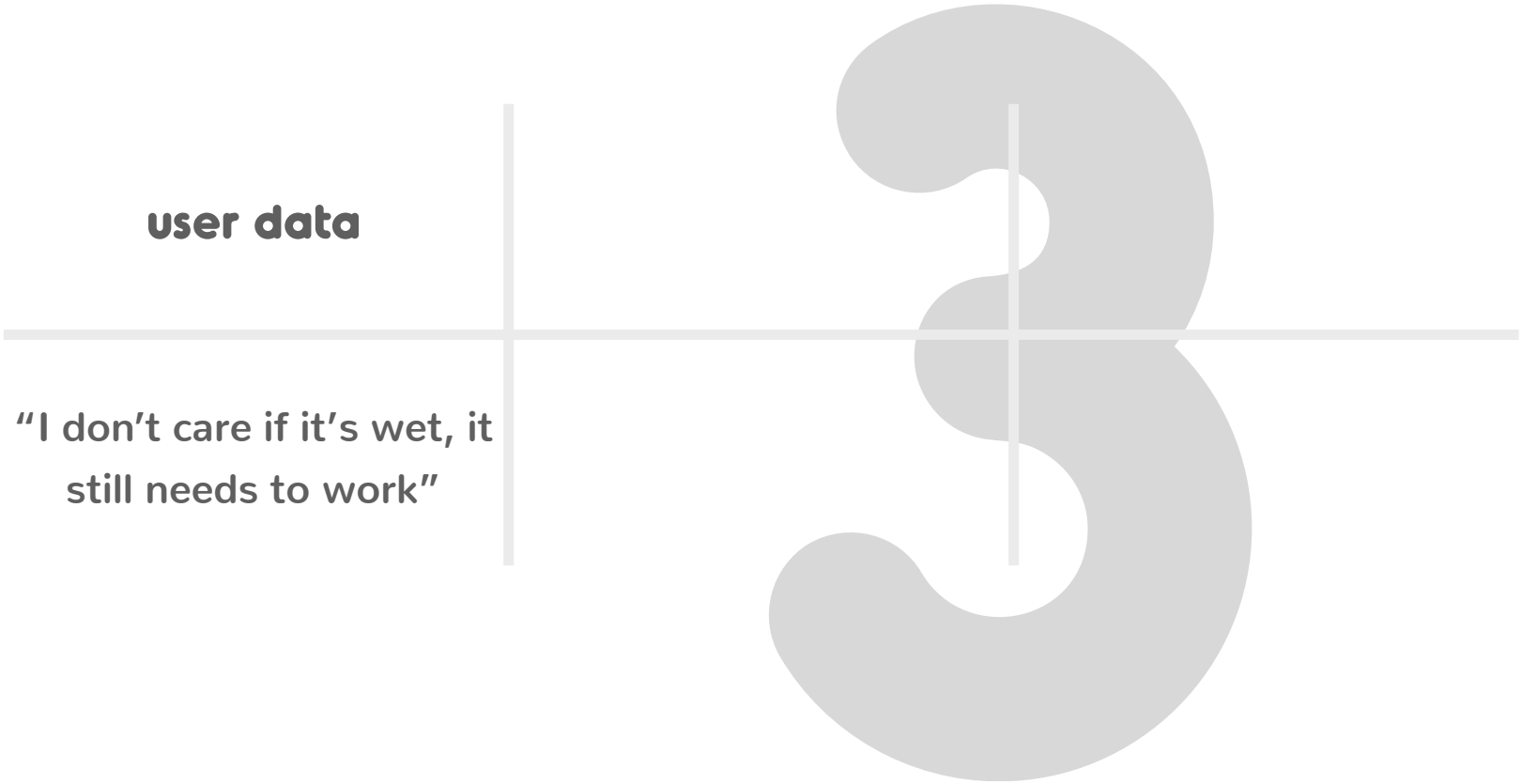
user data	need (incorrect)
“I drop the things all the time”	product is rugged

don't add or lose information

user data	need (correct)	need (incorrect)
"I drop the things all the time"	product operates normally after repeated dropping	product is rugged

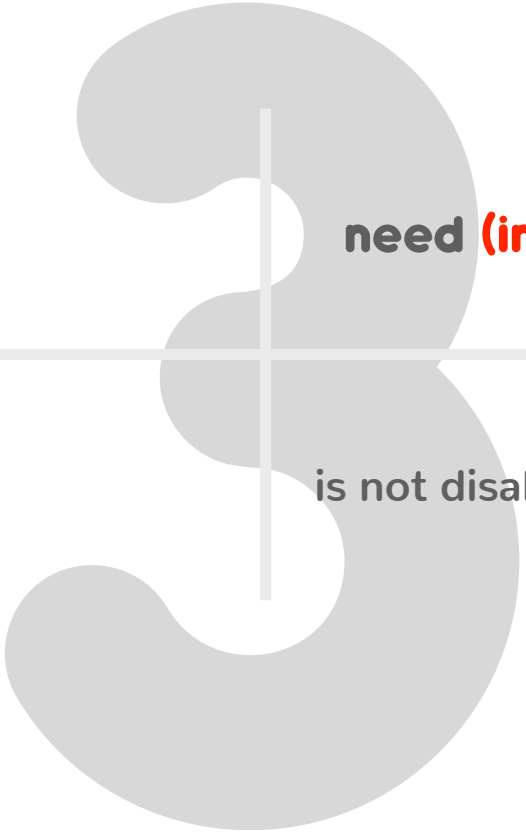


use positive statements



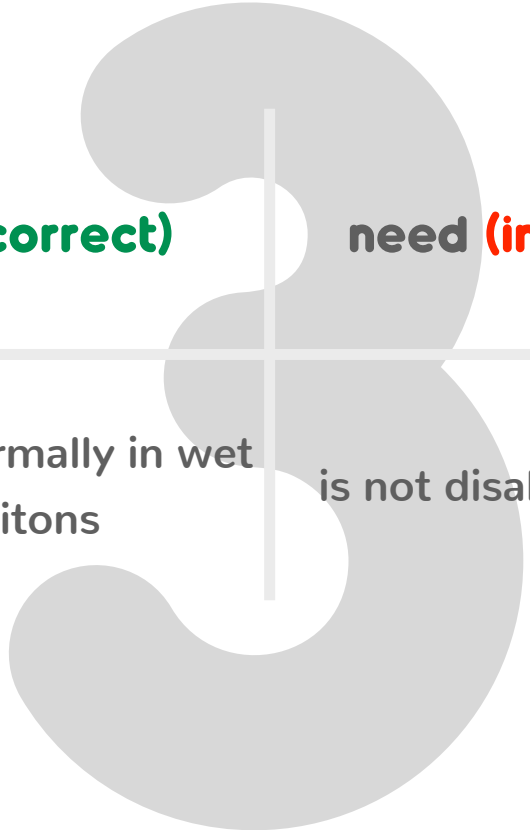
use positive statements

user data	need (incorrect)
“I don’t care if it’s wet, it still needs to work”	is not disabled by rain

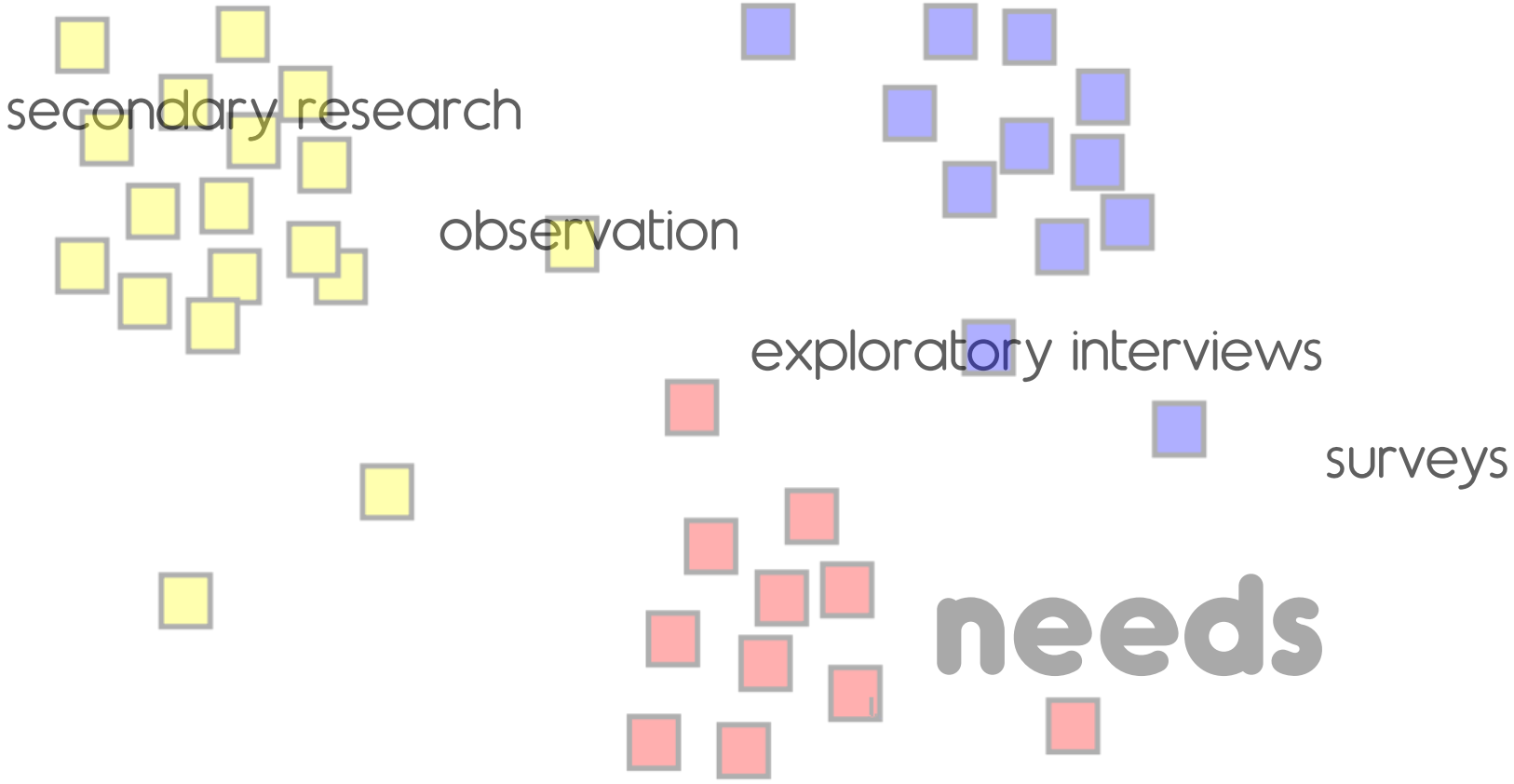


use positive statements

user data	need (correct)	need (incorrect)
“I don’t care if it’s wet, it still needs to work”	operates normally in wet conditons	is not disabled by rain



specifications



description: portable electric device for lifting automobiles

value proposition:

RISE is a portable automobile lift

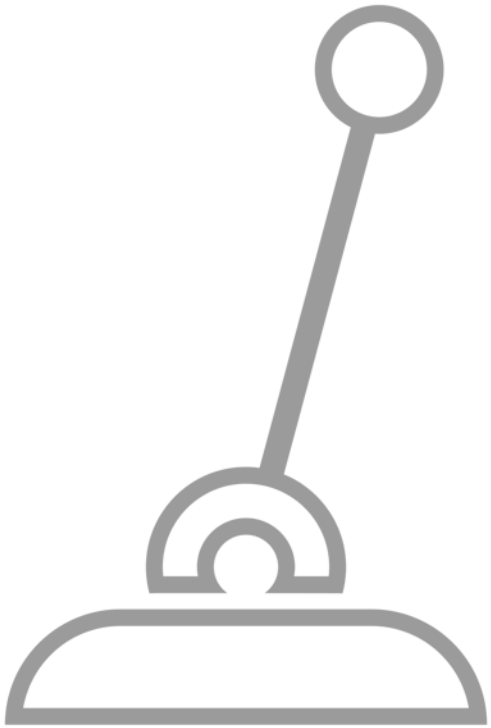
that allows amateur enthusiasts to work on cars,

on weekends at home, as comfortably as using a commercial lift

specifications

user need(s)	product attribute(s)	engineering specification(s)
can be easily transported		
is easily stored in the home garage		
can handle most repair situations		
can be used on many uneven surfaces		

specifications

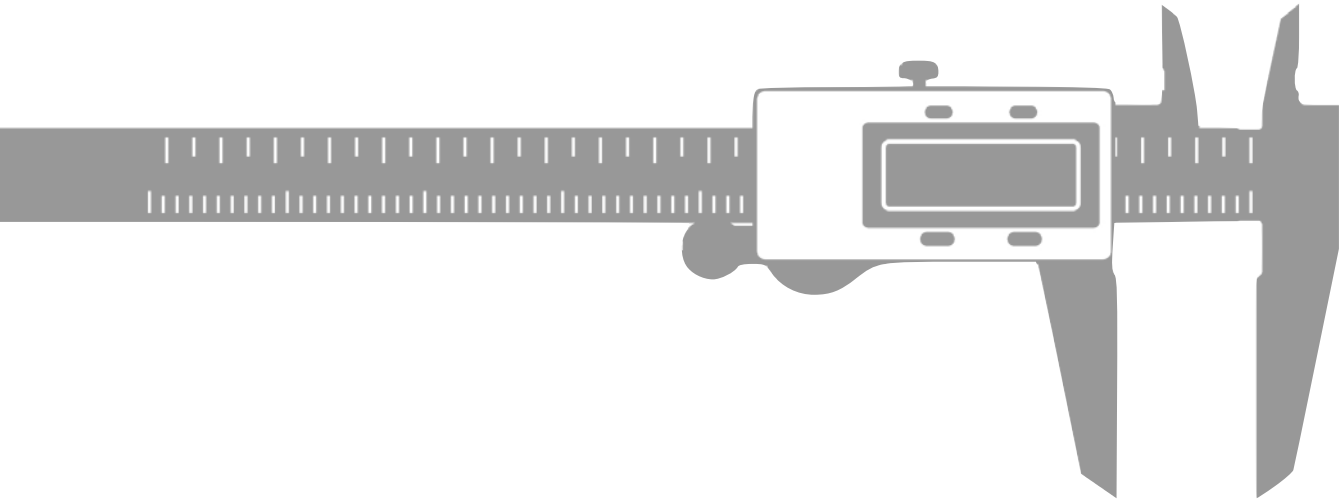


attributes

specifications

user need(s)	product attribute(s)	engineering specification(s)
can be easily transported	weight	
is easily stored in the home garage	size	
can handle most repair situations	capacity	
can be used on many uneven surfaces	stability	

specifications



engineering

specifications

user need(s)	product attribute(s)	engineering specification(s)
can be easily transported	weight	less than 40 pounds
is easily stored in the home garage	size	less than a 24" cube
can handle most repair situations	capacity	up to 3000 pounds
can be used on many uneven surfaces	stability	stable at 16" height with 400 lb side load

engineering specs

definition: a measurable description of what the **product must do**

user need: easy to setup

interpretation: time to assemble under 60 seconds

design attribute: assembly

metric: time to assemble

unit: seconds

value: less than 60

owner: Mildy

engineering specs

un-definition: a measurable description of what the **product is**

user need: easy to find

design attribute: visibility

metric: color
unit: rgb
value: 255, 255, 0
owner: Wildy

engineering specs

un-definition: a measurable description of what the **product is**

user need: easy to find

design attribute: visibility

engineering specs

un-definition: a measurable description of what the **product is**

user need: easy to find

design attribute: visibility

metric: time to spot

unit: seconds

value: less the 5

owner: Wildy

engineering specs

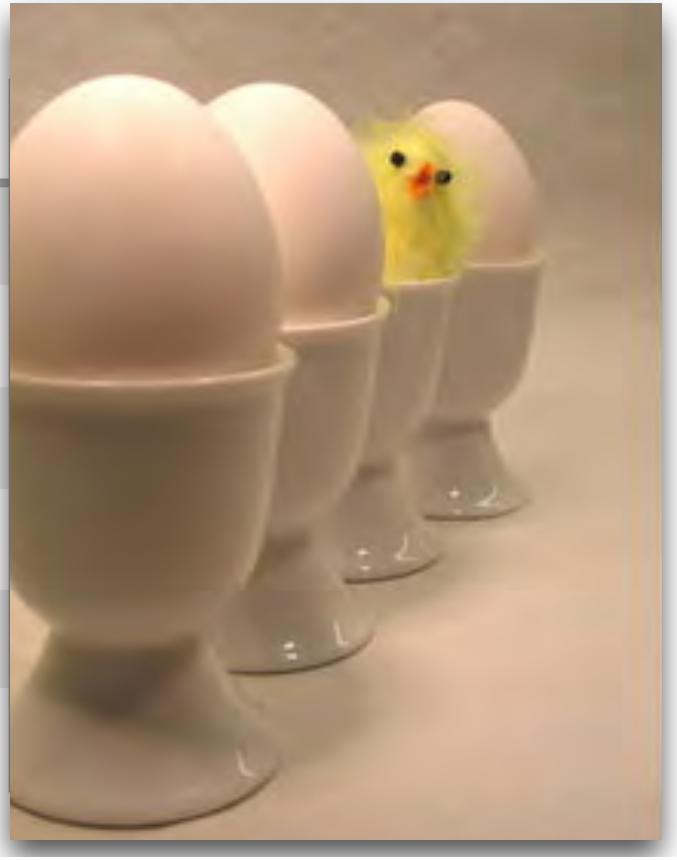
quiz! what product matches the spec?

attribute	metric	unit	value
damage detection	visible detection	binary	yes/no
solidifies in heat	thermo-sets	binary	yes/no
household usability	curing temperature	Celsius	between 50 and 100
producability	manufacturing time	days	between 1 and 2
food safe	FDA approved mat'ls.	binary	yes/no
Atkins-diet friendly	carbohydrate content	grams/product	less than 1

engineering specs

quiz! what product matches the spec?

attribute	metric
damage detection	visible detection
solidifies in heat	thermo-sets
household usability	curing temperature
producability	manufacturing time
food safe	FDA approved mat'ls.
Atkins-diet friendly	carbohydrate content



exercise by sec

open your "product"

imagine that this fruit product has
what were the needs that guided the desi
what product attributes were mapped to t
what were the design specifications that w

Need	
two wor	

exercise by section!

open your "product" kit

imagine that this product has been designed
what were the needs that guided the designers?
what product attributes were mapped to these needs?
what were the design specifications that were followed to design the product?

Need	Attribute
	1
	3
	4
	5
	6

two worksheets per section

Metric	Unit	Value
1		
3		
4		
5		
6		

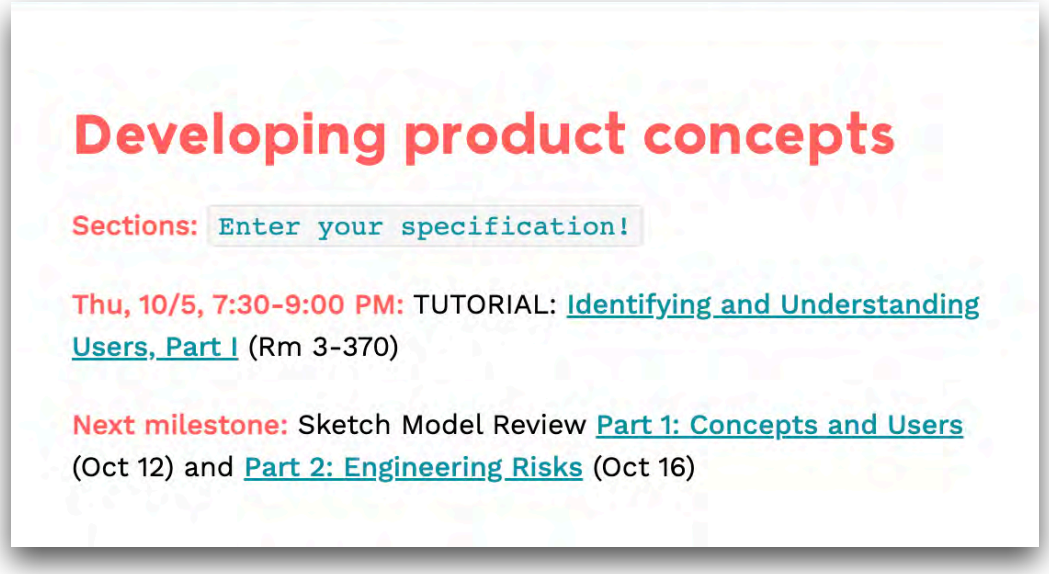
7 minutes

attribute	metric	unit	value
damage detection	visible detection	binary	yes/no
solidifies in heat	thermo-sets	binary	yes/no
household usability	curing temperature	Celsius	between 50 and 100
producability	manufacturing time	days	between 1 and 2
food safe	FDA approved mat'ls.	binary	yes/no
Atkins-diet friendly	carbohydrate content	grams/product	less than 1

exercise

one section member, go to the website

as a section, decide what your needs and specifications should be



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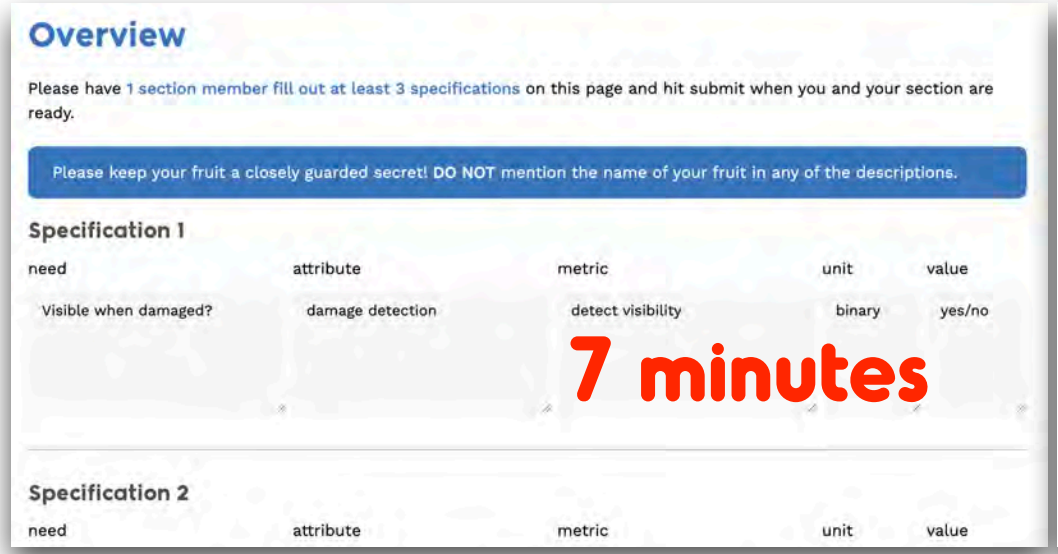
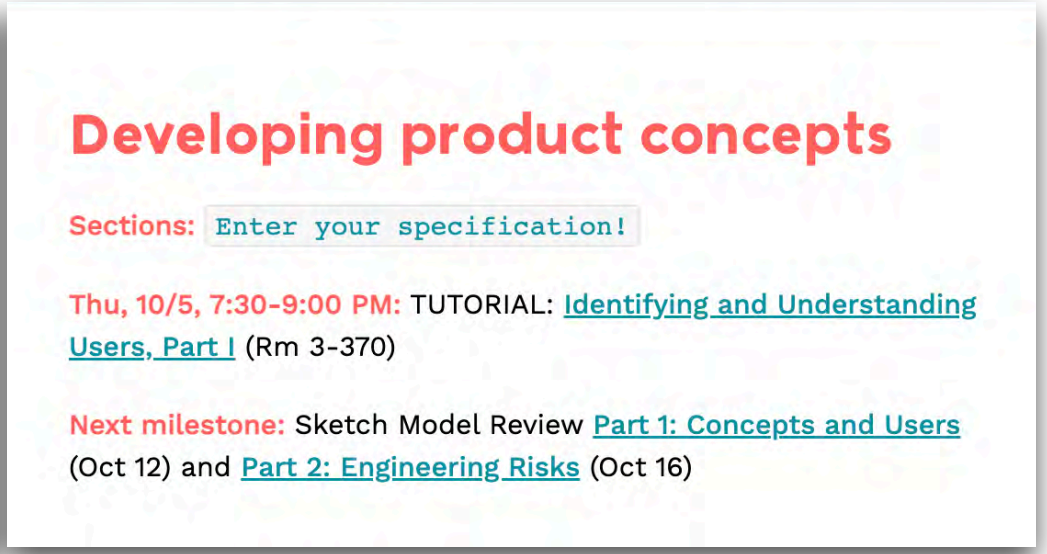
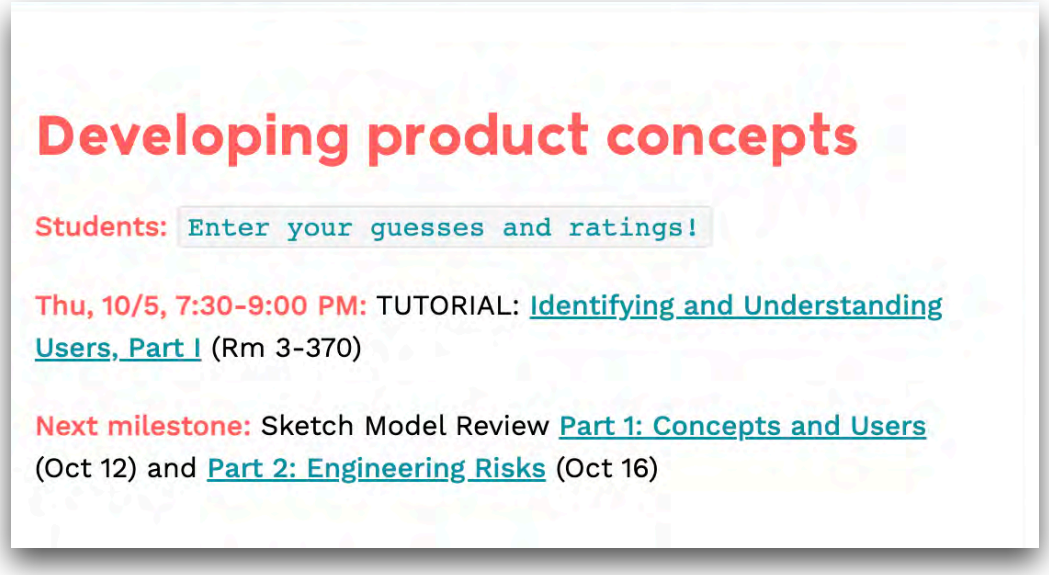




exercise

everyone, go to the website

enter your best guess for the 6 specs you are assigned, rate the specs



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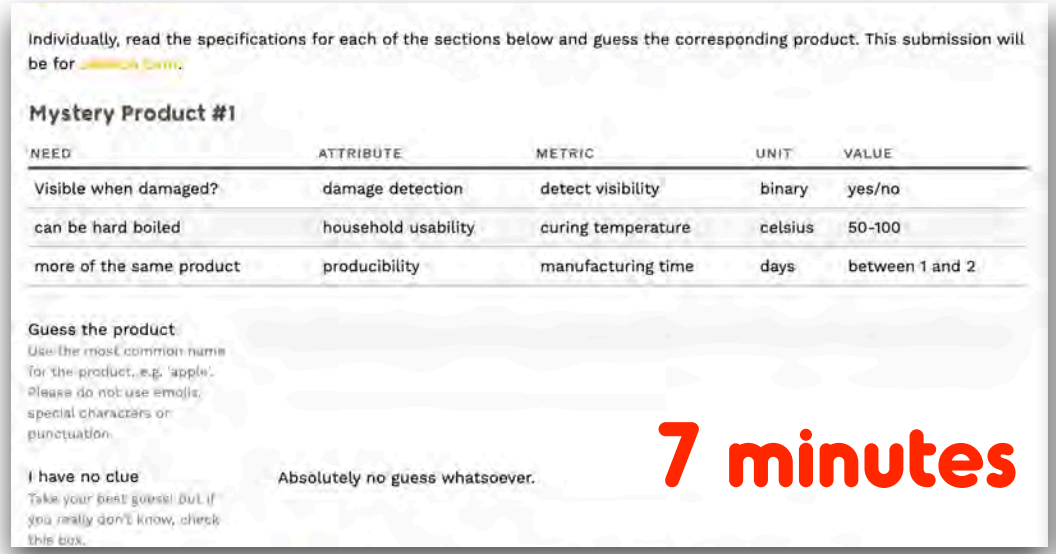

Individually, read the specifications for each of the sections below and guess the corresponding product. This submission will be for [redacted].

Mystery Product #1

NEED	ATTRIBUTE	METRIC	UNIT	VALUE
Visible when damaged?	damage detection	detect visibility	binary	yes/no
can be hard boiled	household usability	curing temperature	celsius	50-100
more of the same product	producibility	manufacturing time	days	between 1 and 2

Guess the product
Use the most common name for the product, e.g. 'apple'. Please do not use emojis, special characters or punctuation.

I have no clue
Take your best guess! But if you really don't know, check this box.

Absolutely no guess whatsoever.

7 minutes

Developing product concepts

Students: `Enter your guesses and ratings!`

Thu, 10/5, 7:30-9:00 PM: TUTORIAL: Identifying and Understanding Users, Part I (Rm 3-370)

Next milestone: Sketch Model Review Part 1: Concepts and Users (Oct 12) and Part 2: Engineering Risks (Oct 16)

Let's take a look at some specifications.

Sort by: Section Name | Rating | Section Accuracy

Blue A
Submitted!

Guesses:	0
Rating:	0/5
Section Accuracy:	0%

Blue B
Submitted!

Guesses:	0
Rating:	0/5
Section Accuracy:	0%

Green A
Submitted!

Guesses:	0
Rating:	0/5
Section Accuracy:	0%

Green B
Submitted!

Guesses:	0
Rating:	0/5
Section Accuracy:	0%

Pink A
Submitted!

Guesses:	0
Rating:	0/5
Section Accuracy:	0%

Pink B
Submitted!

Guesses:	0
Rating:	0/5
Section Accuracy:	0%

Purple A
Submitted!

Guesses:	0
Rating:	0/5
Section Accuracy:	0%

Purple B
Submitted!

Guesses:	0
Rating:	0/5
Section Accuracy:	0%

Red A
Submitted!

Guesses:	0
Rating:	0/5
Section Accuracy:	0%

Red B
Submitted!

Guesses:	0
Rating:	0/5
Section Accuracy:	0%

Yellow A
Submitted!

Guesses:	0
Rating:	0/5
Section Accuracy:	0%

Yellow B
Submitted!

Guesses:	0
Rating:	0/5
Section Accuracy:	0%