

Events and Feedback

No screens

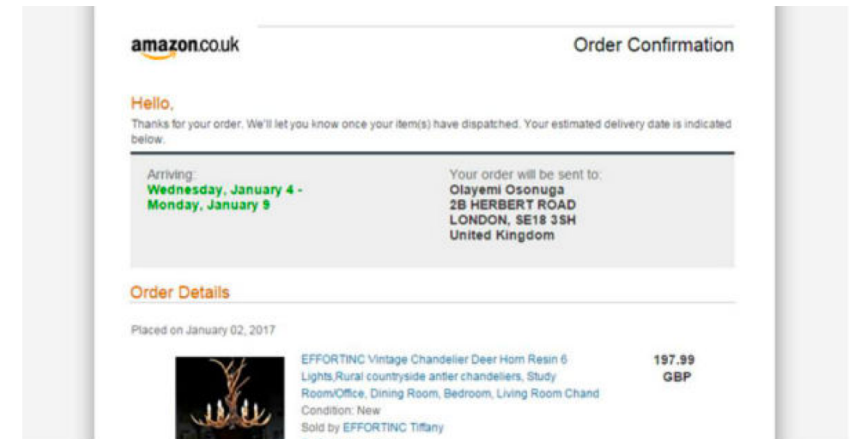
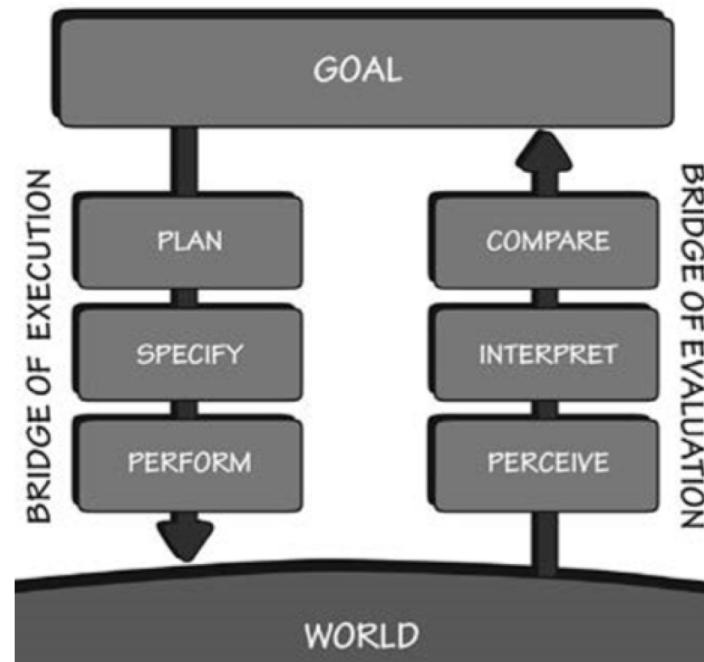


Prof. Lydia Chilton
COMS 4170
10 February 2020

Say your name



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



To help users **evaluate the result**, designers must provide **feedback**.

What goes wrong when you provide **no feedback**?



Feeling: **Confusion.** Users wonder whether their goal has been achieved.

Action: They continue to **expend extra energy** to accomplish the goal.

What goes wrong when you provide **too little feedback**?

Submit Credit Card Payment

Order Summary

Total
\$412.97

Items

Description	Category	Qty	Unit Price	Amount
Mobile device for demos	Hardware	2	\$150.00	\$300.00
Video software upgrade	Software	1	\$50.99	\$50.99
Device accessories	Miscellaneous	2	\$30.99	\$61.98
			Total	\$412.97
				5 items

Payment Information

Information incorrect

Card Number *

Expiration Date *

CCV *

[PLACE YOUR ORDER](#)

Credit card transactions are handled by our secure payment processor. We do not store your credit card information.

When you click the 'Place Your Order' button, we'll send you an email message acknowledging receipt of your order. Your contract to purchase an item will not be complete until we send you an email notifying you that the item has been shipped.

[CONTINUE](#)

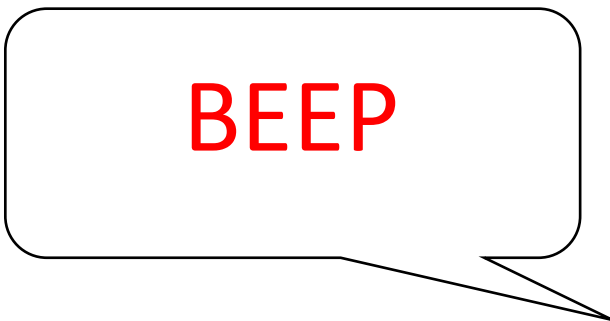
Feeling: **Frustration**. Users don't know what went wrong.

Action: They continue to **expend energy** to **figure out what to do**.

else



What goes wrong when you provide **too little feedback**?



Feeling: **Anxiety**. Users don't know if the feedback if it's important.

Action: They continue to **expend energy** to figure out if it's important.

What goes wrong when you provide **too much feedback**?



I am now booking your flight

I am now using Google flight search

I am now typing JFK into the departure location

I am now typing LAX into the arrival location

I am now selecting February 26, 2018 from the departure date box

I am now confirming the date I just selected from the Departure date box

Feeling: **Annoyed** at being interrupted by irrelevant information.

Action: They **ignore all the feedback**.

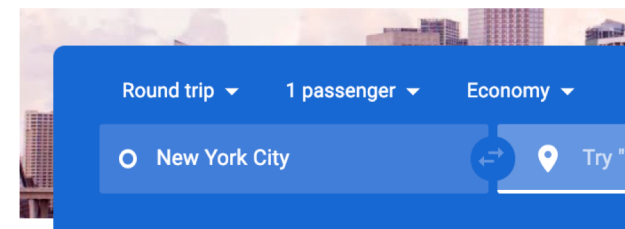
What goes wrong when **feedback too late**?



By the way, I booked that flight you asked for yesterday!

Feeling: **Uncertainty**. They're not sure anything happened.

Action: They **find another way** to reach their goal



What goes wrong when **feedback is not continuous**?

Student Services Online

► **Wait List**

See Class Roster Comments and Suggestions

Wait List Info

Spring 2019 COMS 4170 W sec: 001 **USER INTERFACE DESIGN**
Instructor: Lydia Chilton

Class capacity: 100 **Enrollment:** 108 **Available:** 0

Show All Details Refresh List

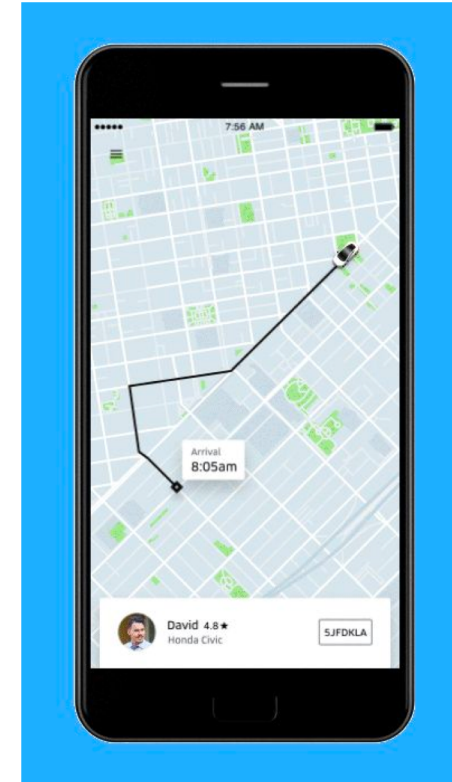
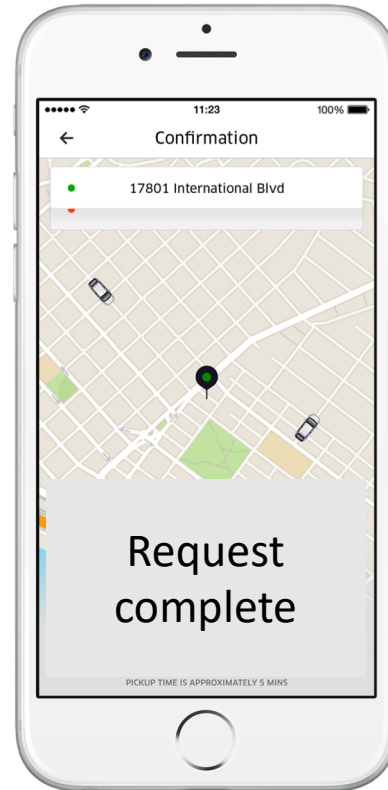
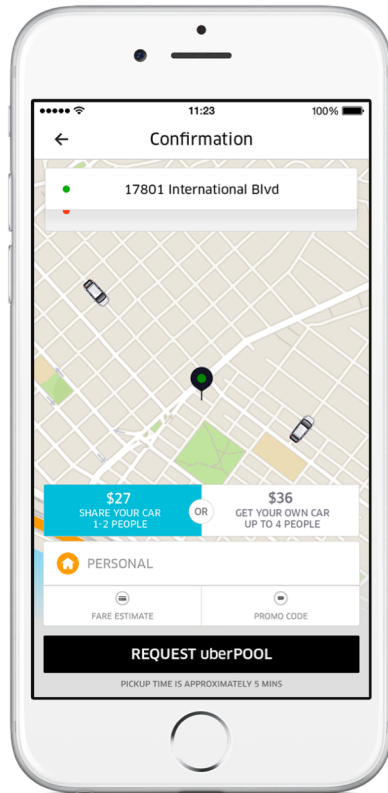
Wait List

Priority	Student PID	UNI	Student Name
----------	-------------	-----	--------------

Feeling: **Unsure**. Users are **unsure** whether the system is doing it or not.

Action: Users have to **ask the system** for feedback frequently.

What goes wrong when feedback acknowledges the action but **does not communicate the new state**?



Feeling: **No closure.** Users feel like there's still more to do in the old state.

Action: Users will continue to perform actions from the previous state

Design goals for feedback:

Communicate

full and continuous information about
the **results of an action** and
the **current state of the system**

to help people achieve their goal

Ways of perceiving feedback

How do we perceive this feedback?

BEEP



**I'm sorry, Dave.
I'm afraid I can't do that.**



Sound

Examples of sound feedback?



How do we perceive this feedback?

Submit Credit Card Payment

Order Summary

Total
\$412.97

Items

Description	Category	Qty	Unit Price	Amount
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Video software upgrade	Software	1	\$50.99	\$50.99
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5 items

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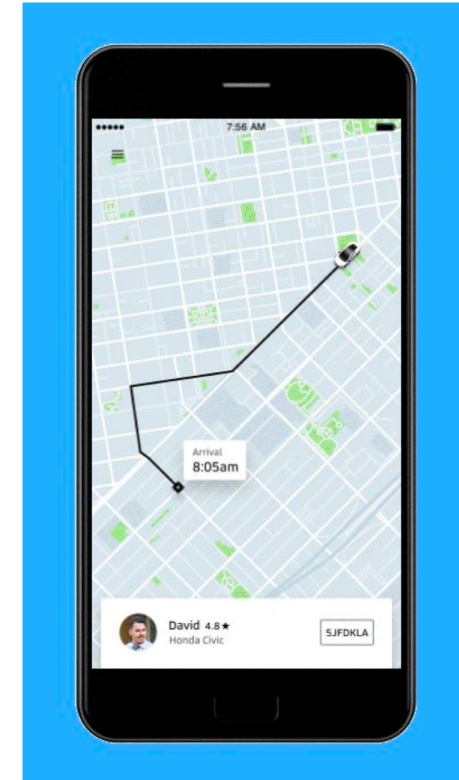
CCV *

[PLACE YOUR ORDER](#)

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[CONTINUE](#)



Sight

Examples of visual feedback (non-digital)?



How do we perceive this feedback?



Smell

Examples of smell feedback?



How do we perceive this feedback?

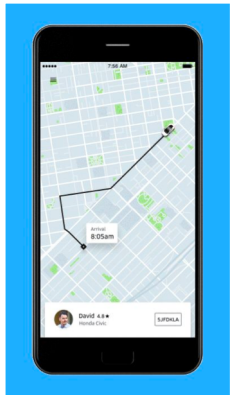


Touch

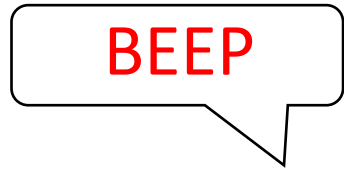
Examples of haptic (touch) feedback?



The human nervous system is designed to perceive feedback in many forms.



Sight



Sound



Smell



Touch

I just gave a recap of Sesame Street



Sight



Sound



Smell



Touch

Very often, design requires us to go **back to basics**.
Basic feelings like fear and confusion.
Basic senses like sight, sound, and touch.

Taste



3D Printed Food?

 Digital Food: Hod Lipson's Creative Machines Watch later Share



Pea polenta

- 310 Kcal
- 15g Fat
- 25.3g Carbs
- 5.8mg Vitamin D

Beet polenta

- 425 Kcal
- 20g Fat
- 50.5g Carbs
- 0.56mg Vitamin B3

[MORE VIDEOS](#) 

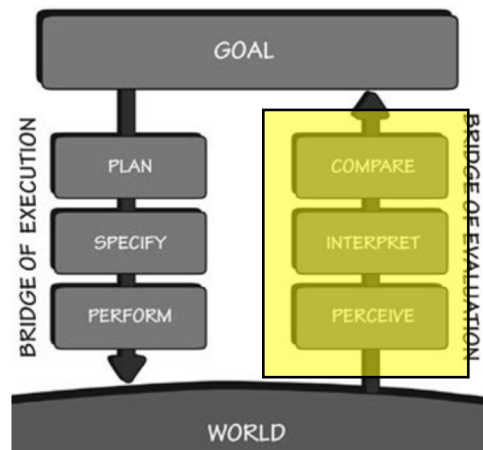
ROBOTICS • DEVICES • NANOSCIENCE

SENSING • IMAGING • VISUALIZATION • MODELING

DIGITAL FOOD

Physical Input Events and Feedback

Every time the user executes an action, the interface should provide feedback



Low-level physical actions, like pressing a key



Low-level virtual actions, like clicking a button

▲ Payment Information

The credit card number is invalid.

Card Number *

1234123412341234

Expiration Date *

12/20

CCV *

999

PLACE YOUR ORDER

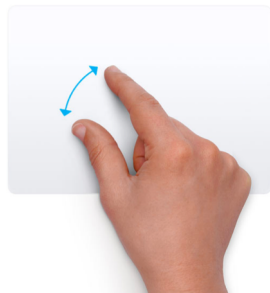
Mid-level actions, like filling out a form



High-level actions, like buying a book

Low-level user actions are represented in the system as **events**.

Action



Event

Keypress event

Mousemove event

Mousepress event

Pinch gesture event

Low-level physical actions

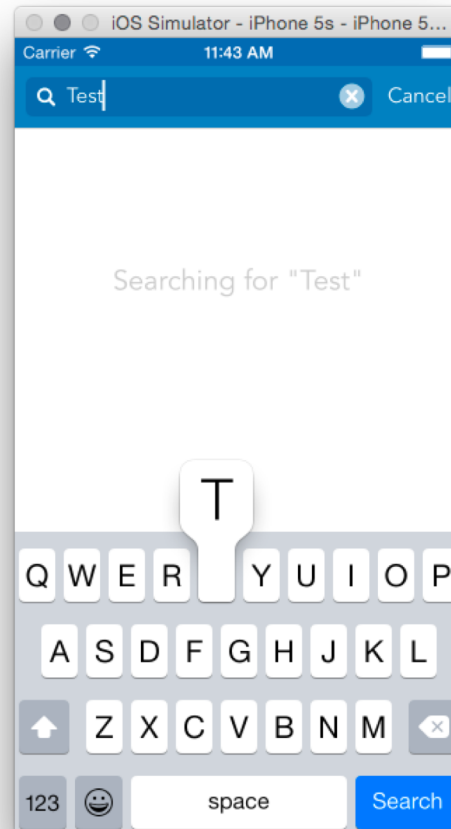
Types of hard keyboard keypress feedback?



haptic (can feel the key), **sound**, and **visual** (screen action)

Low-level physical actions

Types of soft keyboard **keypress** feedback?



~~haptic (can feel the key)~~, **sound** (simulated), and **visual** (screen action)

Low-level physical actions

Types of hard keyboard **keydown** feedback?



haptic (can feel the spring pushing back),
sound (click), and
visual (character appears or NOTHING (shift key))

Low-level physical actions

Types of hard keyboard **keyup** feedback?



haptic (can feel the spring pushing up),
sound (click), and
visual (characters stop appearing or NOTHING)

Low-level physical actions

Types of trackpad Mousepress feedback?



haptic (spring resistance),
sound (simulated click), and
visual (NOTHING)

Low-level physical actions

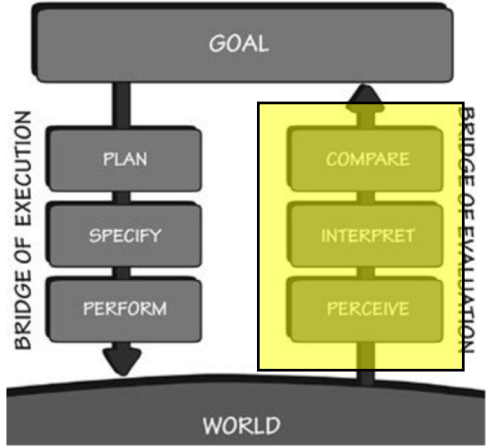
Types of trackpad Mousemove feedback?



haptic (can feel the friction),
~~sound (no), and~~
visual (cursor moves)

Low-level Virtual Feedback

Every time the user executes an action, the interface should provide feedback

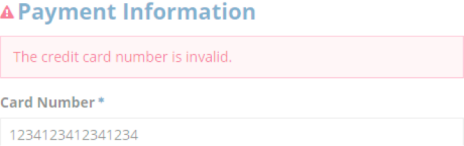


Low-level physical actions, like pressing a key

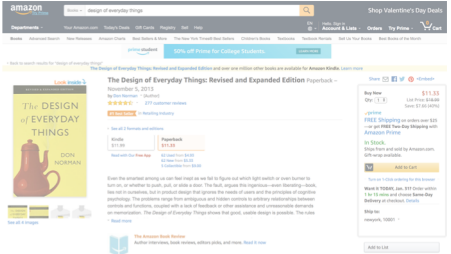


COMPOSE

Low-level **virtual actions**, like clicking a button



Mid-level actions, like filling out a form



High-level actions, like buying a book

Subgoal: Press the compose button

What is the **first event** we respond to?

Normal state



COMPOSE

```
.T-I-KE {  
  background-color: ■ #d14836;  
}
```

Subgoal: Press the compose button

What is the **second** event we respond to?

Normal state



```
.T-I-KE {  
  background-color: ■ #d14836;  
}
```

Mouseover
feedback



```
.T-I-KE.T-I-JW {  
  background-image: linear-gradient(to  
    bottom, ■ #dd4b39, ■ #dd4b39);  
}
```

Subgoal: Press the compose button

What is the **third** event we respond to?

Normal state



```
.T-I-KE {  
  background-color: #d14836;  
}
```

Mouseover
feedback



```
.T-I-KE.T-I-JW {  
  background-image: linear-gradient(to  
    bottom, #dd4b39, #dd4b39);  
}
```

Mousedown
feedback



```
background-image: linear-gradient(to  
  bottom, #dd4b39, #400000);
```

Subgoal: Press the compose button

What is the **final** event we respond to?

Normal state



```
.T-I-KE {  
  background-color: #d14836;  
}
```

Mouseover
feedback



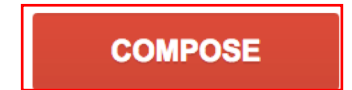
```
.T-I-KE.T-I-JW {  
  background-image: linear-gradient(to  
    bottom, #dd4b39, #dd4b39);  
}
```

Mousedown
feedback



```
background-image: linear-gradient(to  
  bottom, #dd4b39, #400000);
```

Mouseup
feedback



```
.T-I-KE {  
  background-color: #d14836;  
}
```

Implementing Low-level Feedback

How do you implement visual feedback?

Normal state



```
.T-I-KE {  
  background-color: #d14836;  
}
```

Mousedown



```
.T-I-KE.T-I-JW {  
  background-image: linear-gradient(to  
    bottom, #dd4b39, #400000);  
}
```

```
1 $(document).ready(function(){  
2   $("#compose_button").mousedown(function(){  
3  
4     //??????????  
5  
6   })  
7 })  
8
```

1. Register an event handler on the object
2. Change the style

Can you change style like this?

Normal state



COMPOSE

```
.T-I-KE {  
  background-color: #d14836;  
}
```

Mousedown



COMPOSE

```
.T-I-KE.T-I-JW {  
  background-image: linear-gradient(to  
    bottom, #dd4b39, #400000);  
}
```

```
1 $(document).ready(function(){  
2   $("#compose_button").mousedown(function(){  
3  
4     $(this).css("background-image", "linear-gradient(to bottom, #dd4b38, #400000)")  
5  
6   })  
7 })  
8
```

It will work, but it's **ugly**.

This is the better way to change style. Why?

Normal state



COMPOSE

```
.T-I-KE {  
  background-color: #d14836;  
}
```

Mousedown



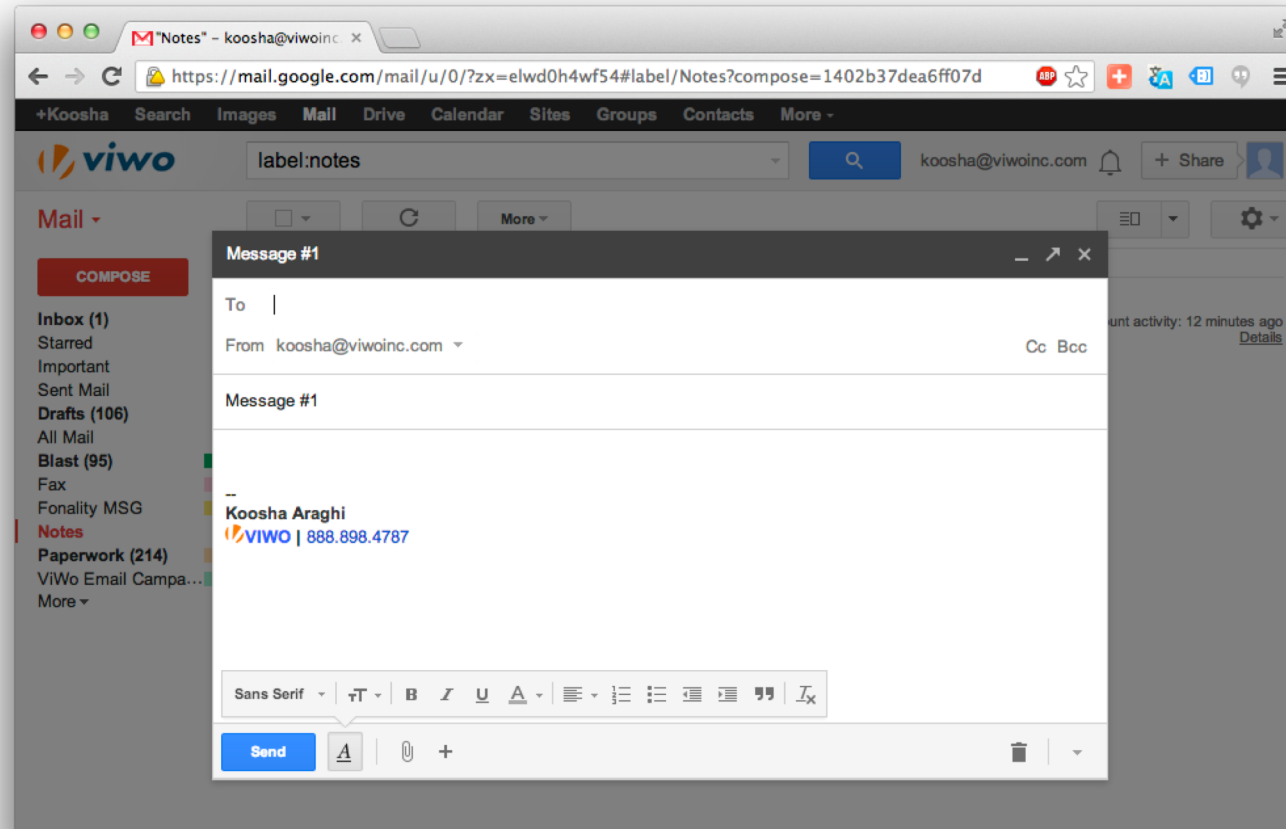
COMPOSE

```
.T-I-KE.T-I-JW {  
  background-image: linear-gradient(to  
    bottom, #dd4b39, #400000);  
}
```

```
1 $(document).ready(function(){  
2   $("#compose_button").mousedown(function(){  
3  
4     //$(this).css("background-image", "linear-gradient(to bottom, #dd4b38, #400000)")  
5     $(this).addClass("T-I-JW")  
6  
7   })  
8 })
```

Classes abstract out designs to make them easier to add / remove.

After you press  What happens?



You enter the compose email state

Feedback:

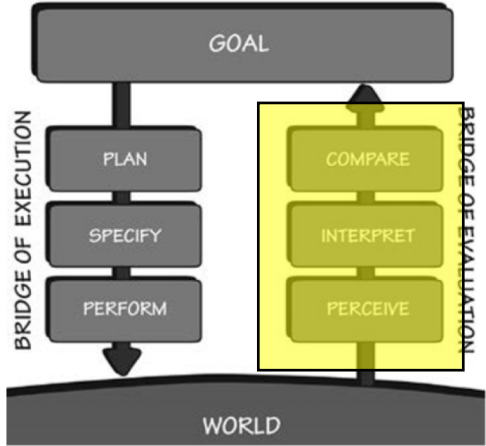
Communicate

full and continuous information about
the results of an action and
the **current state of the system**

to help people achieve their goal

Mid-and High-level Action Feedback

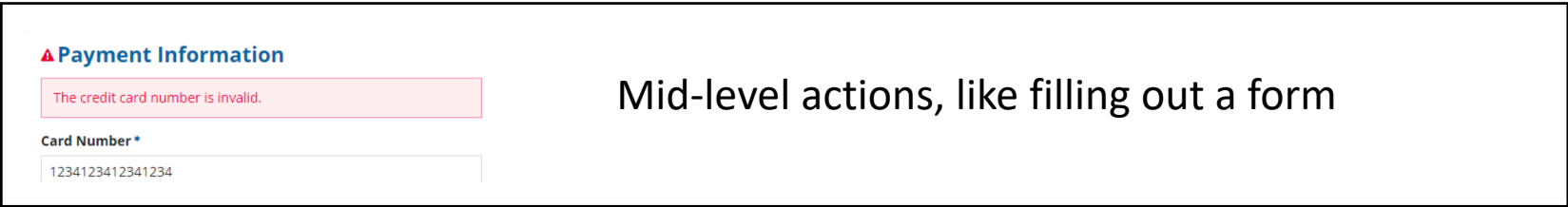
Every time the user executes an action, the interface should provide feedback



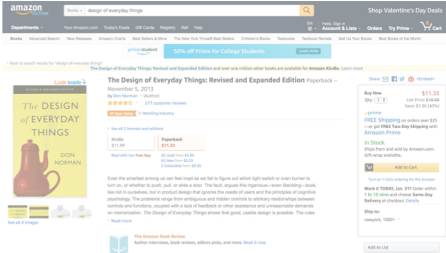
Low-level physical actions, like pressing a key



Low-level virtual actions, like clicking a button



Mid-level actions, like filling out a form



High-level actions, like buying a book

What is the new state?

▲ Payment Information

The credit card number is invalid.

Card Number *

1234123412341234

Expiration Date *

1220

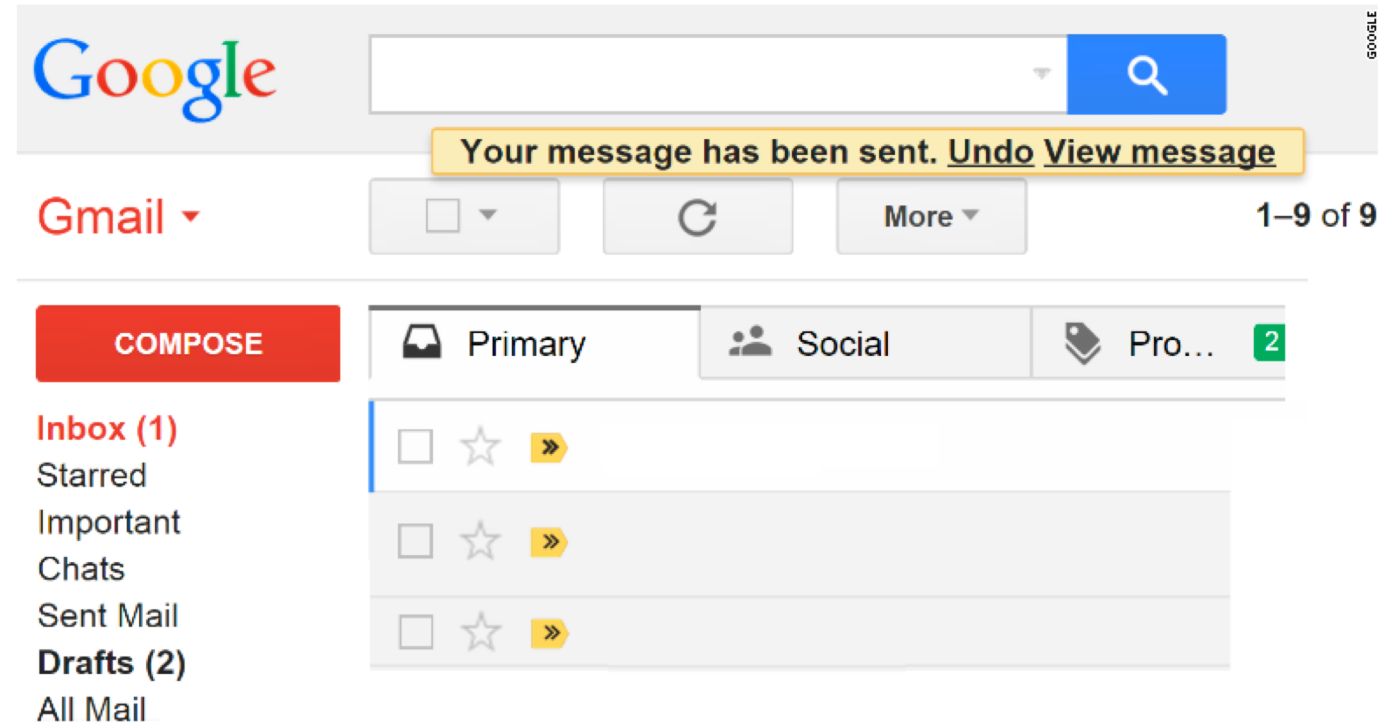
CCV *

999

PLACE YOUR ORDER

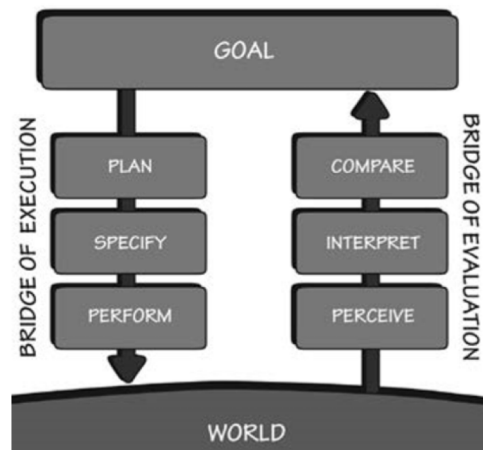
Error recovery state

What is the new state?



Normal inbox state

Every time the user executes an action, the interface should provide feedback



Low-level physical actions, like pressing a key



Low-level virtual actions, like clicking a button

▲ Payment Information

The credit card number is invalid.

Card Number *

1234123412341234

Expiration Date *

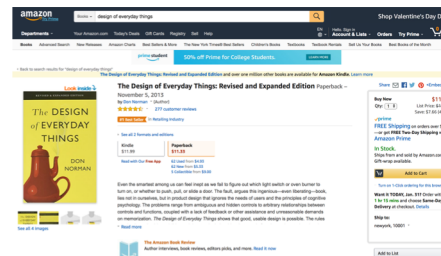
1220

CCV *

999

PLACE YOUR ORDER

Mid-level actions, like filling out a form



High-level actions, like buying a book

Following instructions suck. Why?

how to setup windows

All Videos Images Shopping News More Settings Tools

About 22,600,000 results (0.59 seconds)

Clean Install

1. Enter your computer's BIOS. ...
2. Find your BIOS's boot options menu. ...
3. Select the CD-ROM drive as the first boot device of your computer. ...
4. Save the changes of the settings. ...
5. Shut off your computer. ...
6. Power on the PC and the insert the Windows 7 disc into your CD/DVD drive.
7. Start your computer from the disc.

More items...

How to Install Windows 7 (Beginners) (with Pictures) - wikiHow
[https://www.wikihow.com/Install-Windows-7-\(Beginners\)](https://www.wikihow.com/Install-Windows-7-(Beginners))

People make mistakes
They need feedback to learn.

Feedback is essential to achieving goals

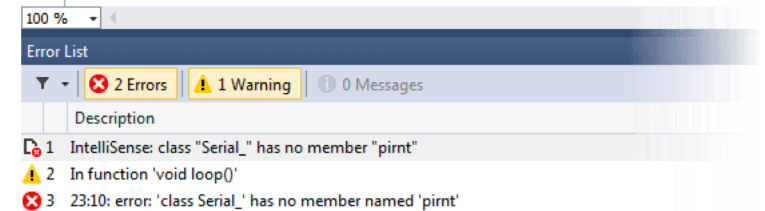


Learning to walk



Playing an instrument

```
void loop() {  
    float humidity = 452;  
    for( int counter = 0; counter < 1000; ++counter ) {  
        digitalWrite(13, HIGH); // set the LED on  
        delay( 200 ); // wait for a second  
        digitalWrite(13, LOW); // set the LED off  
        Serial.pirnt( "Hello " );  
        Serial.println( counter );  
        delay(200); // wait for a second  
        humidity += 0.5;  
    }  
}
```

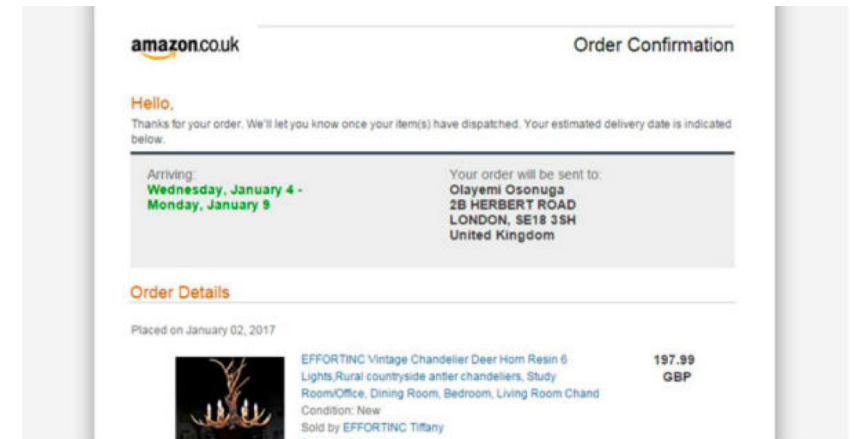
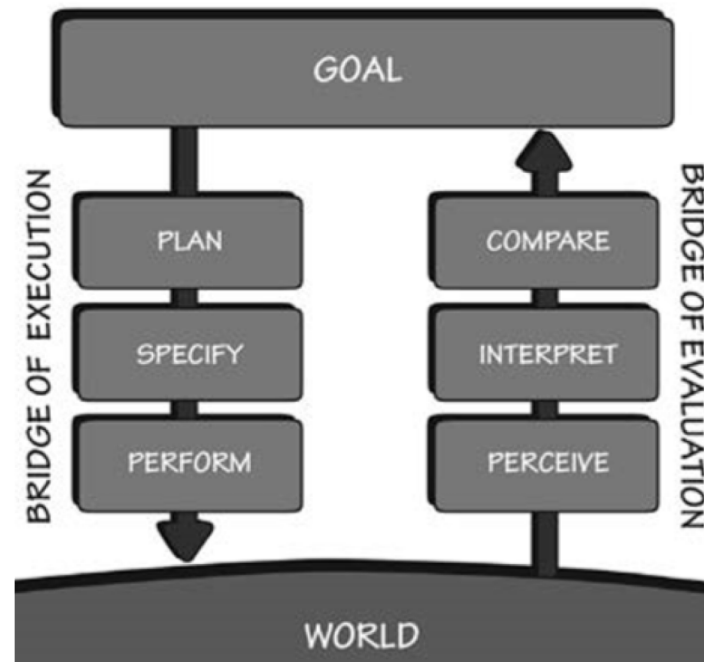


Code

Feedback is how we learn

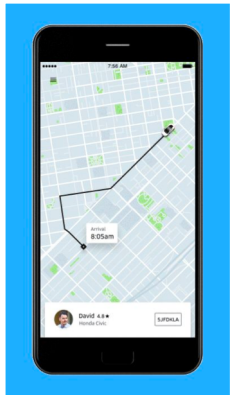
Summary

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

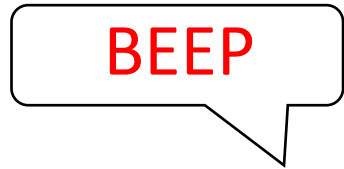


To help users **evaluate the result**, designers must provide **feedback**.

The human nervous system is designed to perceive feedback in many forms.



Sight



Sound

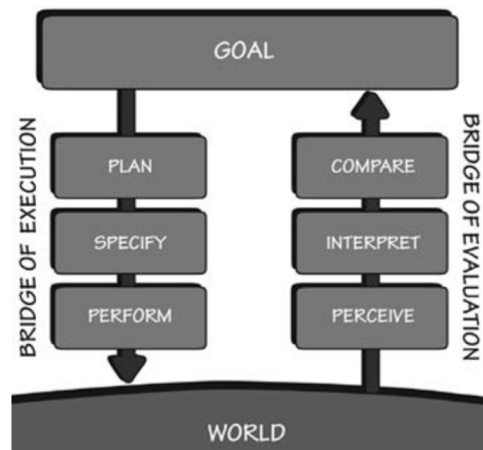


Smell



Touch

Every time the user executes an action, the interface should provide feedback



Low-level physical actions, like pressing a key



Low-level virtual actions, like clicking a button

A screenshot of a payment information form. At the top, there is a red error message: **▲ Payment Information** and **The credit card number is invalid.** Below this, there are three input fields: **Card Number *** (containing 1234123412341234), **Expiration Date *** (containing 1220), and **CCV *** (containing 999). At the bottom right of the form is a blue button labeled **PLACE YOUR ORDER**.

Mid-level actions, like filling out a form



High-level actions, like buying a book

Adding/Removing CSS Classes are a modular way to implement visual feedback.



```
1 $(document).ready(function(){
2     $("#compose_button").mousedown(function(){
3
4         //$(this).css("background-image", "linear-gradient(to bottom, #dd4b38, #400000)")
5         $(this).addClass("compose_press_state")
6
7     })
8 })
```

Normal state

COMPOSE

Mouseover

COMPOSE

Mousedown

COMPOSE

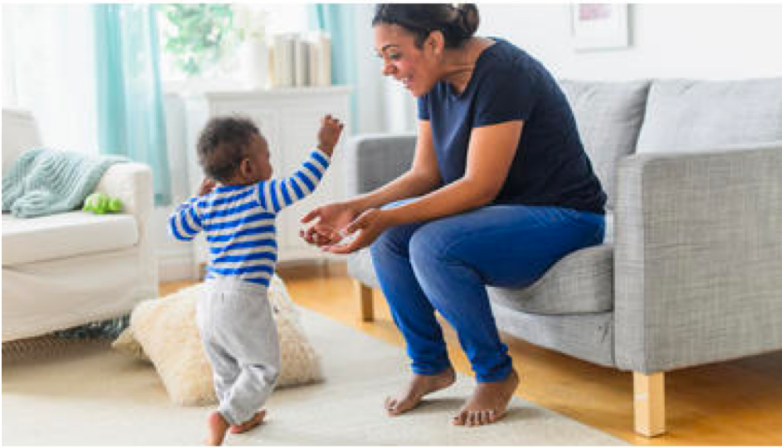
Mouseup

COMPOSE

Normal state

COMPOSE

Feedback is essential to achieving goals

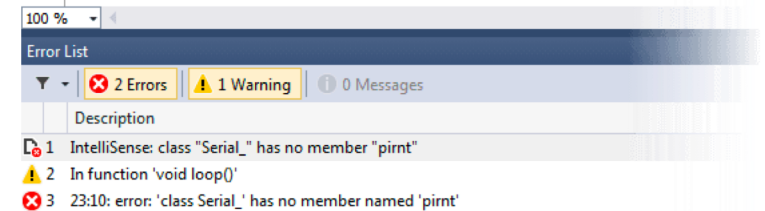


Learning to walk



Playing an instrument

```
void loop() {  
  float humidity = 452;  
  for( int counter = 0; counter < 1000; ++counter ) {  
    digitalWrite(13, HIGH); // set the LED on  
    delay( 200 ); // wait for a second  
    digitalWrite(13, LOW); // set the LED off  
    Serial.pirnt( "Hello " );  
    Serial.println( counter );  
    delay(200); // wait for a second  
    humidity += 0.5;  
  }  
}
```



Code

Feedback is how we learn

Fill out participation now!
HW 3 is out.

Columbia University

User Interface Design

COMS 4170 · Spring 2020

Home Grading Syllabus **Piazza**

3	FEBRUARY 3 Participation Form HW1 Review User Interaction Models (same as 1/31 slides)	FEBRUARY 5 Homework 2 due @ 4pm Participation Form Homework 3 out JavaScript, Widgets, and Events	FEBRUARY 7 Participation Form JavaScript, Widgets, and Events
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