User Interaction Models

Prof. Lydia Chilton

COMS 4170

29 January 2024

Homework 1 Review

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I need a container div.
I can probably use the same one for all the groups!

```html
<style>
    .container{
        width: 350px;
    }
</style>
```
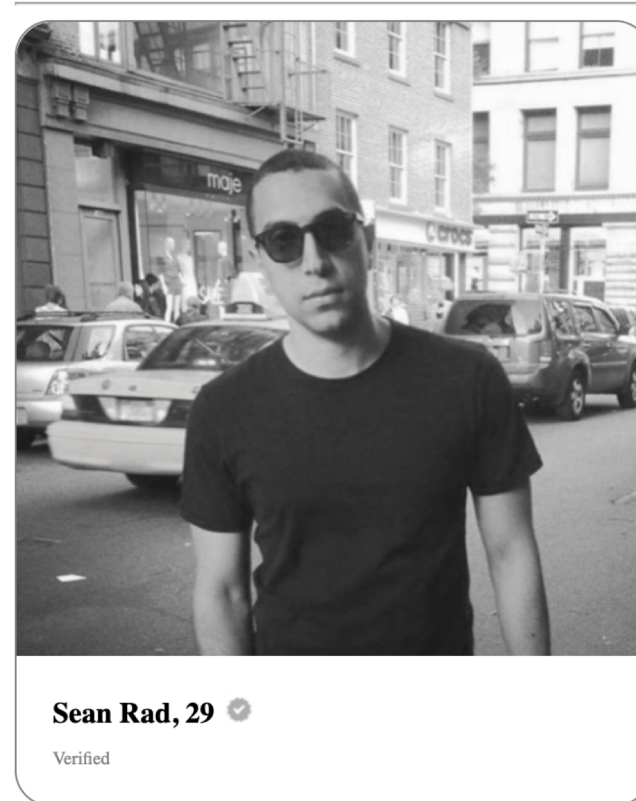
```html
<div class="container">
    <div class="logo_container"> •••
    </div>

    <hr class="tinder_hr">

    <div class="profile_group"> •••
    </div>

    <div class="like_me_container"> •••
    </div>

</div>
```

tinder

Sean Rad, 29 ✓

Verified

♥ Like me on Tinder

Finally! (1 hour later)

tinder

Sean Rad, 29 ✔
Verified

♥ Like me on Tinder

tinder

Sean Rad, 29 ✔
Verified

♥ Like Me On Tinder

User Interaction Models

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Interfaces **display information** in a way that helps users **accomplish a goal**.

Pine text-based email client
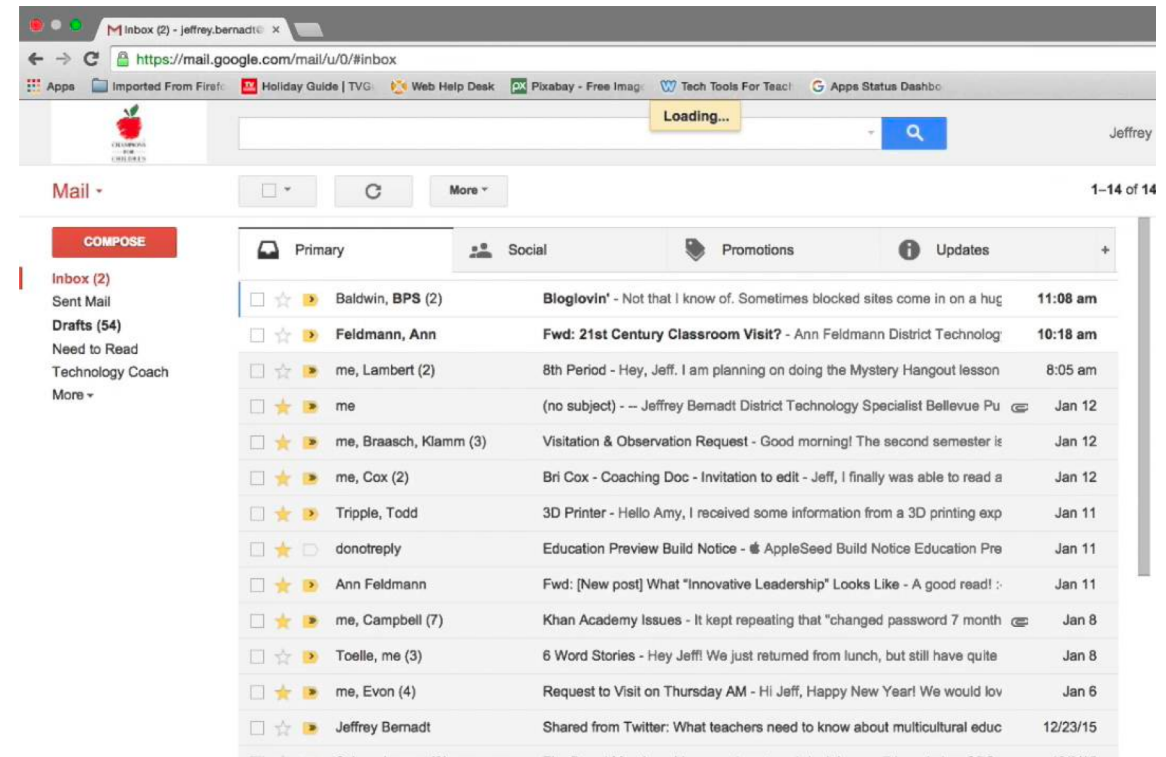
GMail

What is the primary goal of this interface?
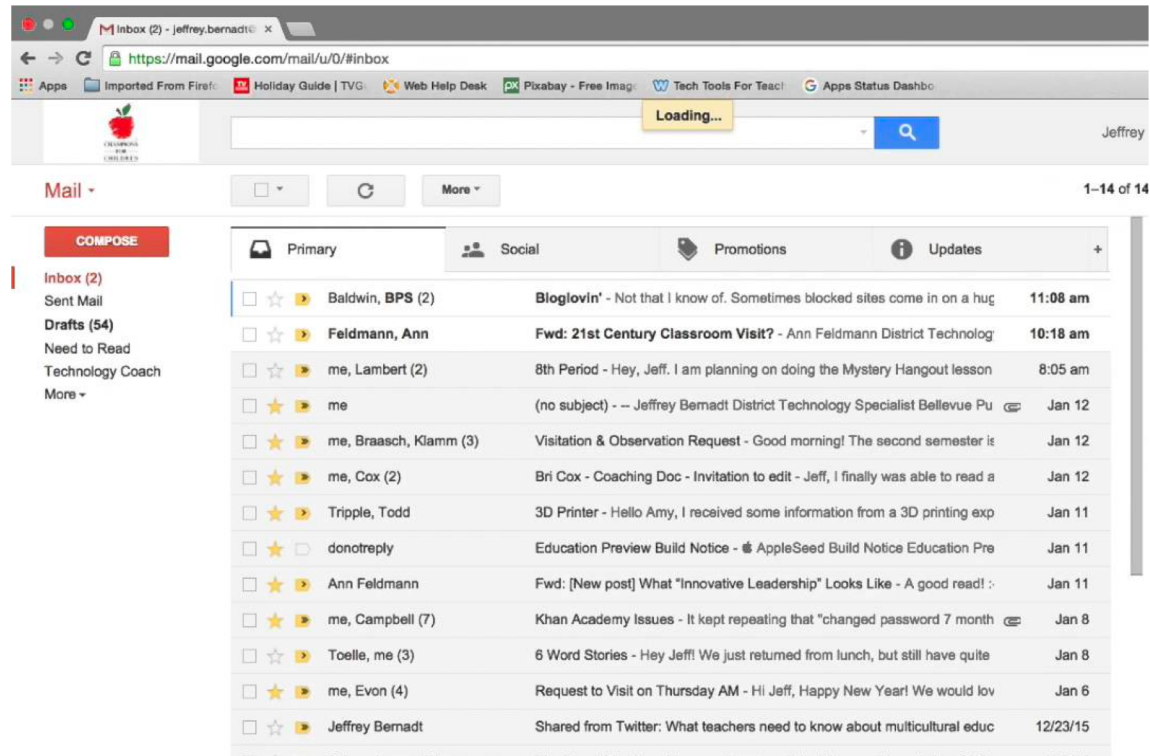
To read and respond to all email.

What is the primary goal of this interface?

To buy a book.

Users interact with a system to accomplish a goal
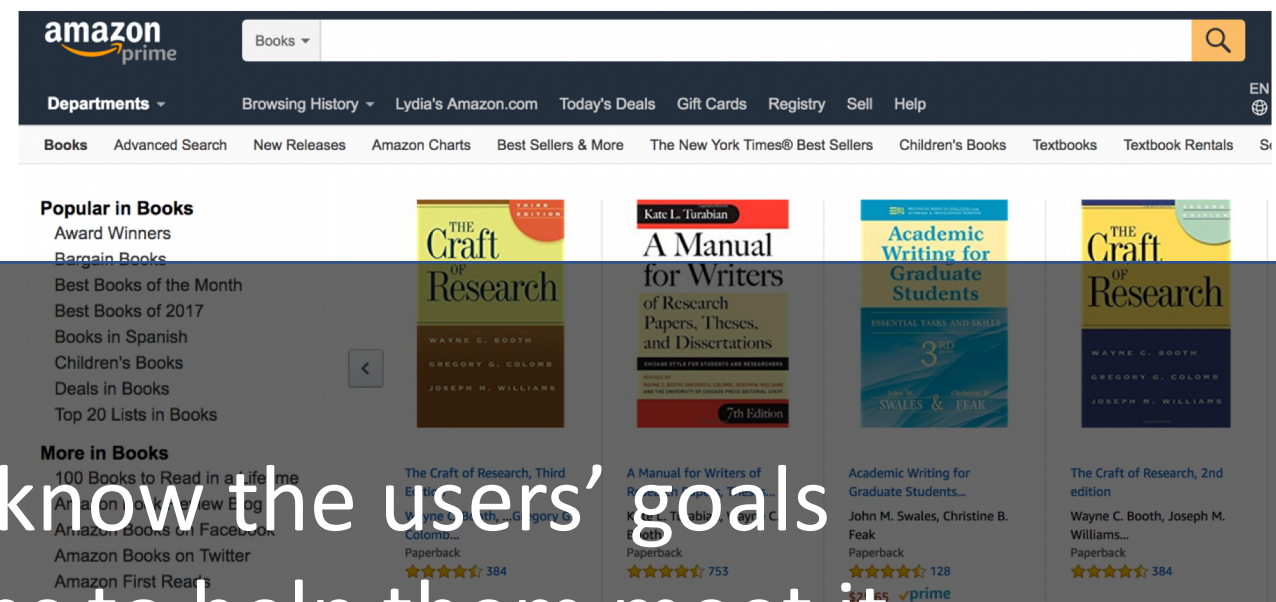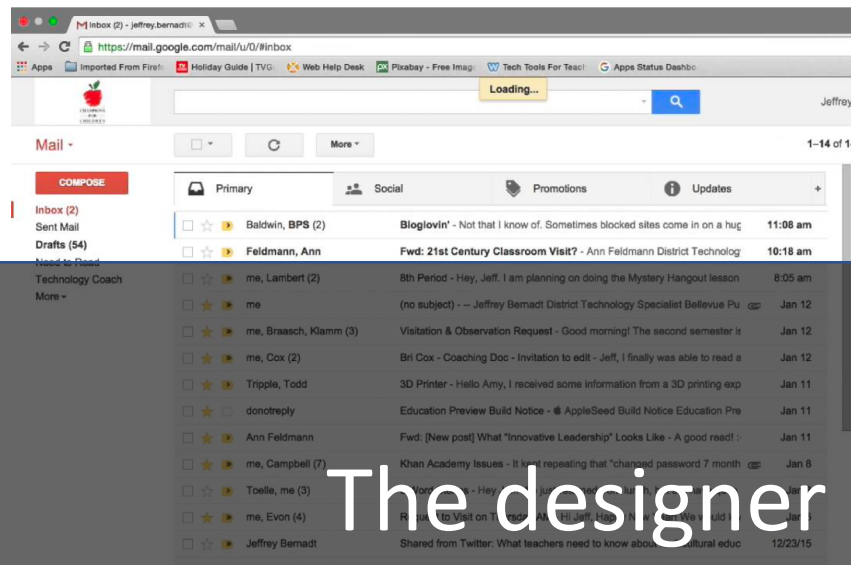
The designer must know the users' goals and create interactions to help them meet it.

To read and respond to all email.

To buy a book

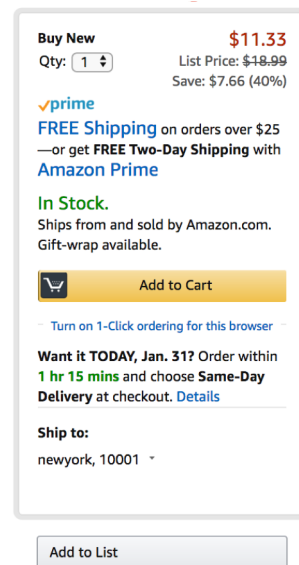# Large goals must be broken into smaller goals

Goal: Buy a book
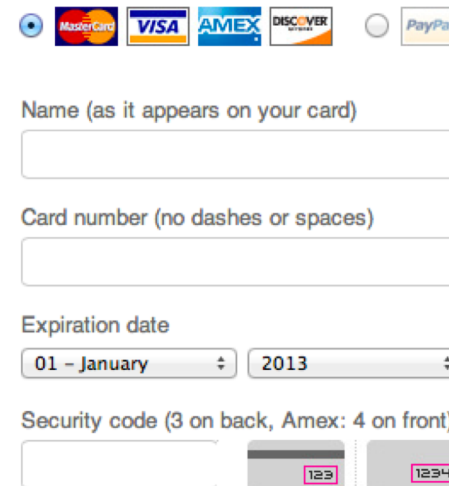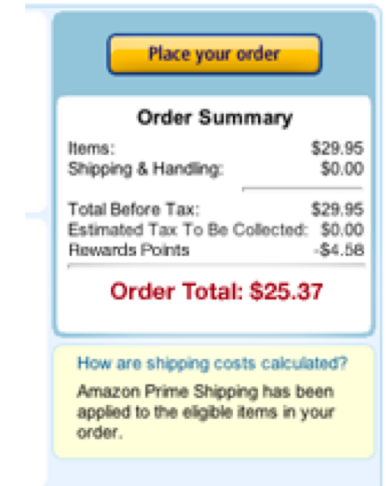
Subgoals:

1. Find it

2. Add to cart

3. Enter payment info

4. Place order

Goal: Buy a book
Subgoal: Search for book
Interaction: Type its name, click on it

Goal: Buy a book
Subgoal: Add to cart
Interaction: Click "Add to Cart" button

Goal: Buy a book
Subgoal: If they are done with cart, checkout
Interaction: Click "Proceed to checkout" button

Goal: Buy a book

Subgoal: Enter payment information
Interaction: Click, type, move cursor, click "Continue"

amazon.com

SIGN IN   SHIPPING & PAYMENT   GIFT OPTIONS   PLACE ORDER

Secure Payment Info

MasterCard VISA AMEX DISCOVER   PayPal

Continue

You can review this order before it's final.

Name (as it appears on your card)

Card number (no dashes or spaces)

Expiration date

01 – January   2013

Security code (3 on back, Amex: 4 on front)

123   1234

Goal: Buy a book

Subgoal: If the information is correct, place order
Interaction: Click "place your order"

The designer must know the users' goals create the subgoals and interactions to meet it.

Goal: Buy a book

Subgoal: Find it   Add to cart   Enter payment info   Place order
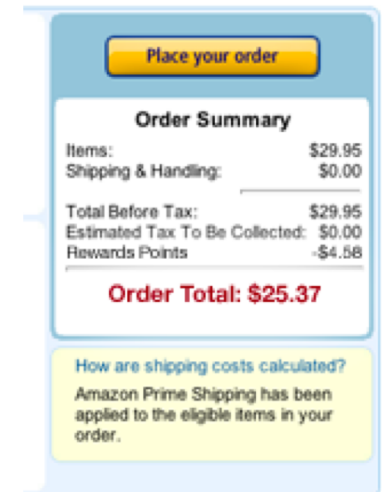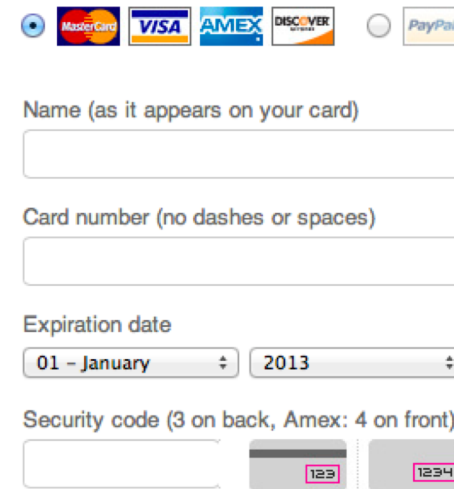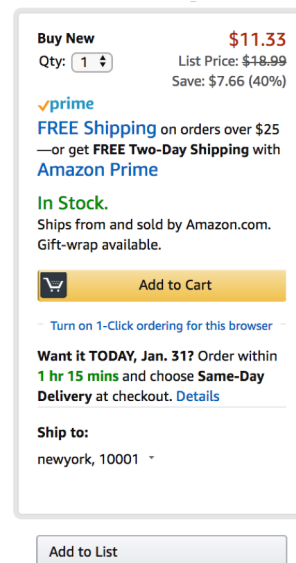**Interaction**:   Type, click   click   Type, click, point   Click

The designer must know the users' goals

But sometimes on Amazon,
I don't have a goal.

I'm just browsing.

Are these sites "just for browsing"?

No. Although people do browse,
The primarily goal is to find something.

The designer must know the users goals and
Create interactions that help them meet it.

Low-level Interactions

Interaction:
Moving + Clicking

Which button is faster to click?
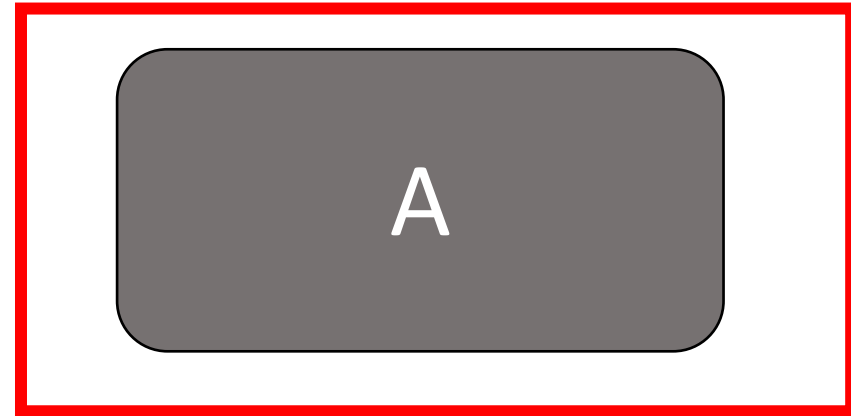
Which button is faster to click?
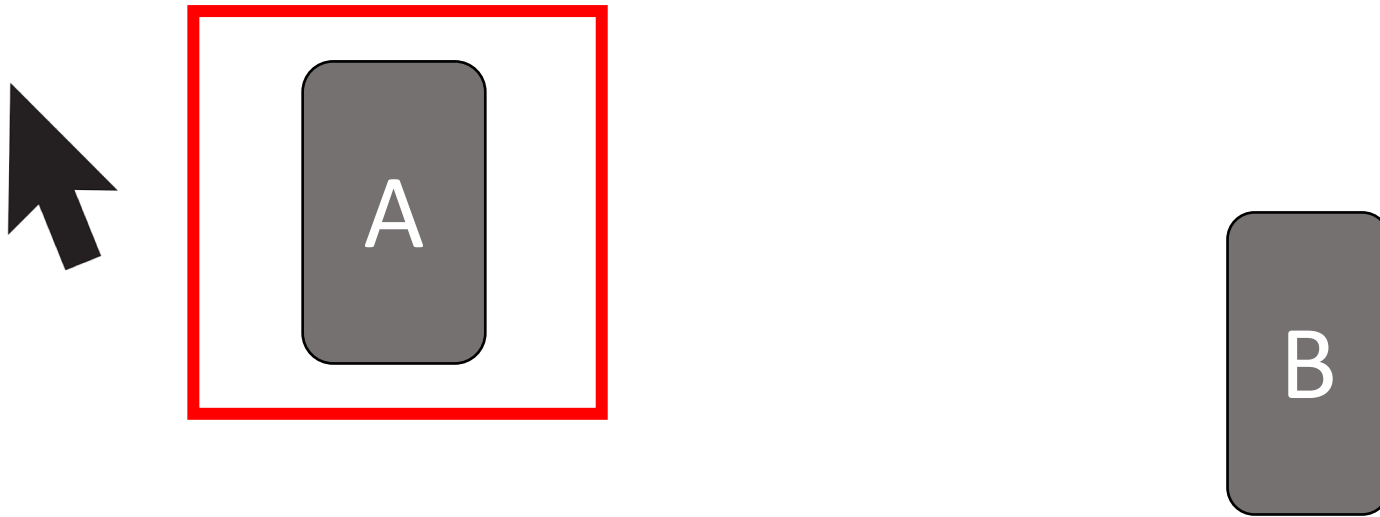
Which button is faster to click?
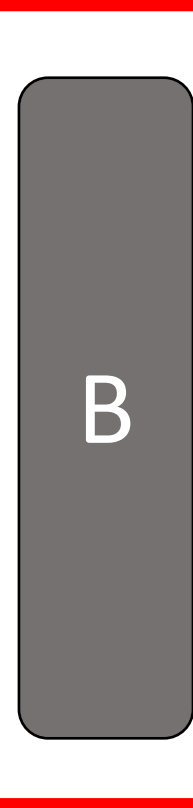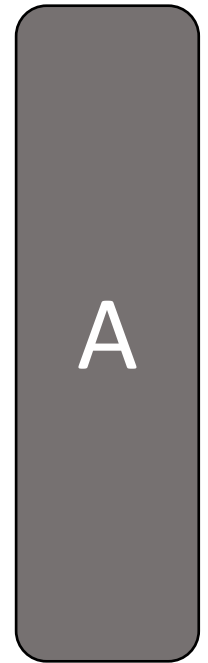
Fitts's Law
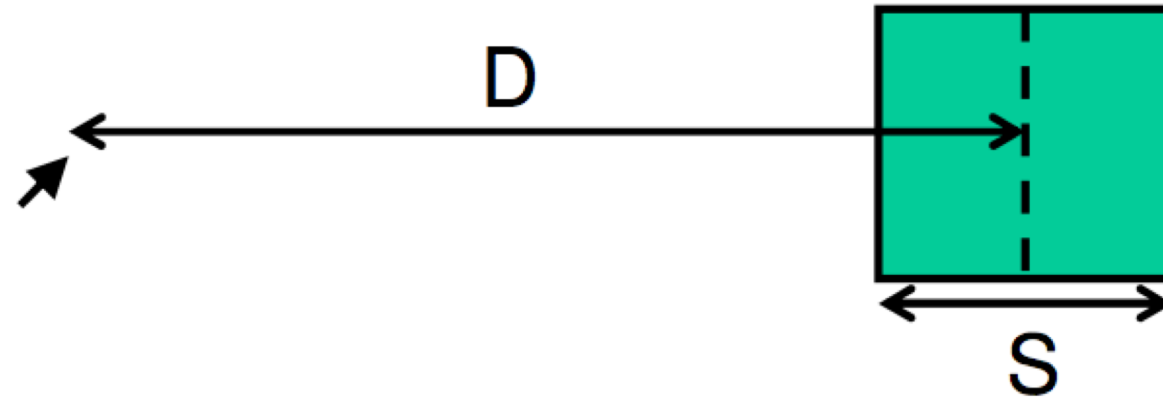
Time to move your pointer to a target $= a + b * \log\left(\dfrac{2\mathbf{D}}{\mathbf{S}}\right)$

Using Fitts' law, why is A faster to click?
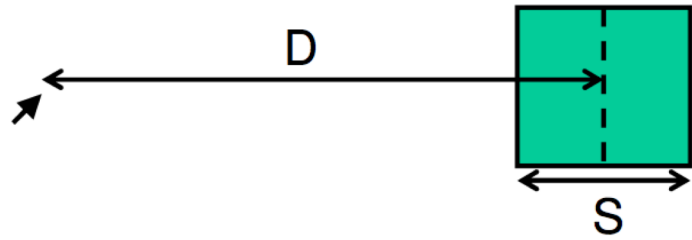
$$= a + b * \log \left(\frac{2D}{S} \right)$$

D is small.
Thus the time is lower.

A

B
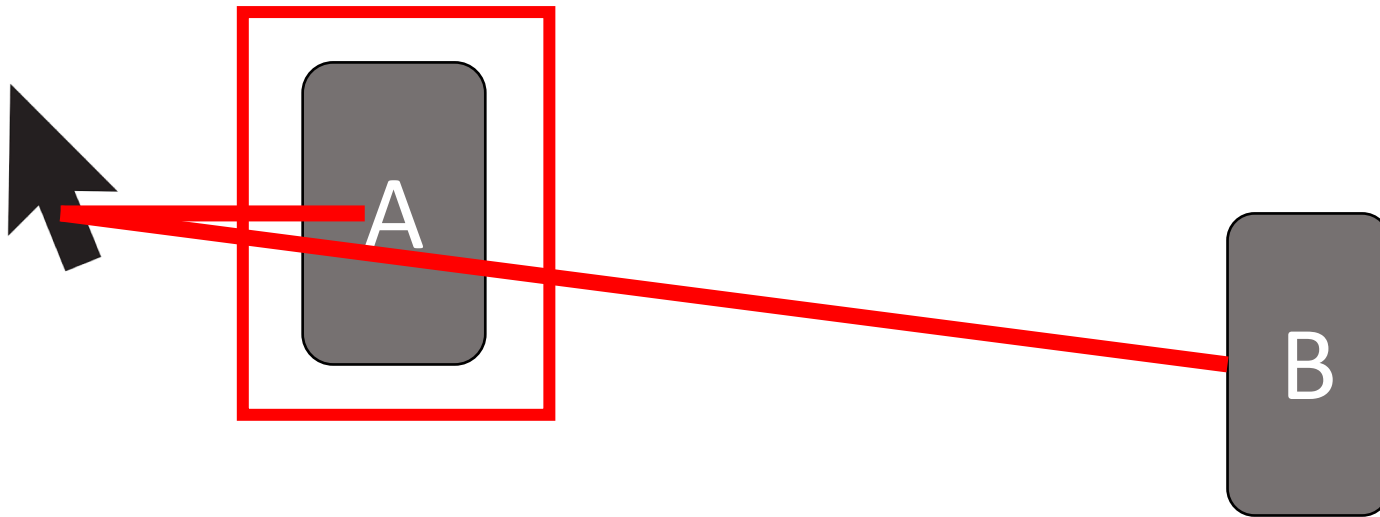
Using Fitts' law, why is A faster to click?

$$ = a + b * \log \left(\frac{2D}{S} \right) $$

S is bigger.
Thus the time is lower.
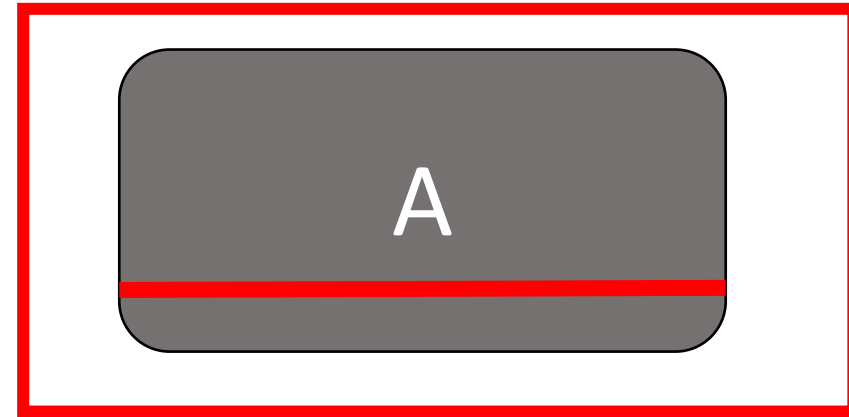
Using Fitts' law, why is B faster to click?
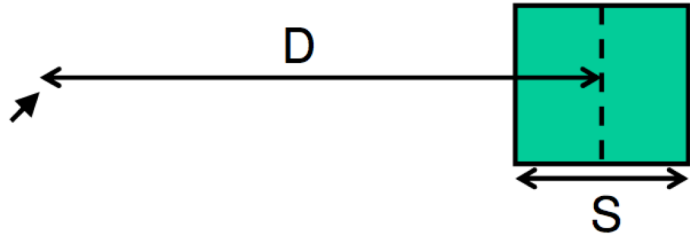
$$= a + b * \log\left(\frac{2D}{S}\right)$$

S is bigger (infinite).
Thus the time is lower.

A   B
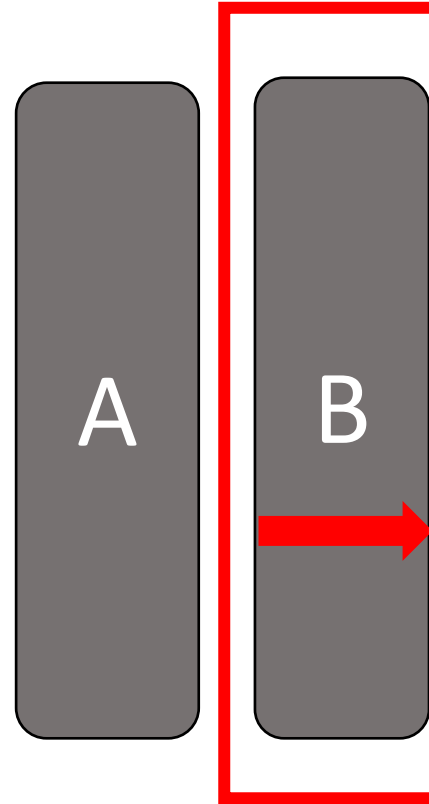
This is why did iOS designs the menu to touch the edge of the screen
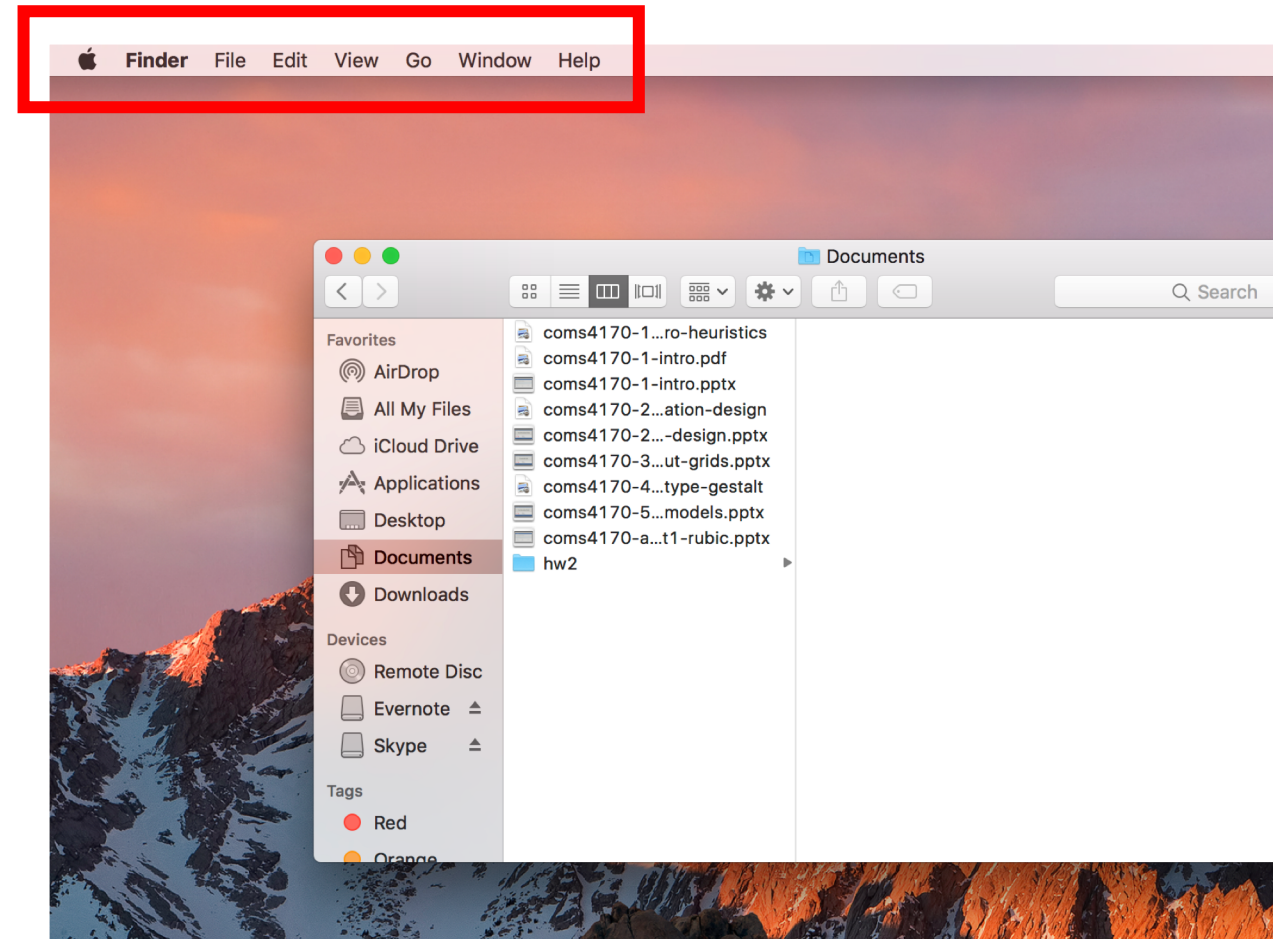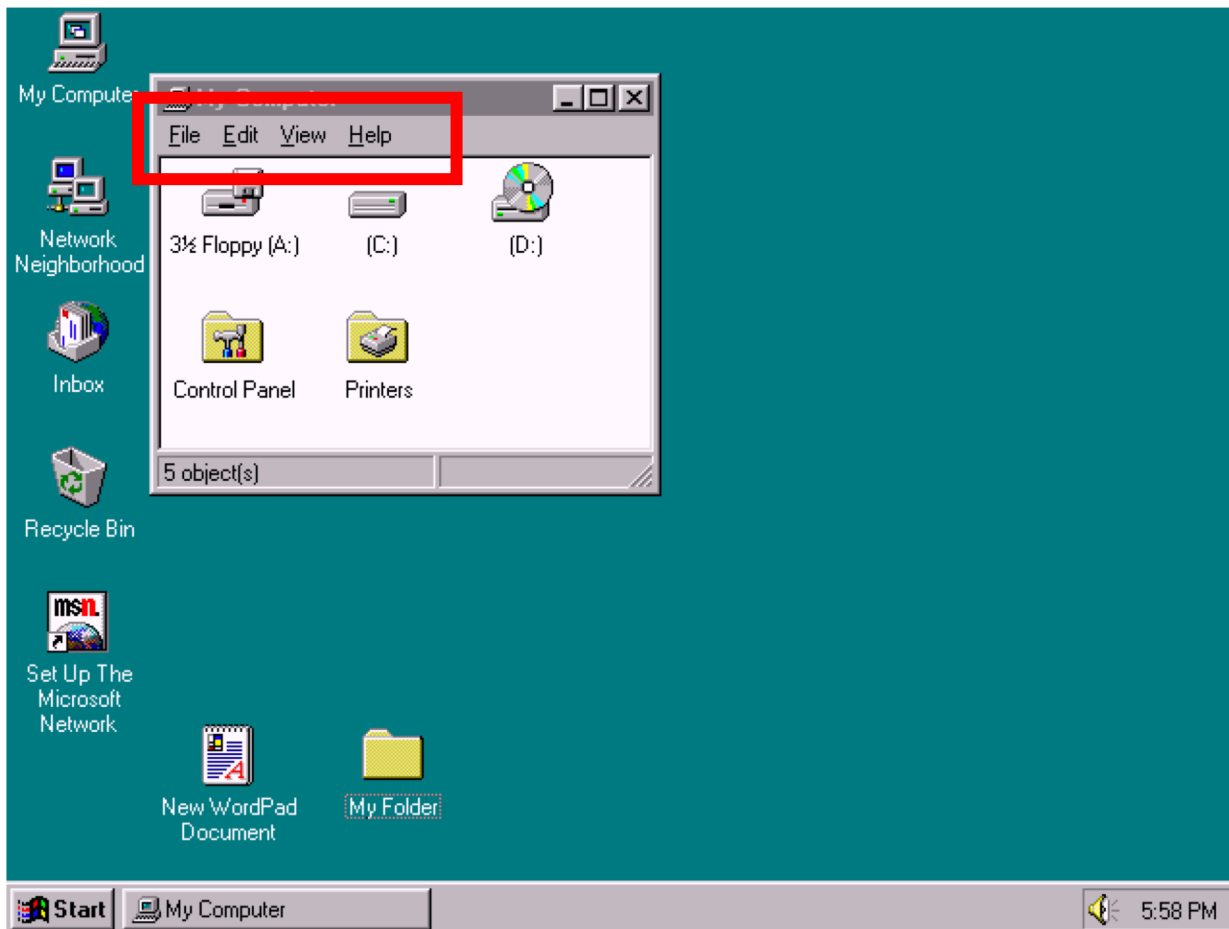
Fitts's Law: What are a and b?
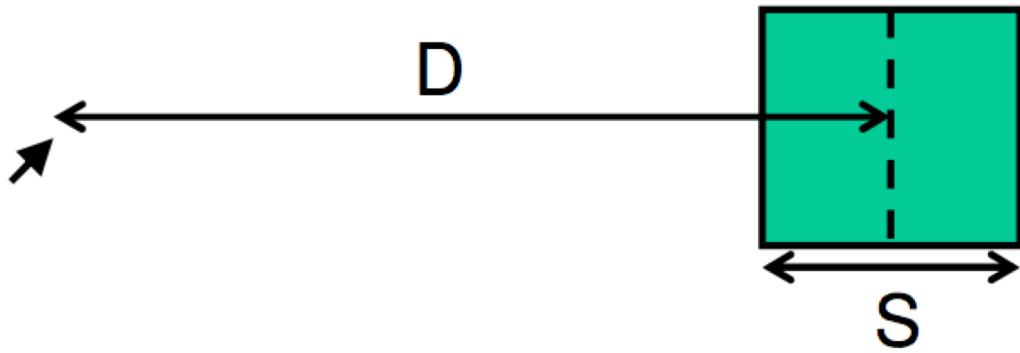
$$\text{time} = a + b * \log \left(\frac{2D}{S} \right)$$

Time to move the pointer: Fitts's Law
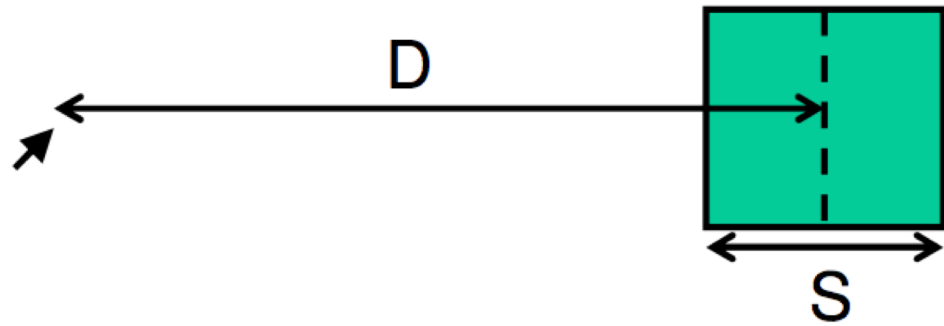
D

S

Time to move your
pointer to a target

$$= a + b * \log \left(\frac{2D}{S} \right)$$

Buttons on the edges are fast to get to
because they have infinite size
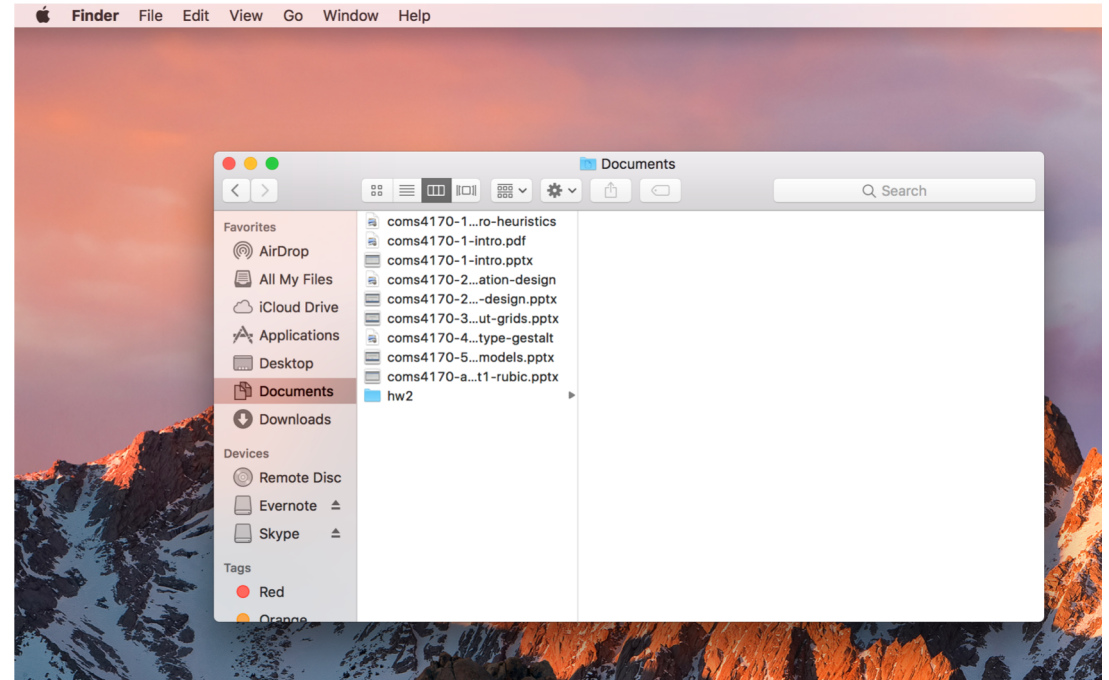
More moving + clicking:
Tunneling Menus
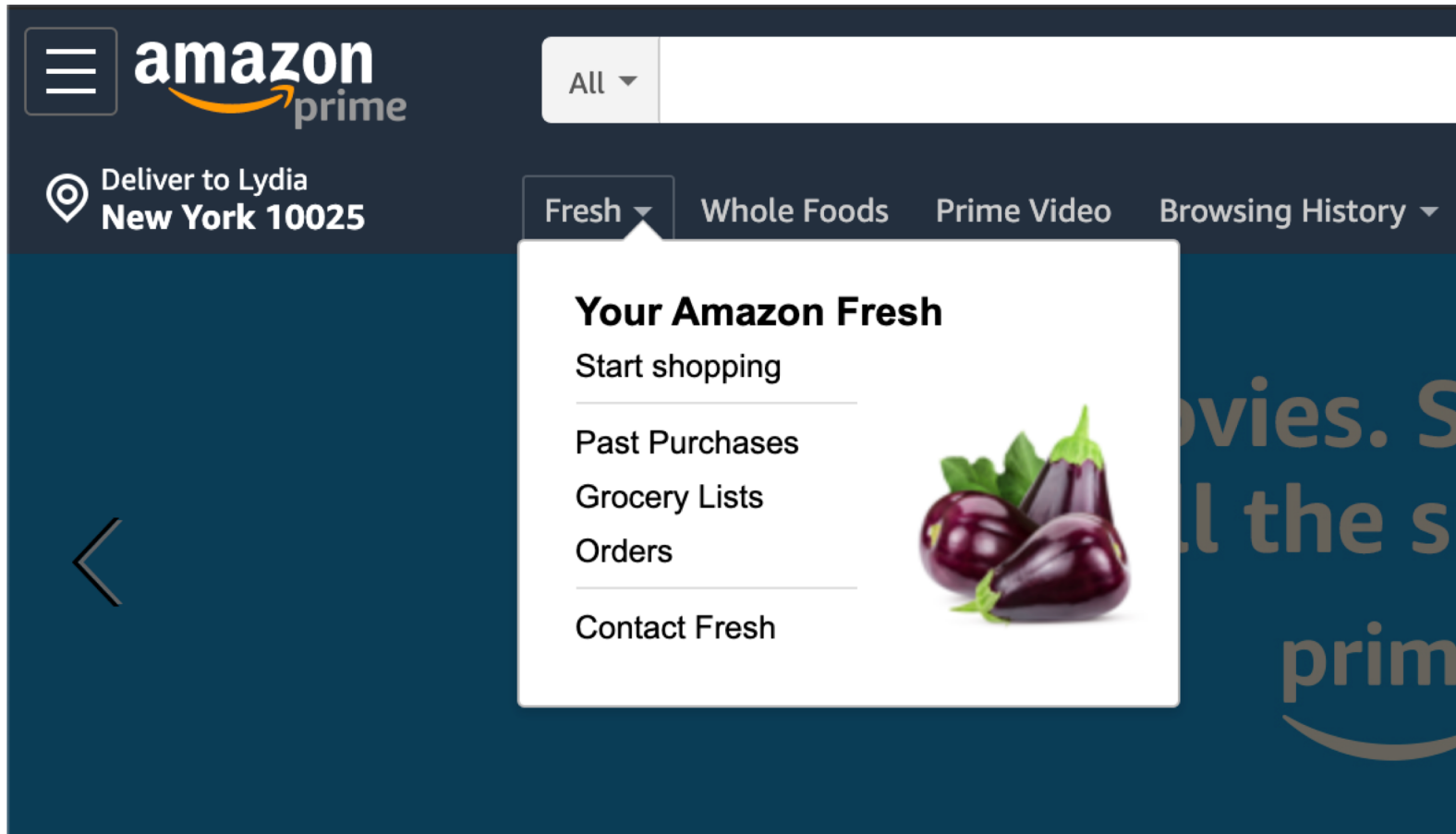
More moving + clicking:
Cascading Tunnel Menus
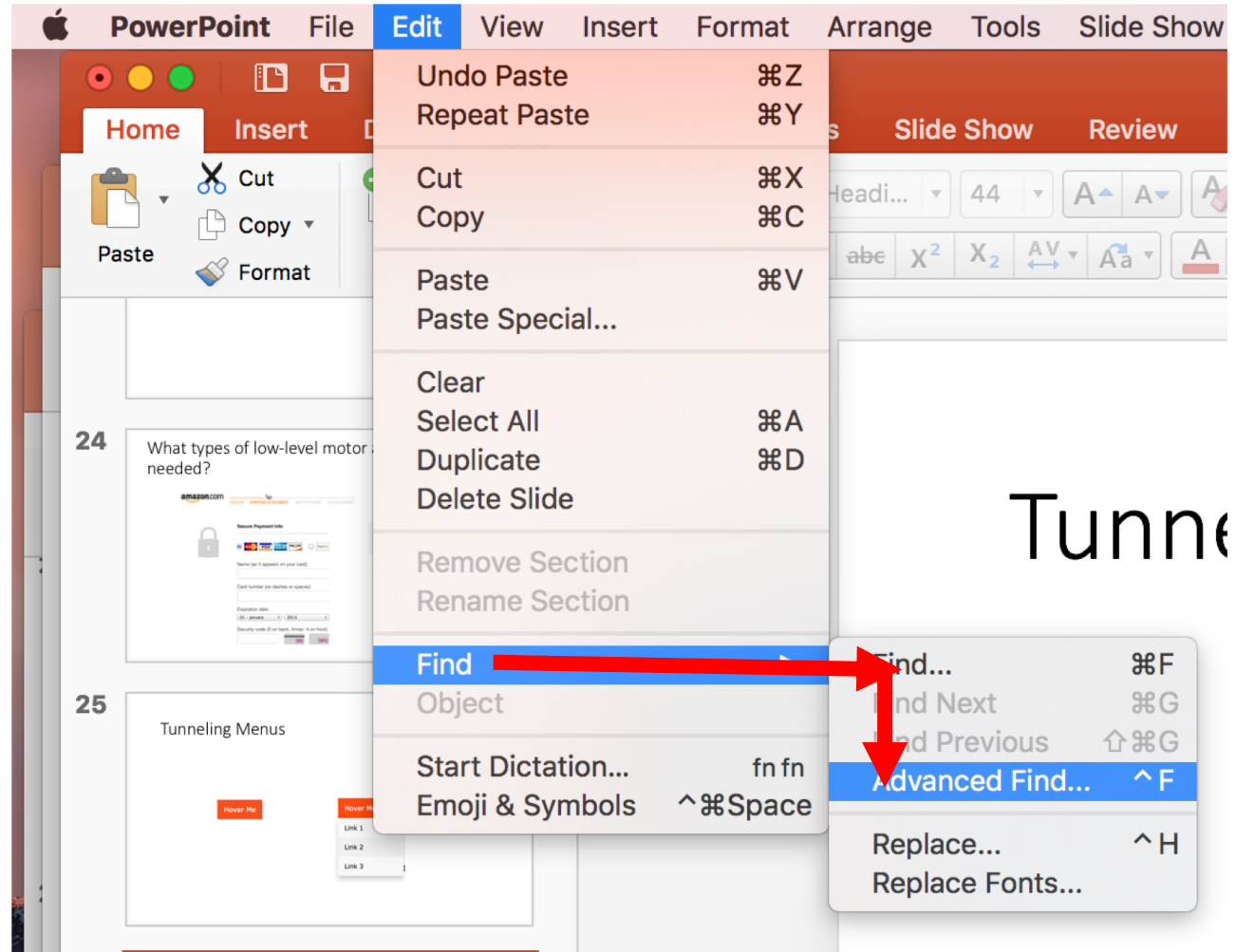
More moving + clicking:
Cascading Tunnel Menus fix
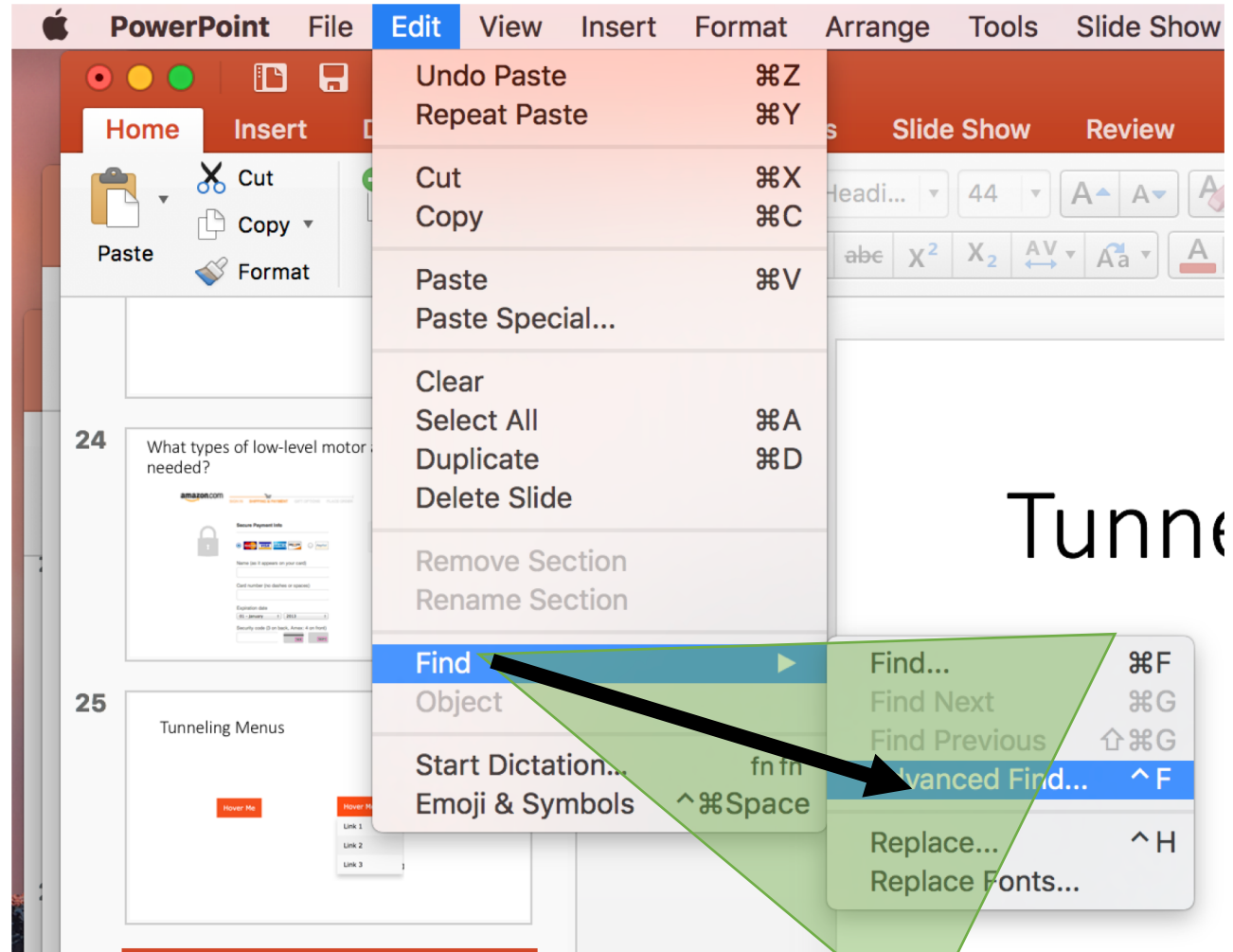
What are all the low-level interactions are needed to accomplish this subgoal?

Secure Payment Info

Name (as it appears on your card)

Card number (no dashes or spaces)

Expiration date

Security code (3 on back, Amex: 4 on front)

Move
Click
Move
Click
TypeTypeTypeType
Move
Click
TypeTypeTypeType
Move
Tunnel
Click
Move
Tunnel
Click
TypeTypeTypeType

Every interaction takes time and effort, and is a potential source of error.

How could you improve this?

Low-level Interactions take time and effort. Minimize them because you do them a lot.
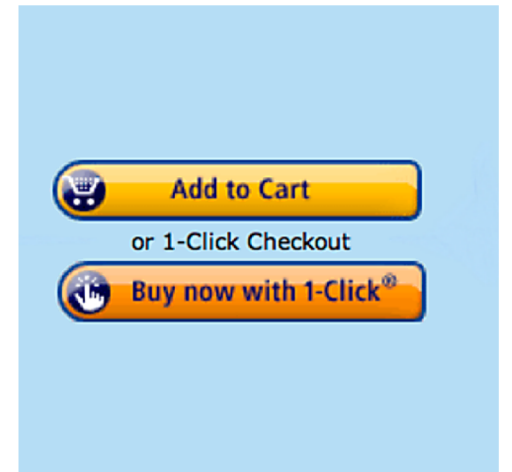
The Interaction Loop

Establish a goal: Buy a book.

What happens after you place an order?

To accomplish a goal, users must **execute** an operation and **evaluate** the result

The Seven Stages of Action
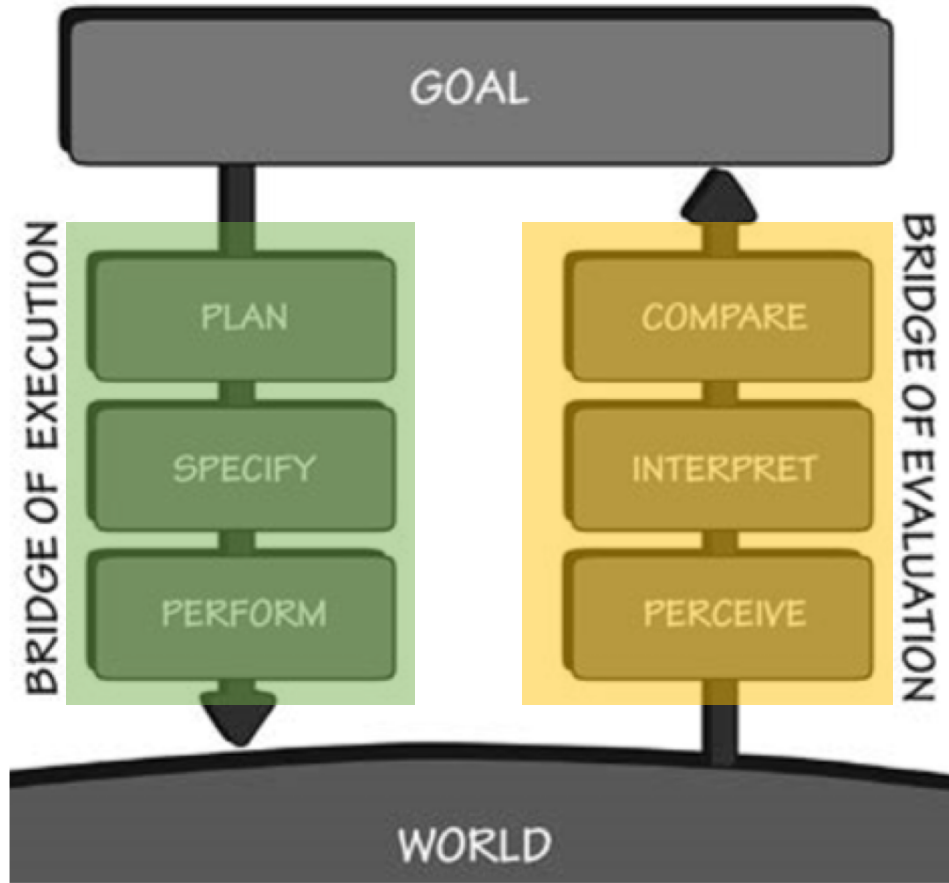
1. Form the goal

2. Plan the action
3. Specify the action sequence
4. Perform the action sequence

5. Perceive the state of the world
6. Interpret the perception
7. Compare the outcome with the goal

Goal Execution Step 1:
Plan the action
Specify the action sequence
Perform the action sequence

Goal Execution Step 2:

Plan the action

Specify the action sequence

Perform the action sequence

Goal Execution Step 3:

Plan the action
Specify the action sequence
Perform the action sequence

Goal Evaluation Step 1:
Perceive the State of the world
Interpret the perception
Compare the outcome with the goal

Goal Evaluation Step 2:
Perceive the State of the world
Interpret the perception
Compare the outcome with the goal

amazon.co.uk   Order Confirmation

Hello,

Thanks for your order. We'll let you know once your item(s) have dispatched. Your estimated delivery date is indicated below.

Arriving:	Your order will be sent to:
Wednesday, January 4 –	**Olayemi Osonuga**
Monday, January 9	**2B HERBERT ROAD**
	LONDON, SE18 3SH
	United Kingdom

Order Details

Placed on January 02, 2017

EFFORTINC Vintage Chandelier Deer Horn Resin 6   197.99
Lights,Rural countryside antler chandeliers, Study   GBP
Room/Office, Dining Room, Bedroom, Living Room Chand
Condition: New
Sold by EFFORTINC Tiffany
Fulfilled by Amazon
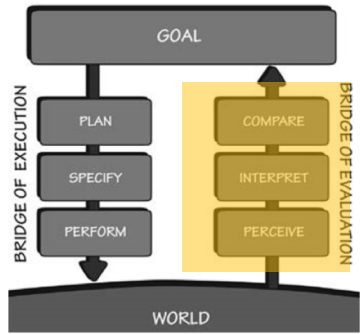
Goal Evaluation Step 3:
Perceive the State of the world
Interpret the perception
Compare the outcome with the goal

What's the users goal?   Post a tweet
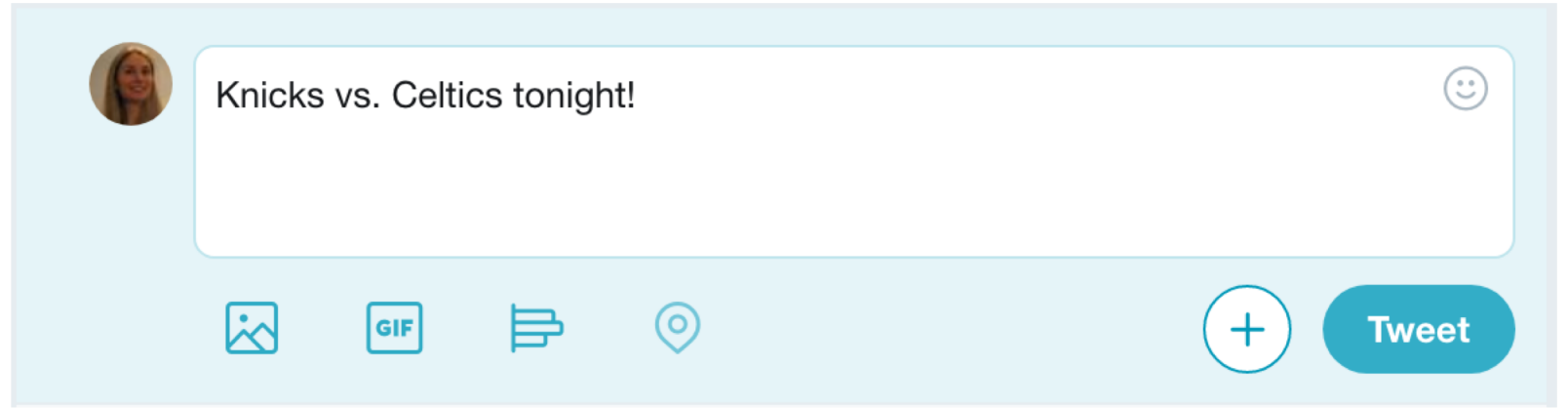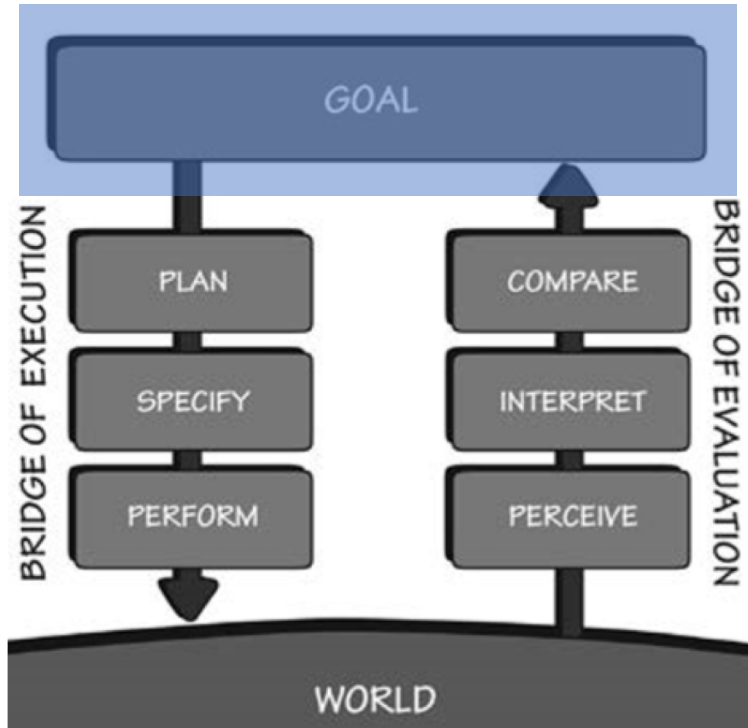
What does the execute?
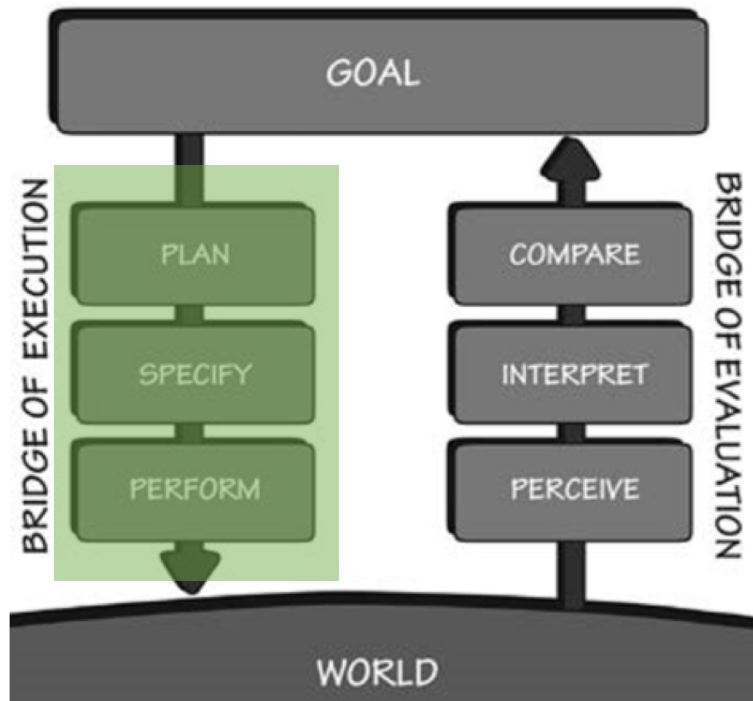
Put cursor in box
Type message
Move mouse to button and click
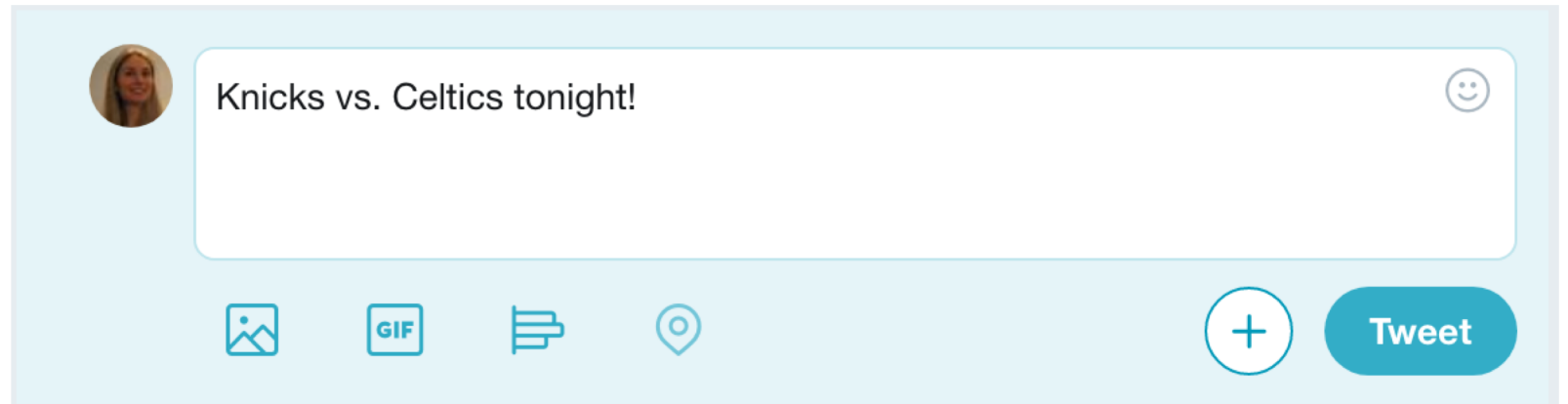
What does the user evaluate?

Did it get posted?

GOAL

BRIDGE OF EXECUTION

PLAN

SPECIFY

PERFORM

COMPARE

INTERPRET

PERCEIVE

BRIDGE OF EVALUATION

WORLD

What's happening?

Lydia Chilton
Knicks vs. Celtics tonight!
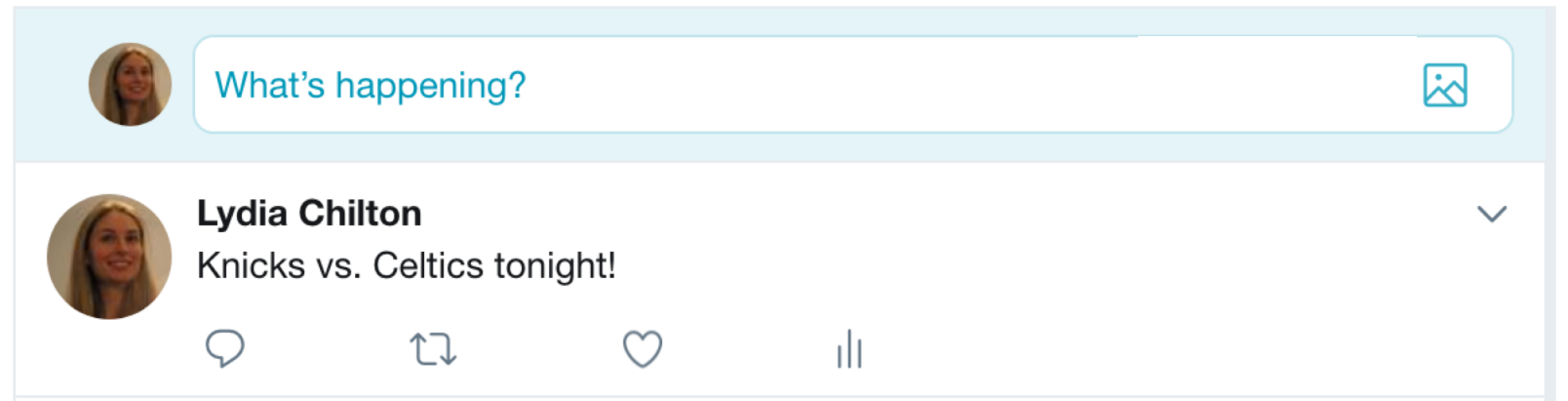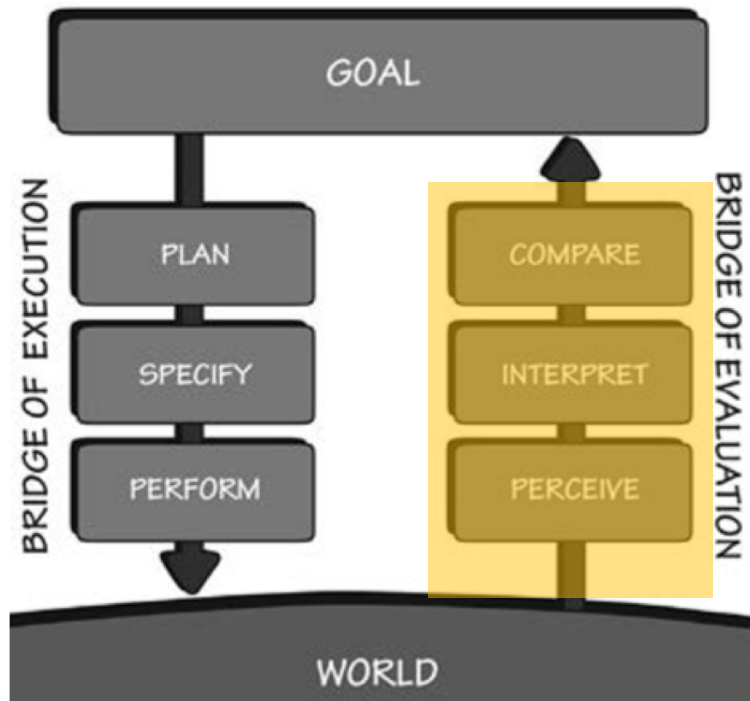
How does the user know?

It's my face.

It's my text.

It has new options.
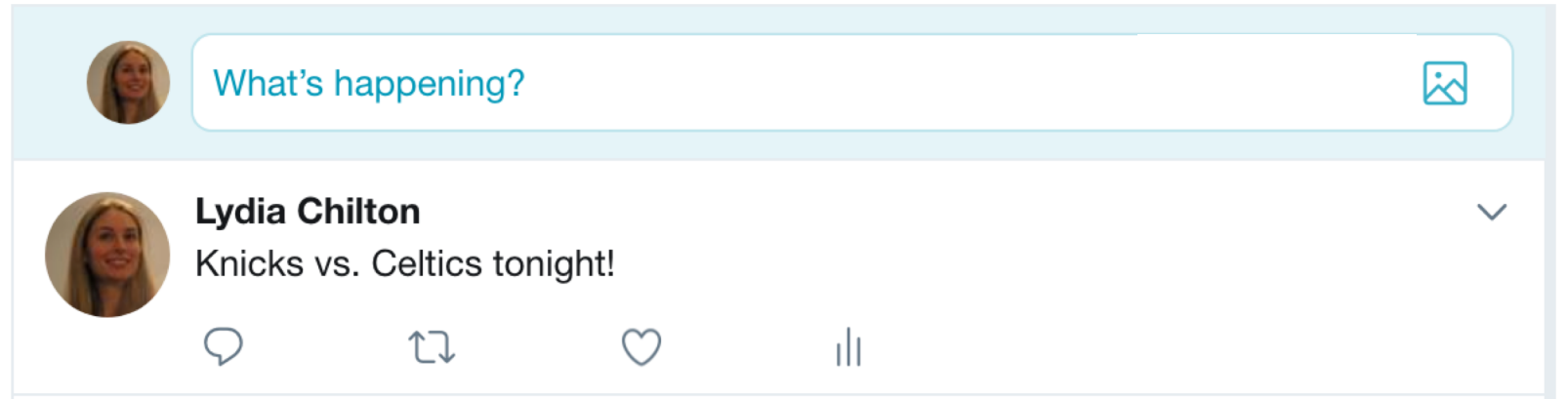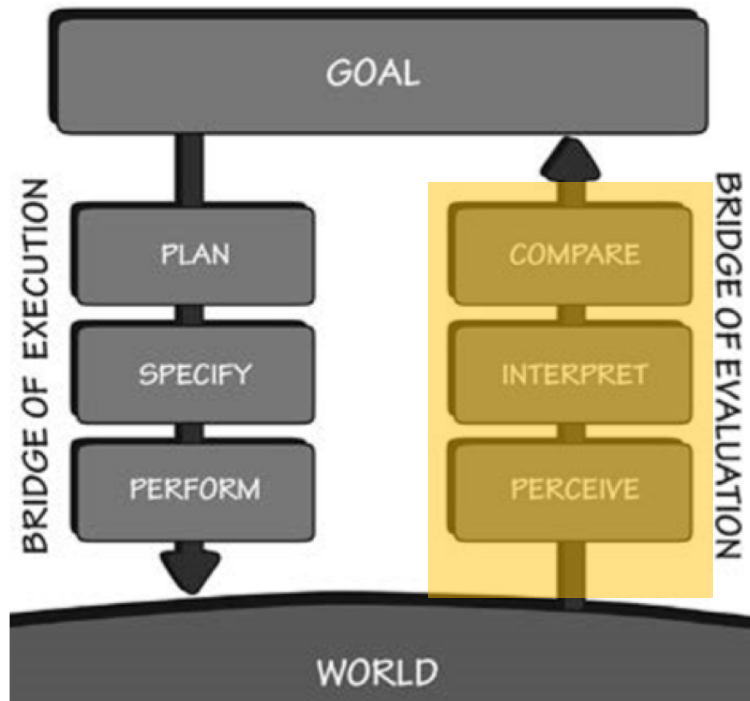
Goal: Perfect DDR score.

What's the users subgoal?   Step on the correct arrow at the correct time.
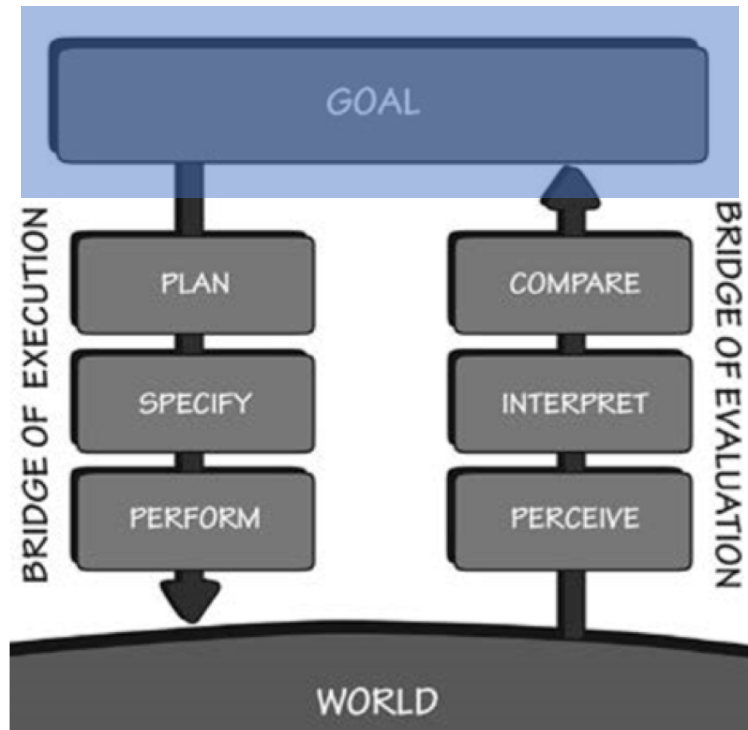
Execution 1:
How does the user plan the action?
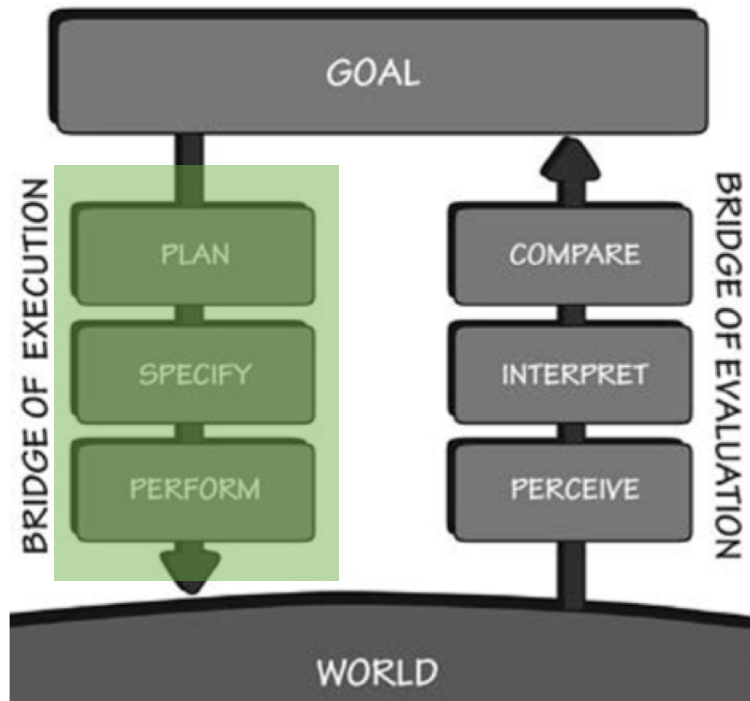
Look at the screen to see the correct arrow/timing

**Execution 2&3:
How does the user
execute the action?**

Lift your foot, move over arrow,
Place it at the right time
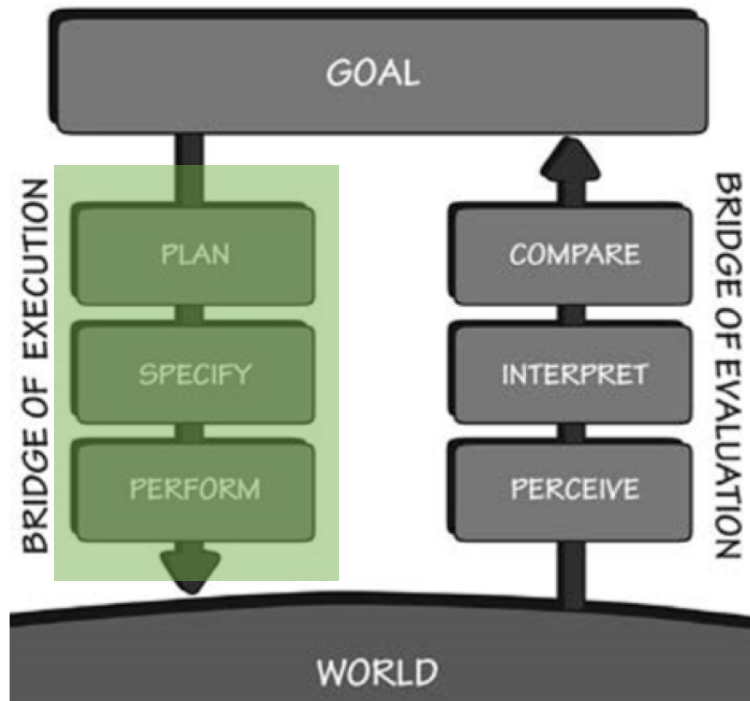
Evaluation:
How does the user evaluate the action?
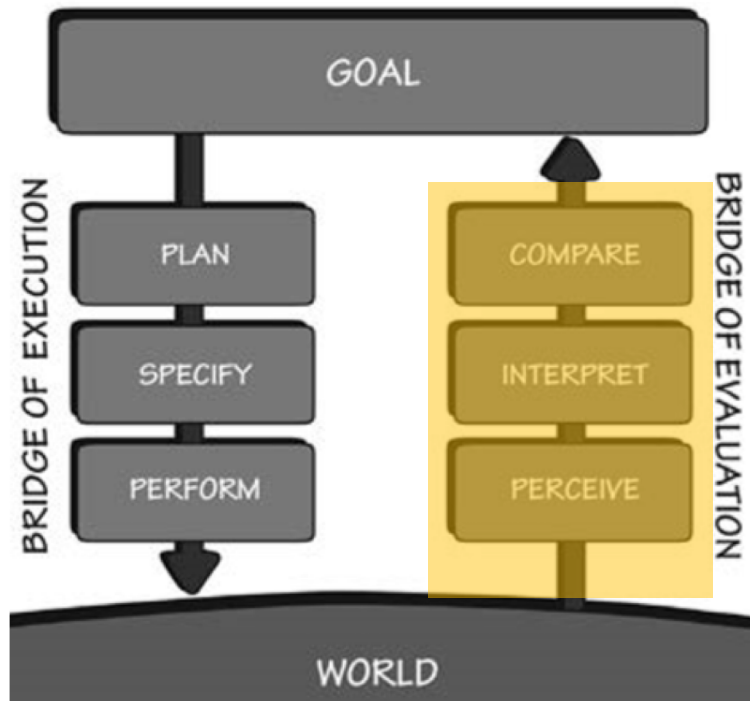
You can see the arrow flash
It tells you a grade

What's the users goal?   To set the alarm for 9:07am
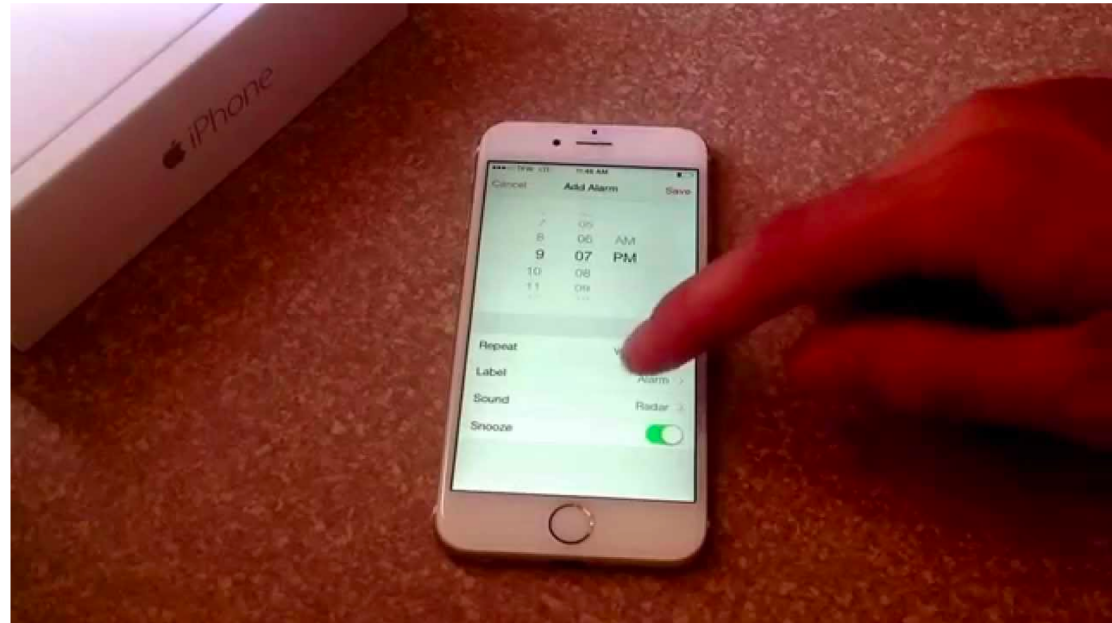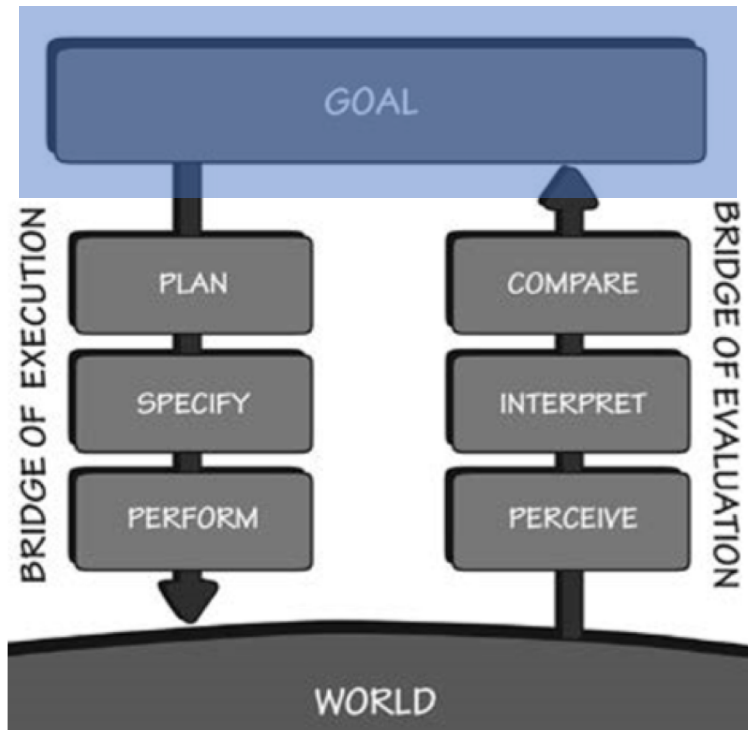
Execution?

Move the wheel to the time
Switch it to "on"
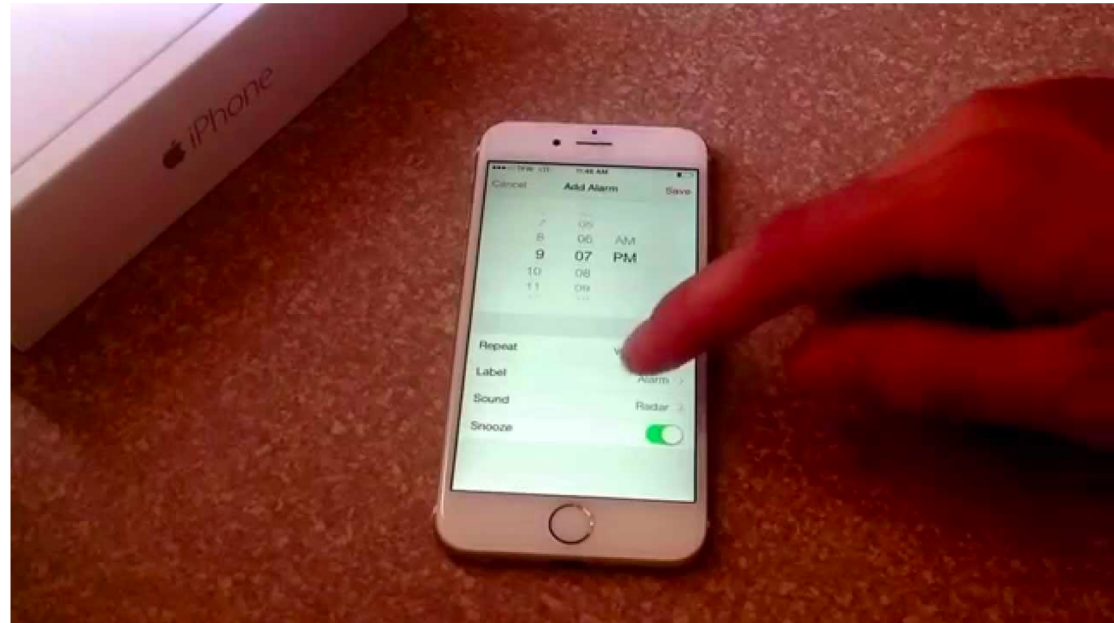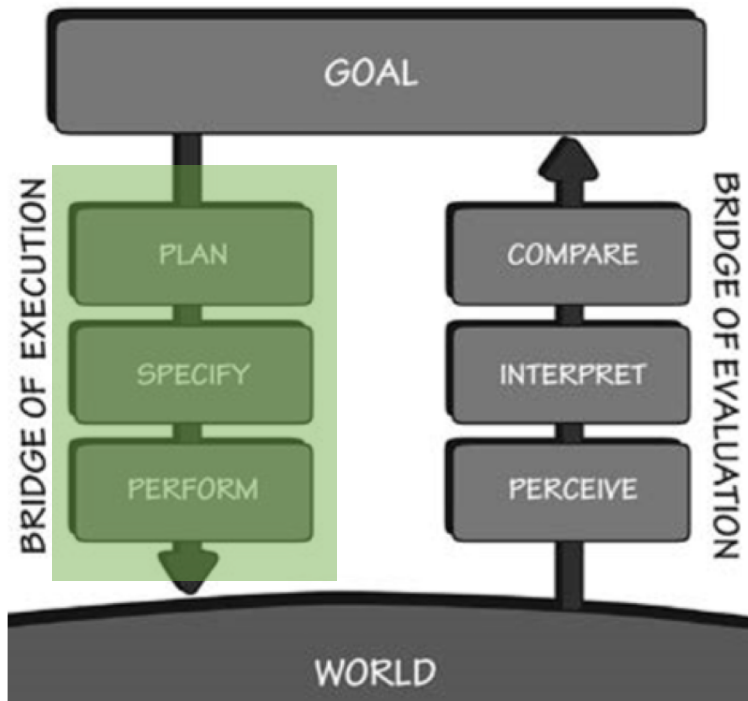
Evaluation?

Turns to an alarm screen
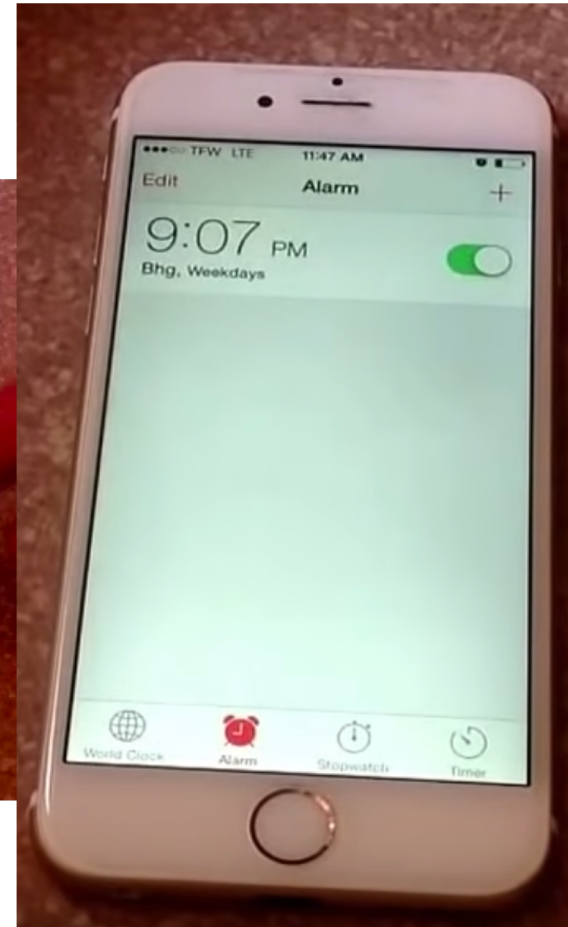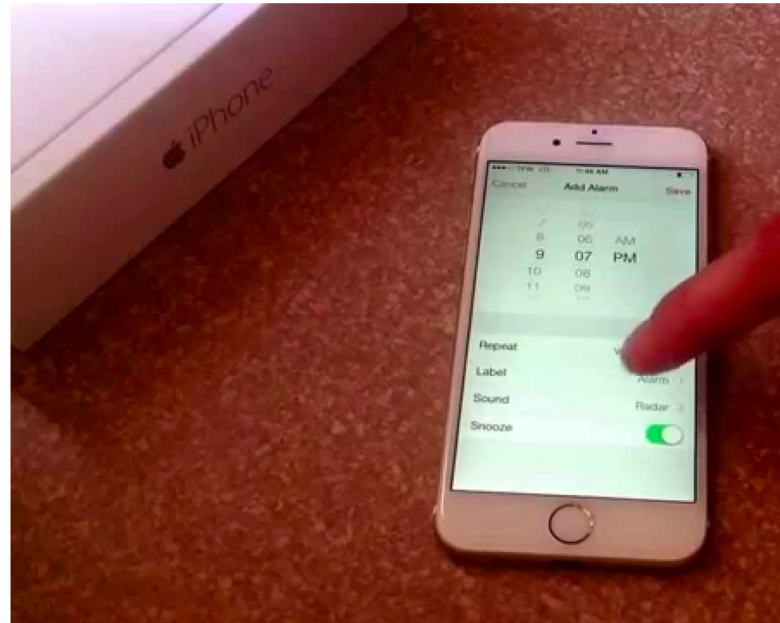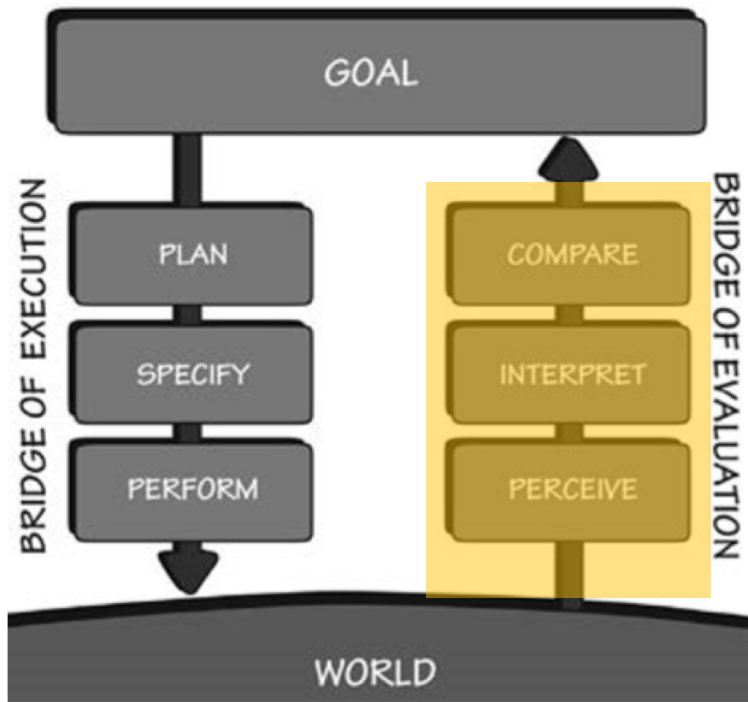
Programing interactions in JavaScript

HTML

```
31  <body>
32
33      <button id="counter" class="btn btn-primary">Counter (0)</button>
34
35  </body>
36
```


counter.html

file:///Users/lydiach
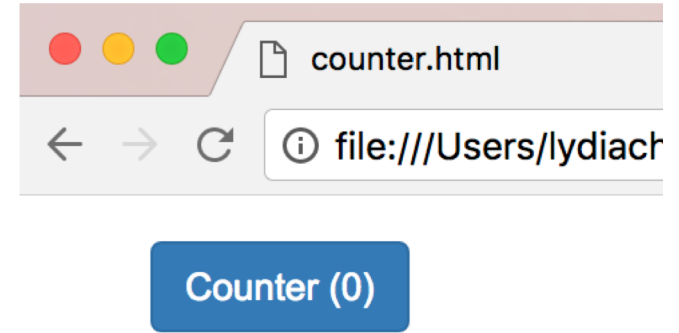
Counter (0)

JavaScript

```
25
26  $(document).ready(function(){
27      $("#counter").click(function(){
28          alert("foo")
29      })
30  })
31
```


counter.html

file:///Users/lydiachilton/Documents/hw4/counter.html

This page says:

foo

Counter (0)
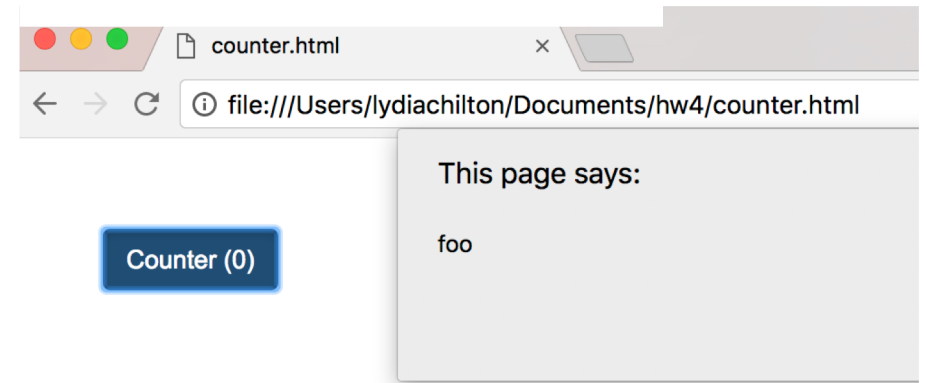
Summary

Users interact with a system to accomplish a goal
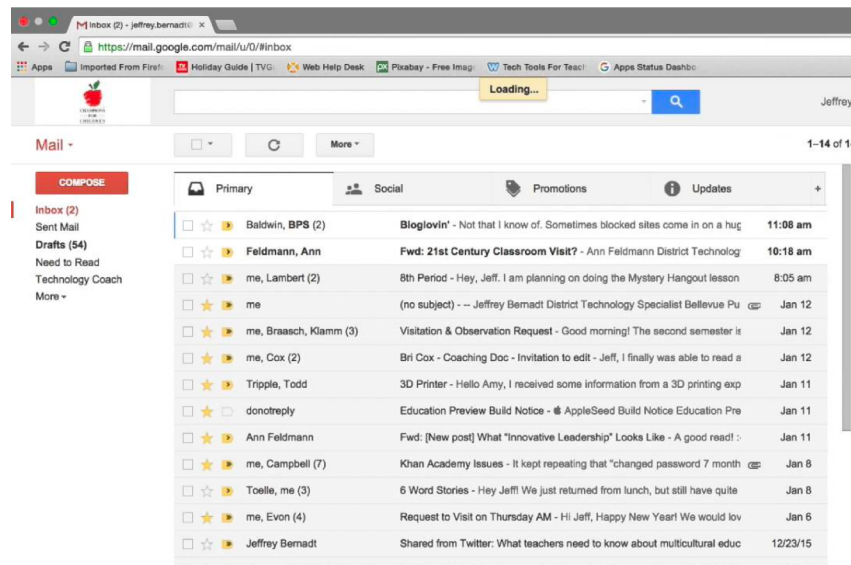
To read and respond to all email.
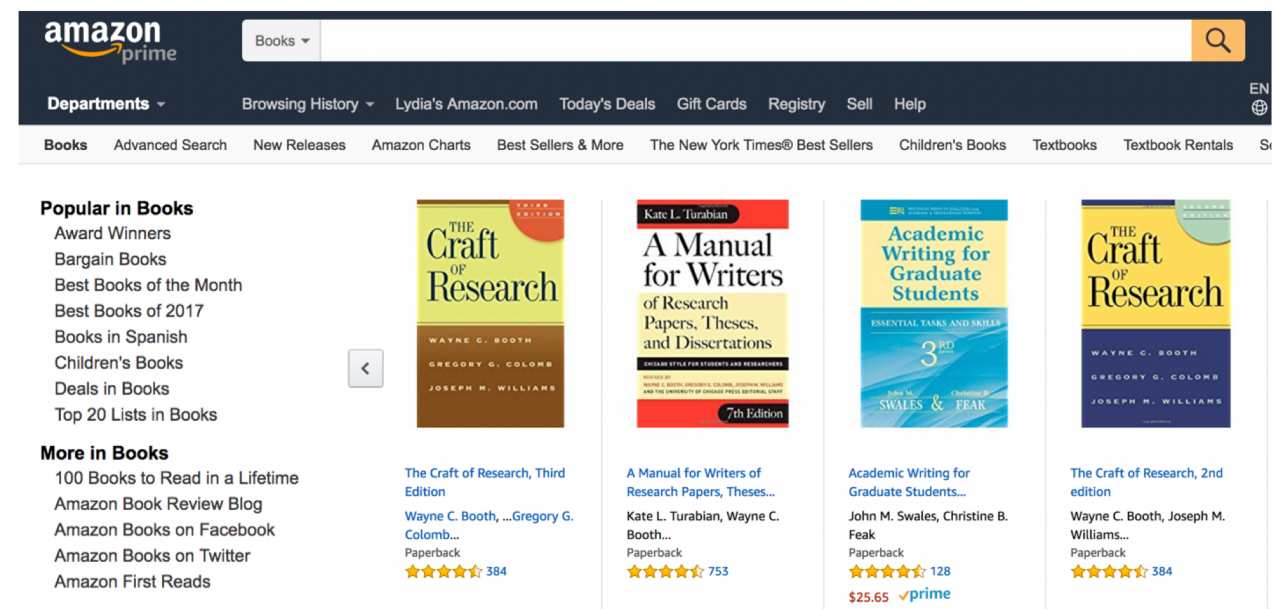
To buy a book

The designer must create the subgoals and interactions to help them accomplish it.

Goal: Buy a book

Subgoal:	Find it	Add to cart	Enter payment info	Place order
Interaction:	Type, click	click	Type, click, point	Click
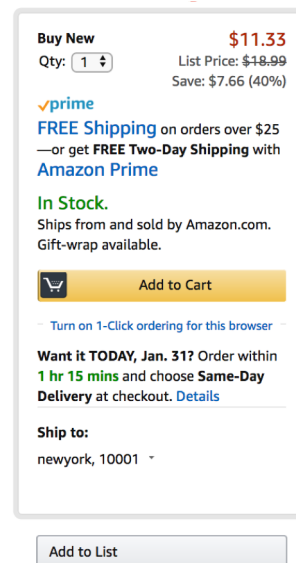
Time to move to a target : Fitts's Law
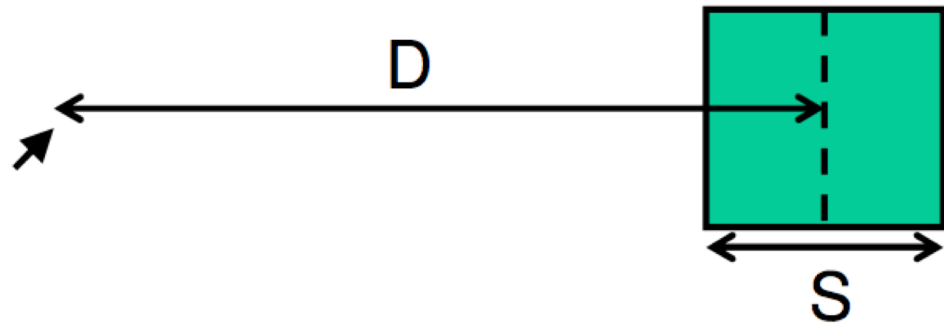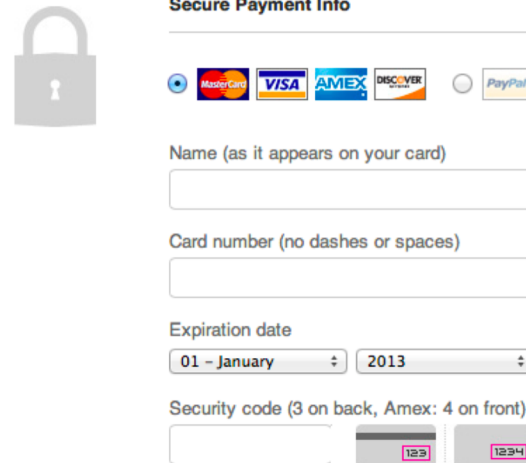
D

S

Time to move your
pointer to a target

$$= \quad a + b * \log \left(\frac{2D}{S} \right)$$

Buttons on the edges are fast
to get to because they have
infinite size

Low-level interactions take time and effort. Minimize them because you do them a lot.

Secure Payment Info

MasterCard VISA AMEX DISCOVER ⚪ PayPal

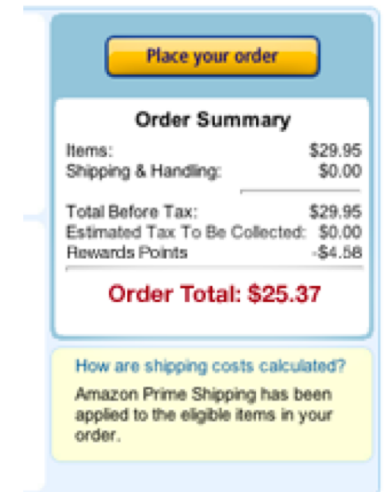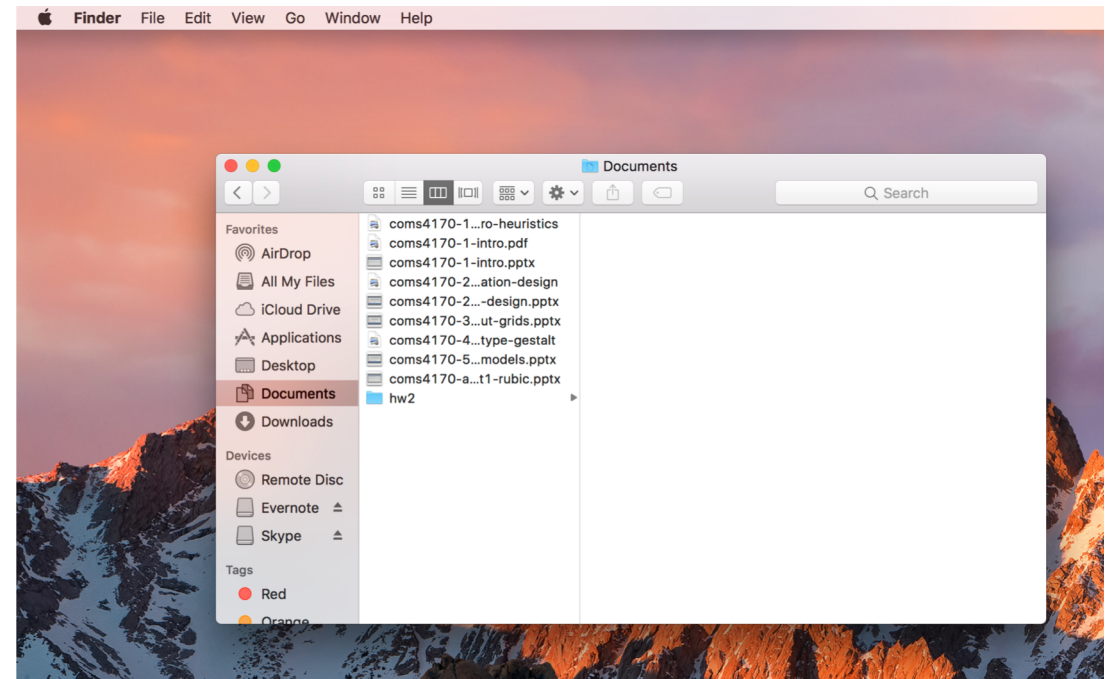Name (as it appears on your card)

Card number (no dashes or spaces)

Expiration date

01 – January   2013

Security code (3 on back, Amex: 4 on front)

123   1234

Move
Click
Move
Click
TypeTypeTypeType
Move
Click
TypeTypeTypeType
Move Tunnel Click
Move Tunnel Click
TypeTypeTypeType

Know the users' goals and design interactions as: execution and evaluation
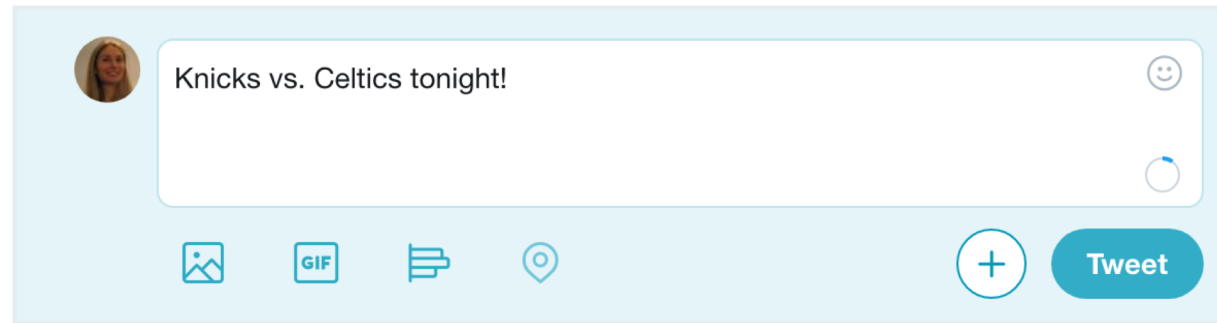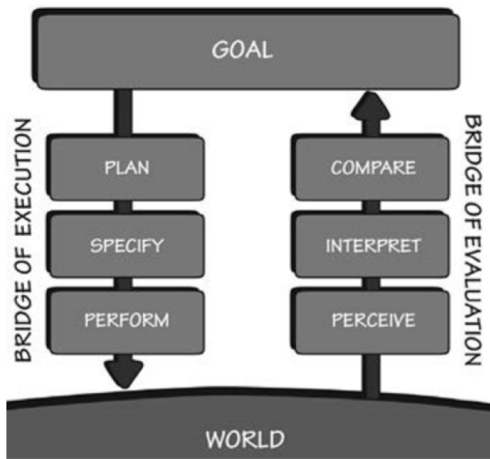
Execution

Plan the action
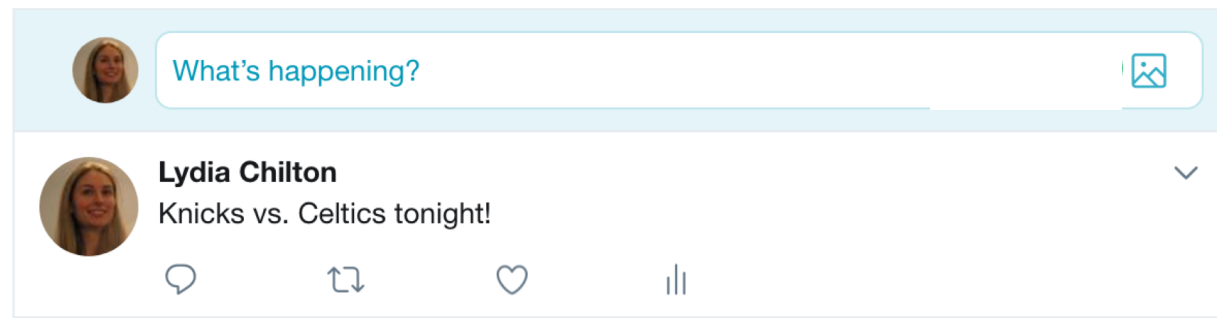
Specify the action sequence

Perform the action sequence

Evaluation

Perceive the state of the world

Interpret the perception

Compare the outcome with the goal