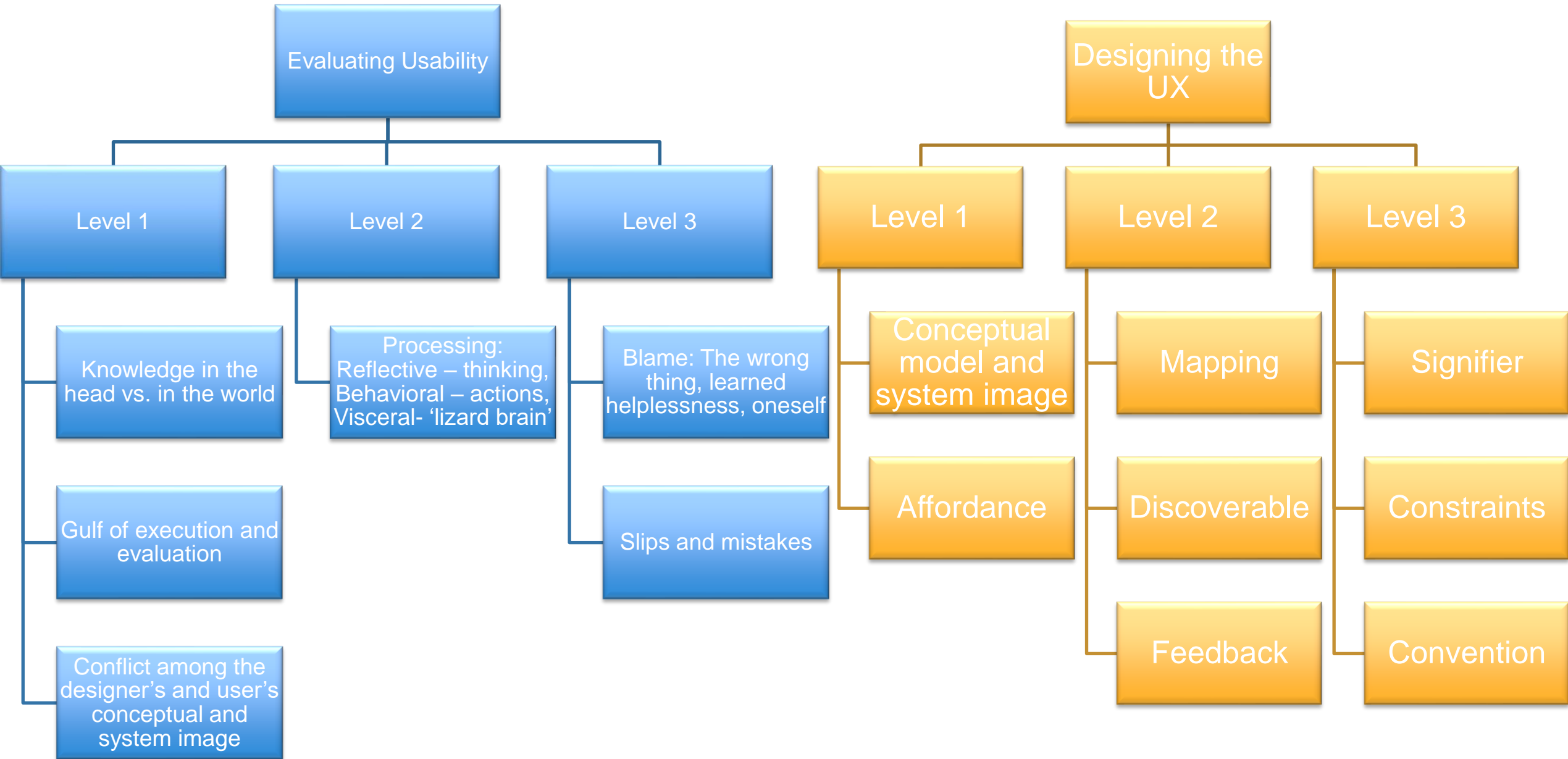


3.

Human Error? No Bad Design; Slips & Mistakes

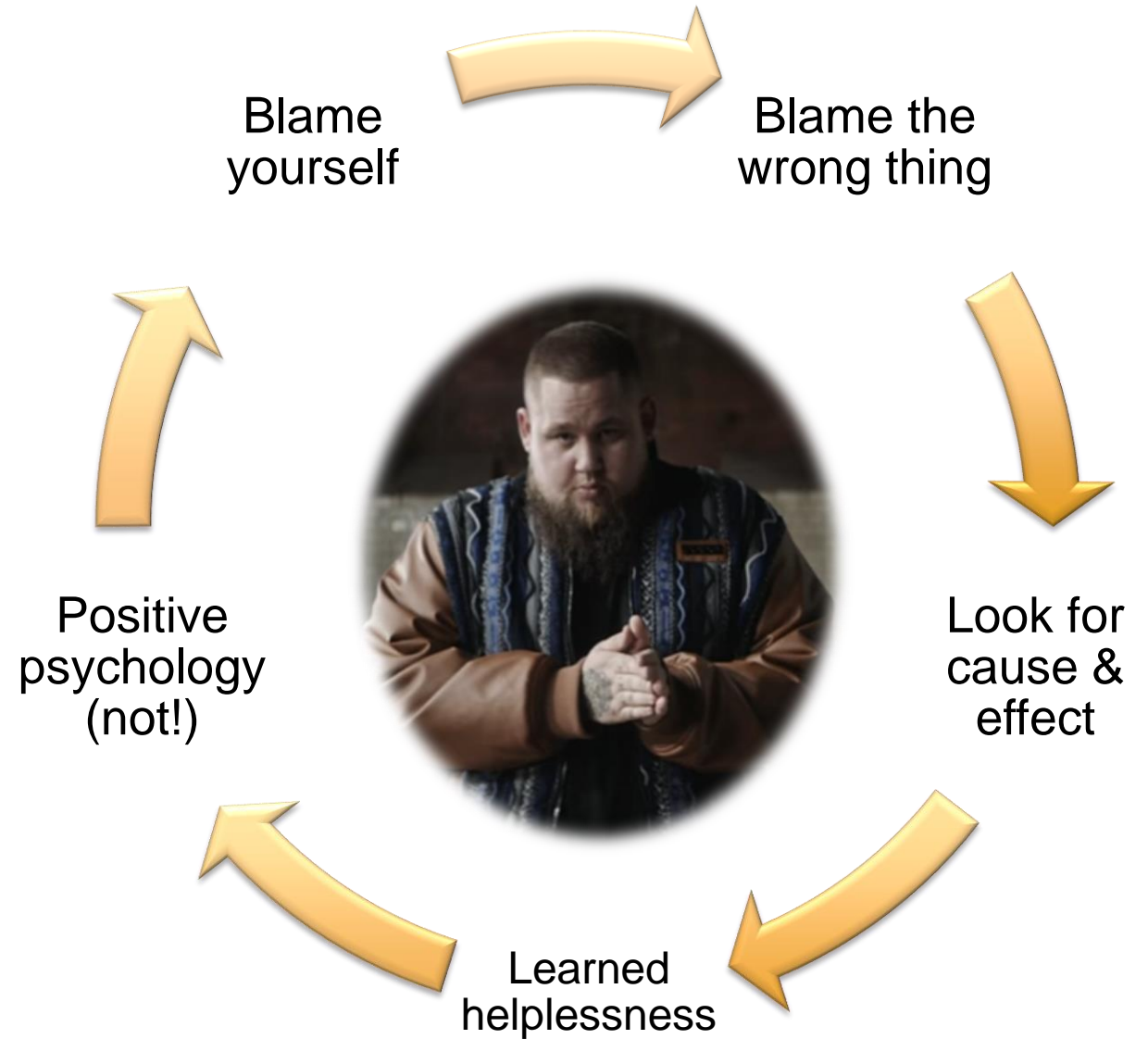
MIS3506 * Lavin * Fall 2021



I Am Only Human (after all)

What do we mean by being “human”?

- What is “human error”?



When an accident is thought to be caused by people, we blame them and continue to do things just as we've always done.

Norman, p. 162



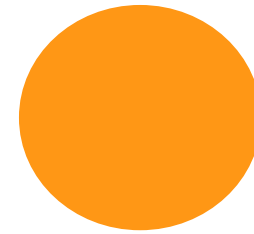
Defining the Problem

Understanding **WHY** there is error

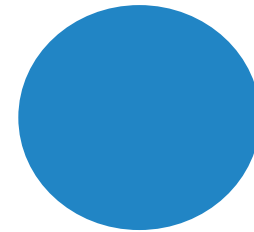


Diagnosing Error

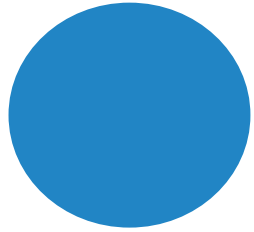
What is the role of each of these in understanding a process so that it can be improved?



Five Whys

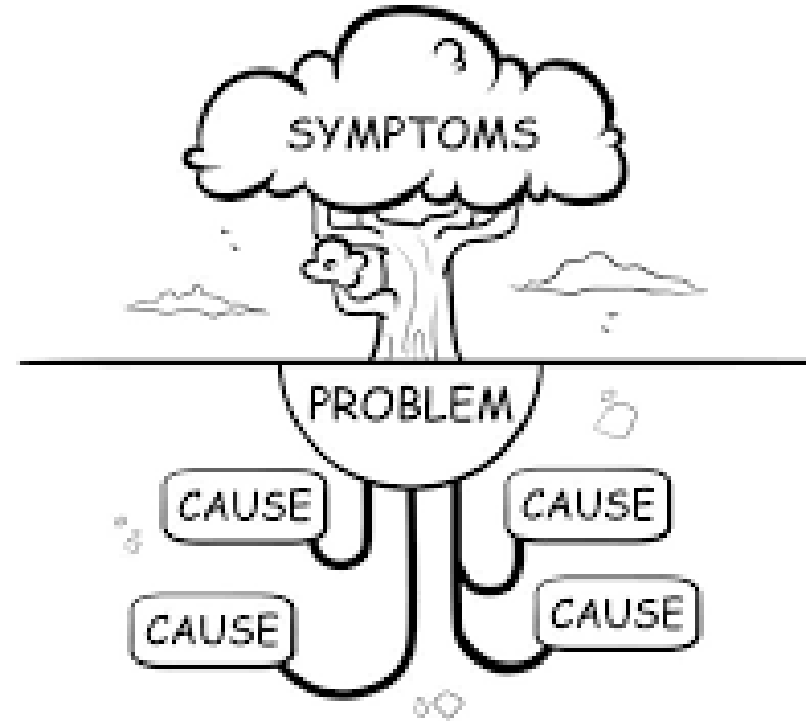


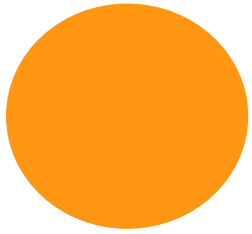
Root Cause Analysis



Root Cause Analysis

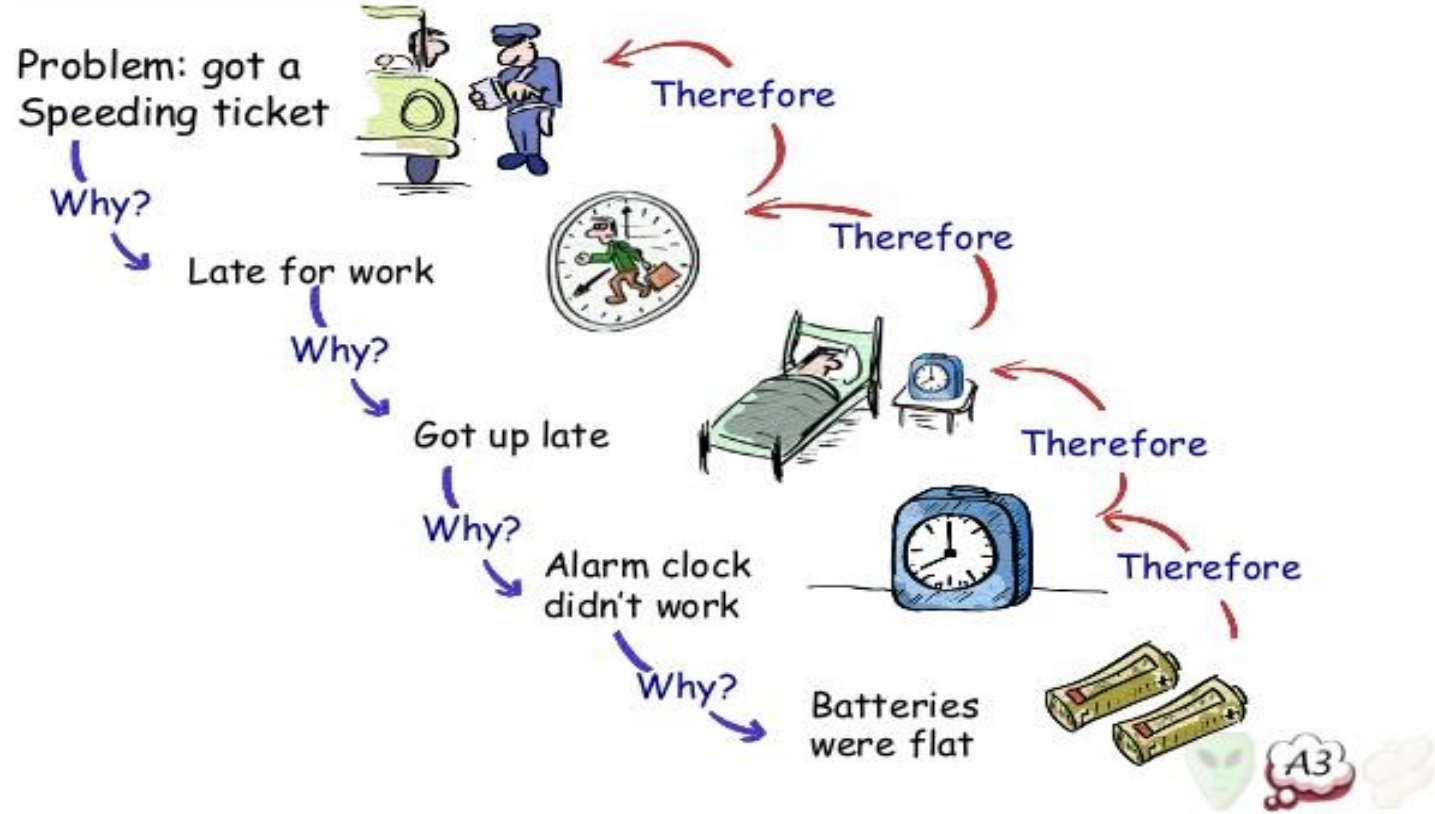
- **More than putting out fires**
- Identify the problem
- Define the problem
- Collect Data
- Identify Possible Causal Factors
- Identify the Root Cause
- Recommend & Implement Solutions/Changes





Five Whys

... AND 5-WHYS



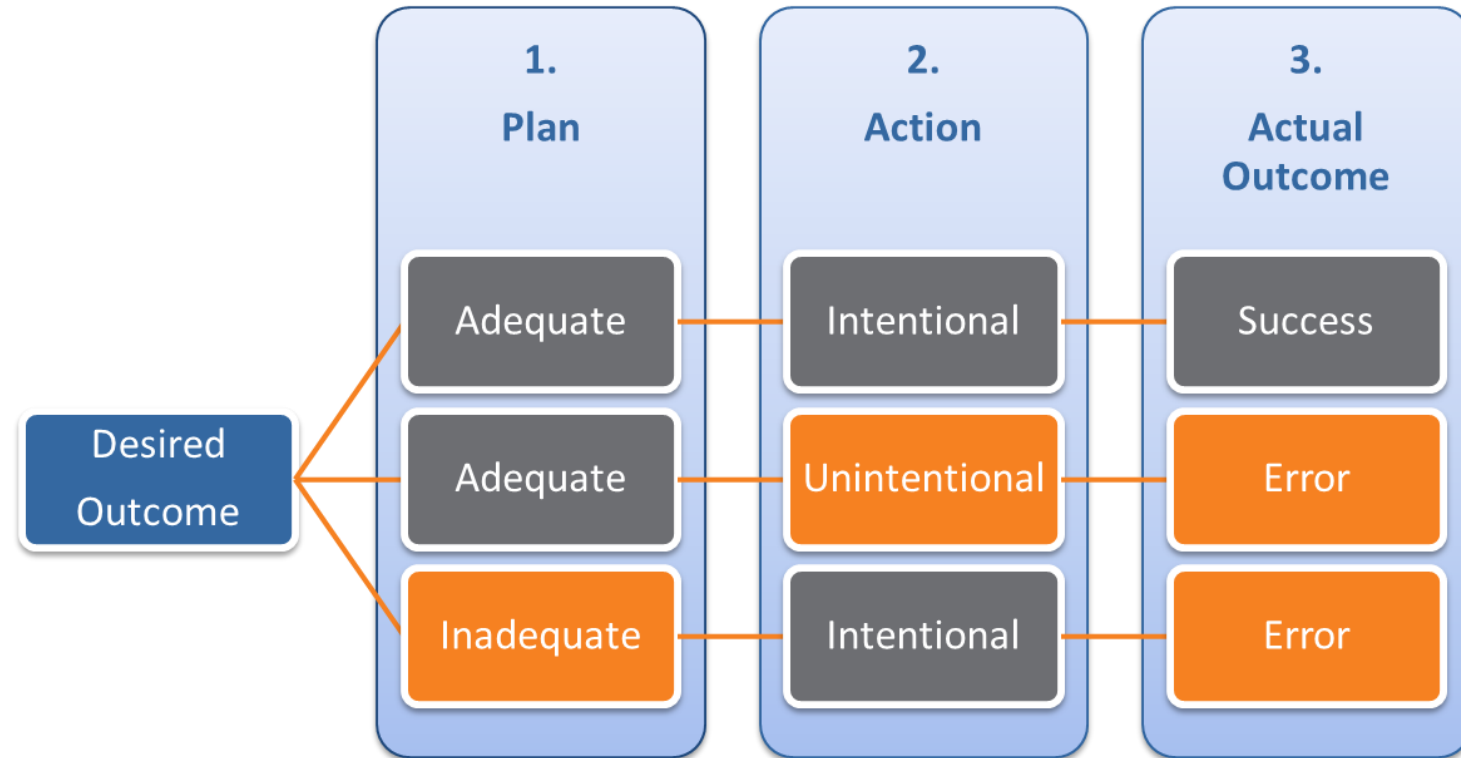
Diagnosing Error

If the system lets you make the error it is badly designed...



Diagnosing “Human” Error

Failures can occur in planning & execution



3.

Do Users Suck?

**Mistakes vs. Slips vs. Choice
& Usability**

The screenshot shows a Zoom web interface in a browser window. The main page is titled "Contacts" and features a sidebar with navigation options: "My Contacts" (with sub-items: Starred, External, Apps, Cloud Contacts) and "All Contacts" (with sub-items: Zoom Rooms, Company Contacts). At the bottom of the page are three navigation buttons: "Home", "Meetings", and "Contacts". A modal dialog box is centered on the screen, displaying a loading spinner and the text "Connecting...". The browser's address bar shows a search bar and a profile icon. The Windows taskbar at the bottom includes the search bar, task view, and several application icons (Edge, Word, Chrome, File Explorer, Teams, Excel, PowerPoint, Zoom). The system tray shows the time as 12:03 PM on 9/8/2020.

Academic Calendar

Academic Year: 2004 Term: Fall Session: 01 - Session

Start Date: 08/20/2004	Online Mid Session Grade Start Date: 08/20/2004
End Date: 12/15/2004	Online Mid Session Grade End Date: 12/15/2004
Pre-Registration Date: 07/01/2004	Online Final Grade Start Date: 08/20/2004
Registration Date: 08/20/2004	Online Final Grade End Date: 12/15/2004
Last Registration Date: 12/15/2004	
Grade Withdrawal Date: 12/01/2004	(First day when a withdrawal grade is given without penalty)
Grade Penalty Date: 12/02/2004	(First day when a withdrawal grade is given with penalty)
Fiscal Year: 2004	(For Student Billing)
Number of Weeks: 17	
Number of Months: 4	
Number of Courses: 0	(Valid for Nontraditional Program Sessions)
Financial Aid Award Year: 2004	
Financial Aid Award Term: 9	

Calendar Record # 13

An anecdote....

Understanding “Why”

What are the causes?

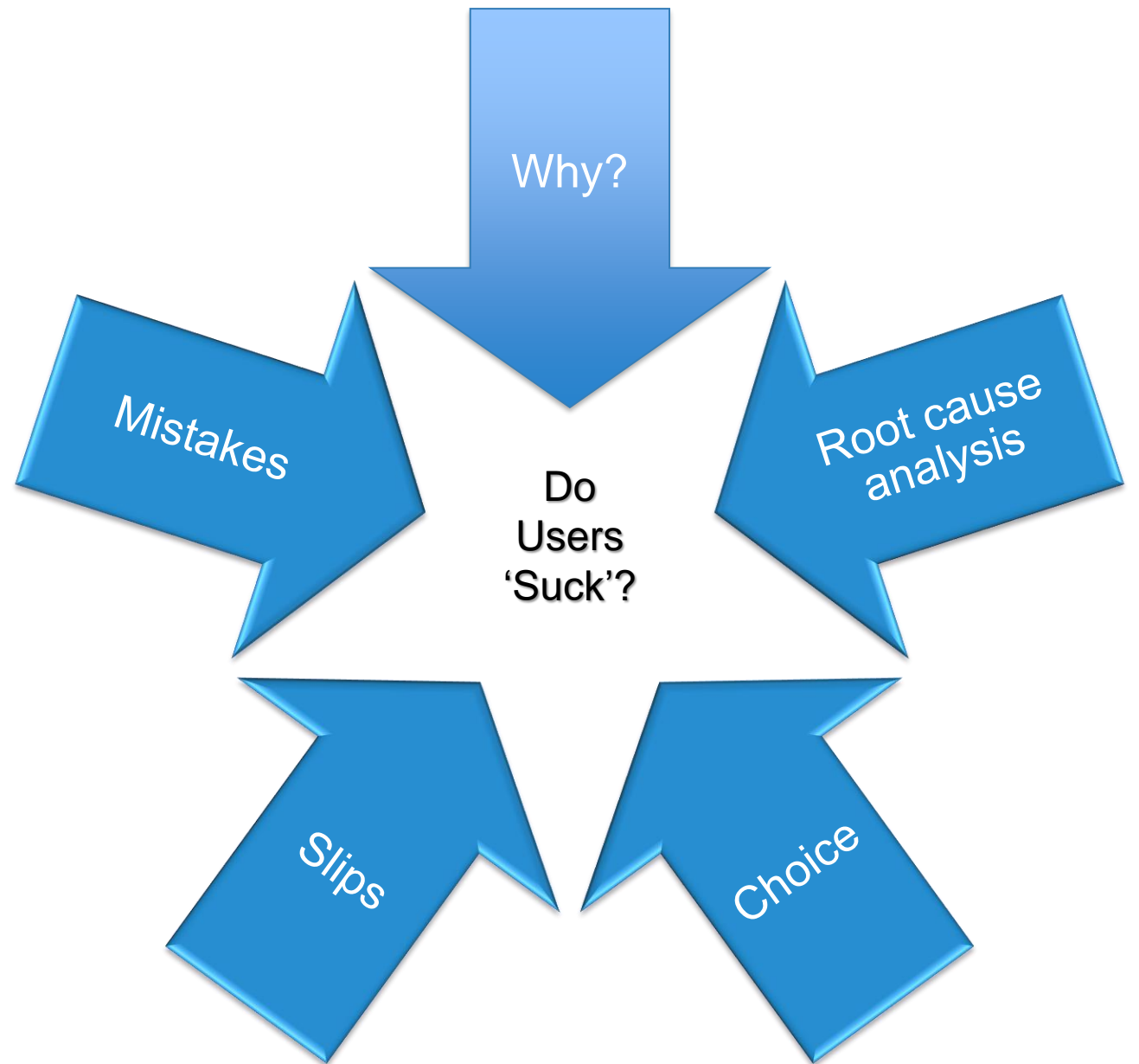
What are the results?

- Financial loss
- Injury

What are the reasons?

- Alertness
- Specifications
- Interruptions

Who is to blame?





All wrong actions are errors!

Slip

- Intent does not match action

Mistake

- Wrong Goals or Plan

Slip

- Action Based
- Memory Lapse



Slips – Everyday Errors

- Intending to do one thing and doing another
- Occur more frequently to skilled people?

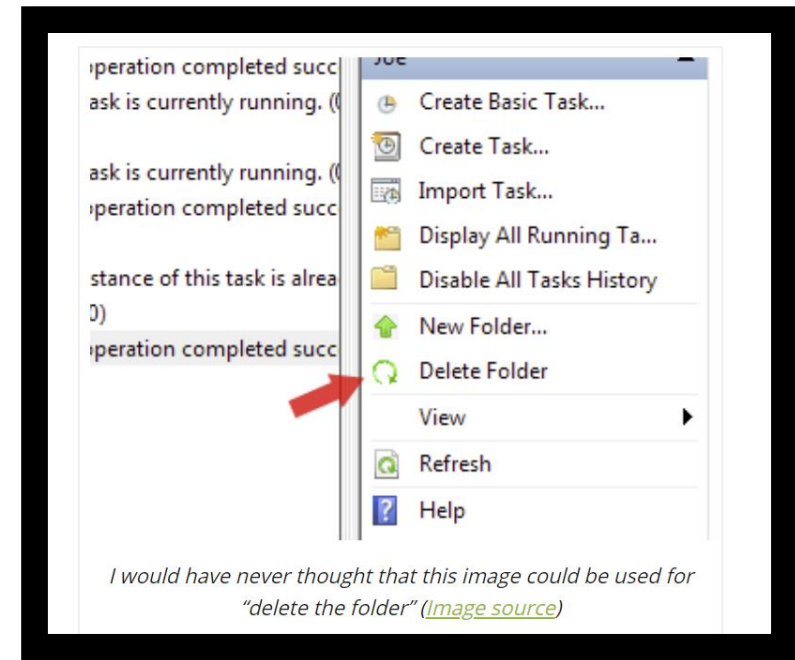
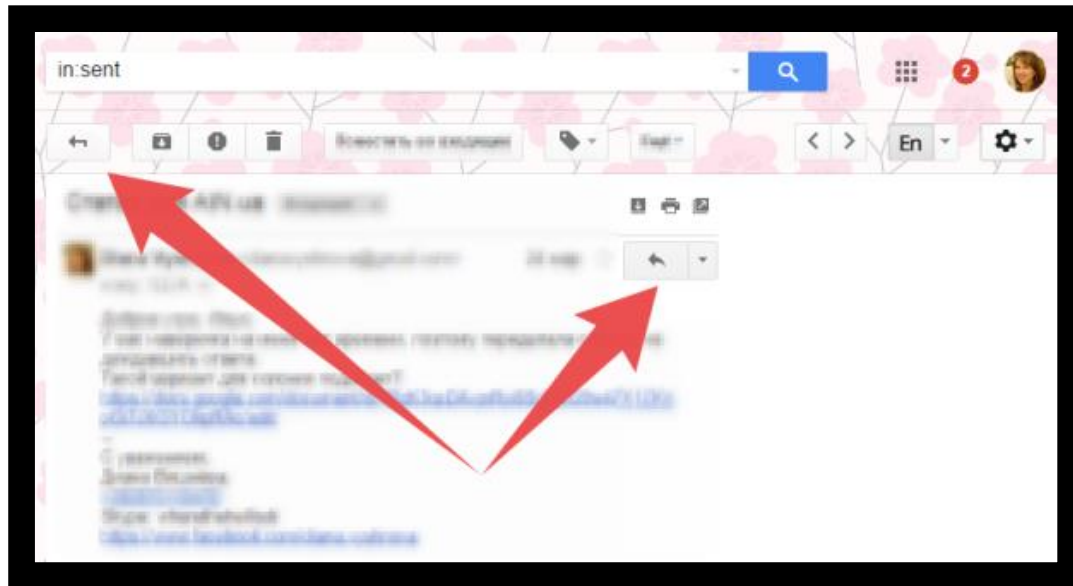
Slips – Capture Slips

- Perform a frequent activity
- Partial memory-lapse



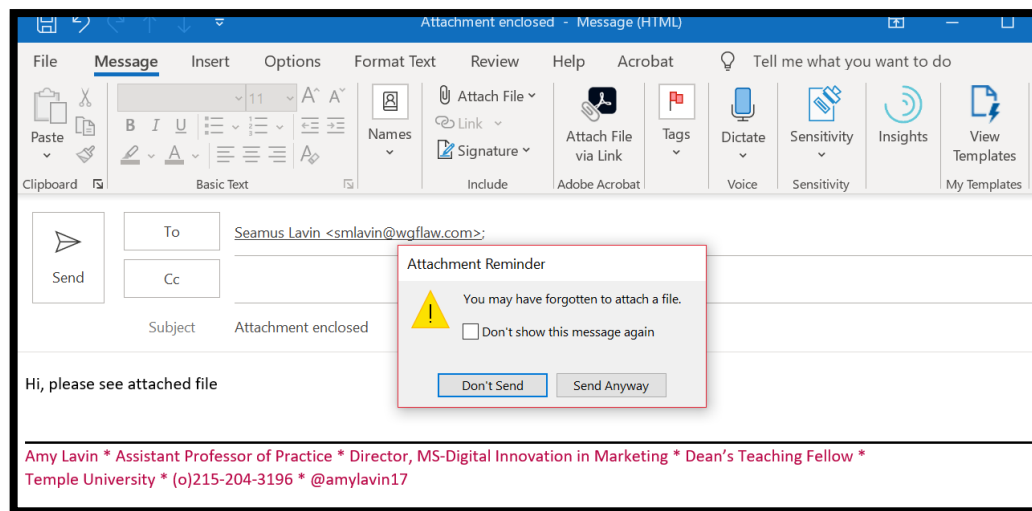
Slips – Description-Similarity

- Wrong & Right Items Look Similar



Slips – Memory-Lapse

- Failure to perform all steps
- Interruption of steps



Amy Lavin * Assistant Professor of Practice * Director, MS-Digital Innovation in Marketing * Dean's Teaching Fellow *
Temple University * (o)215-204-3196 * @amylavin17



Slips – Mode Error

- Different states – different meanings



Mistake

- Rule Based
- Knowledge Based
- Memory Lapse



Mistakes - Rule Based

- Experience
- Formal Procedures

Mistakes – Knowledge Based

- New situation – can't relate a similar experience



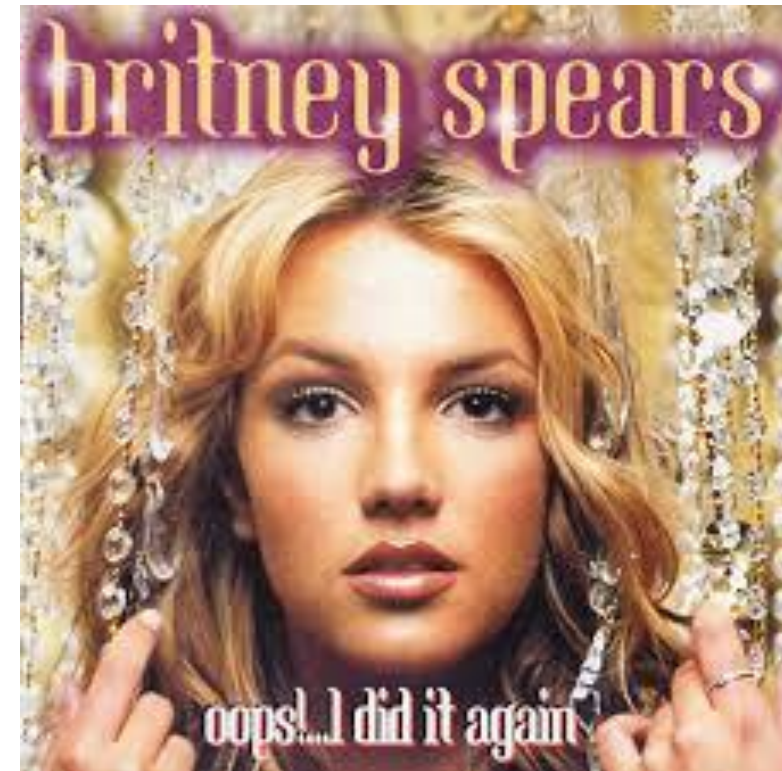
Mistakes – Memory Lapse

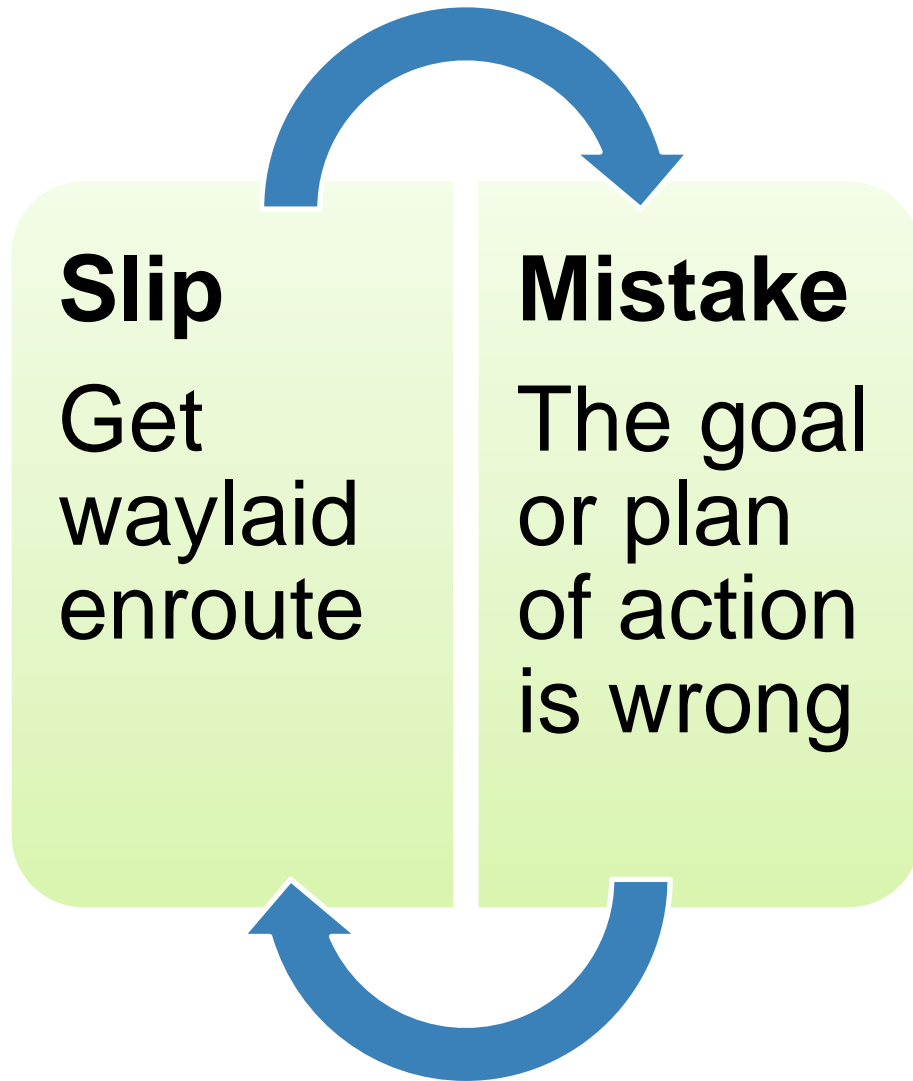
- Memory failure leads to forgetting the goal or plan of action



Memory Lapse

- **Mistakes** are errors in choosing an objective or specifying a method of achieving it whereas **slips** are errors in carrying out an intended method for reaching an objective








How can the designer combat these?

- Understand the design and the user
- Usability testing
- Discoverability of errors
- Availability of help
- Checklists
- Provide assistance to users through visual clues, feedback



Human error - slips and mistakes

slip

-  understand system and goal
-  correct formulation of action
-  incorrect action

mistake

-  may not even have right goal!

Fixing things?

- slip – better interface design
- mistake – better understanding of system

4.

Usability Testing

Tools to conduct your test

Planning Your Test

Scope

Choose website
Specify test components
Identify concerns
Select Scenarios

Schedule

Indicate test location
Determine times
Define test length
Indicate testing equip.

Scenarios

Who is the user?
• Personas
Why do they use the site?
• Motivations & Goals
Indicate # of types &
tasks included
Create multiple test plans

Metrics

Subjective:

- Background questions to the user
- Completion satisfaction questions

Quantitative:

- This is all about Data
- Completion Rates
- Error Rates
- Time on Task...

Usability Testing

Test early	<ul style="list-style-type: none">• Hand drawn storyboard• PowerPoint simulation
Test often	<ul style="list-style-type: none">• And obviously the first and ... last prototype
Grab anybody and everybody	<ul style="list-style-type: none">• Friends, co-workers, diversity is good though!
Observe closely and ask them to verbalize	<ul style="list-style-type: none">• Dump the ones that don't want to play
Ignore the lure of rigor	<ul style="list-style-type: none">• <i>getting a job in IBM is no longer lifelong</i>
Hone in on key tasks	<ul style="list-style-type: none">• "Find ABC", "purchase XYZ"
Document	<ul style="list-style-type: none">• Keep notes on what you learned each time
Use Krug's script	<ul style="list-style-type: none">• Once or twice• Or if you want to get paid or if there is conflict

Usability testing

Typically
one
'expert'
user

- Cognitive walkthrough
- Heuristic evaluation

Multiple
'normal'
users

- Observational test in a lab
- Hallway/café test
- A/B test

Test Goals

- Identify if users are able to complete specific tasks successfully
 - Determine how long it takes to complete tasks
- Establish how efficiently users can undertake predetermined tasks
- Identify changes required to improve user performance and satisfaction
- Running a usability test helps you to make subjective findings too:
 - Do users enjoy using the product?
 - Does the product work effectively?

Observational test in a lab



Observational test in a Café (Café testing)



Café testing tips

Identify the tasks you want the user to try in advance

Get talkative opinionated users

Use a script

Look at their hands and listen closely

Take notes or record – pros and cons

Reflect

HEURISTIC REVIEW – UX – NIELSEN

Visibility of System Status

Match Between the System & Real World

User Control and Freedom

Consistency and standards

Error prevention

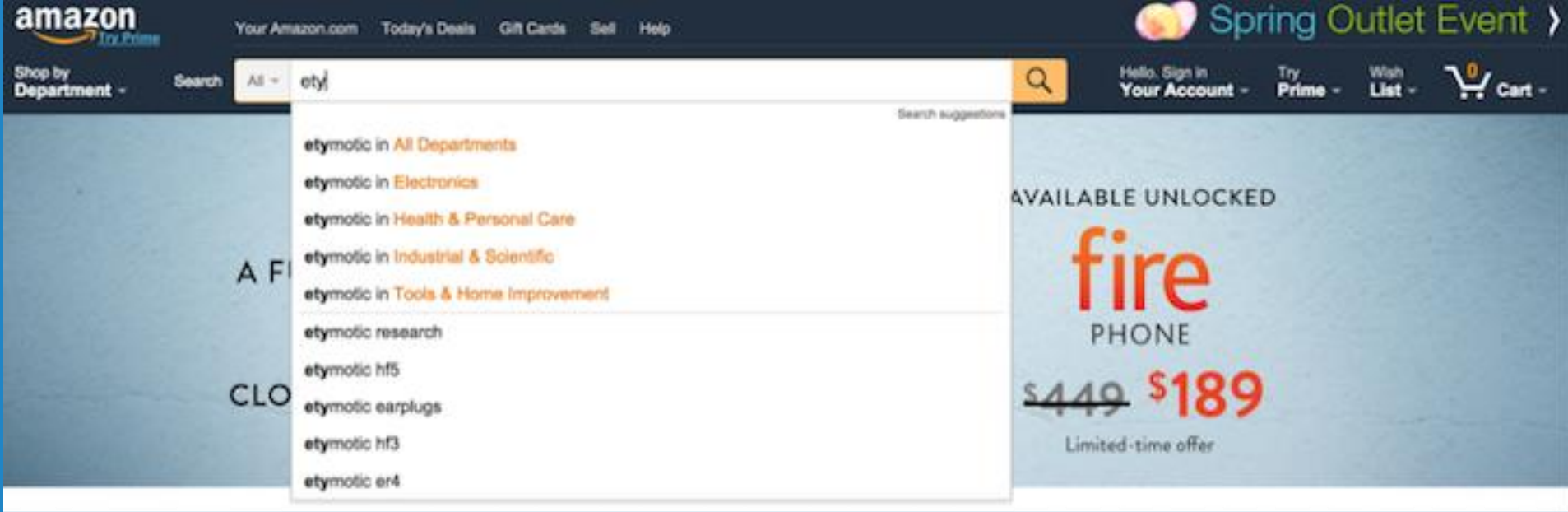
Recognition rather than recall

Flexibility and Efficiency of Use

Aesthetic and minimalist design

Help users recognize, diagnose and recover from errors

Help and Documentation



Usability

In-class Activity – Usability Dry Run

Source: <https://www.nngroup.com/articles/slips/>

Class activity

<https://owlsports.com/>

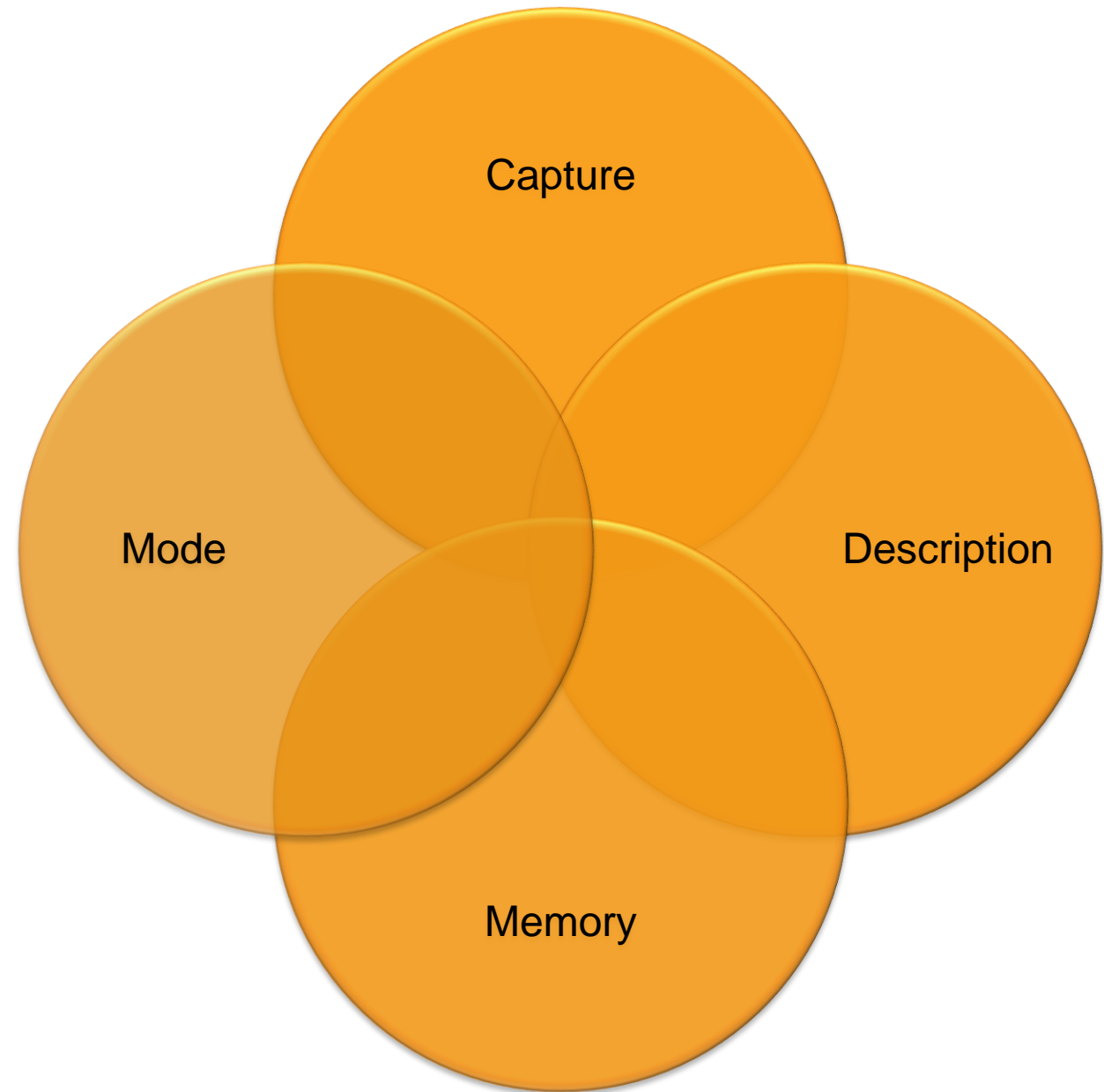
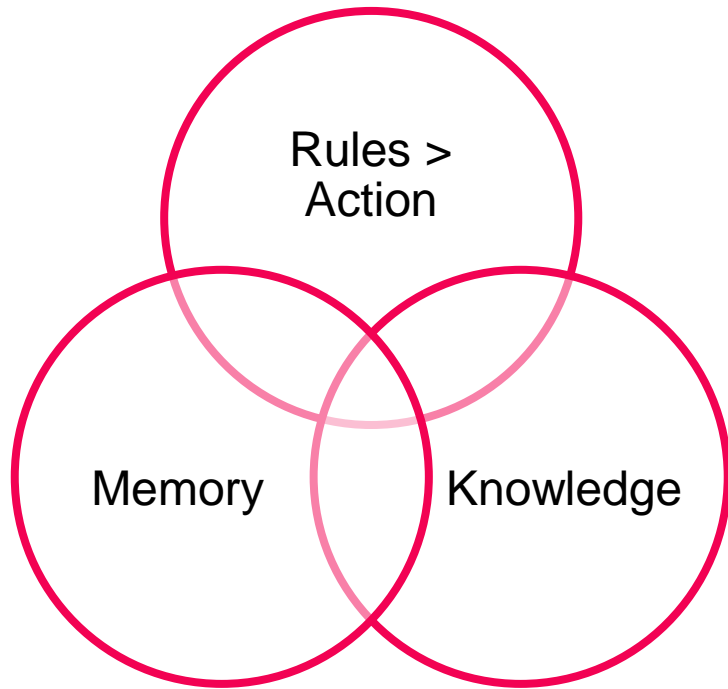
Heuristic evaluation

- Team member 1: Apply first five heuristic evaluation items
- Team member 2: Apply second five heuristic evaluation items

Café test

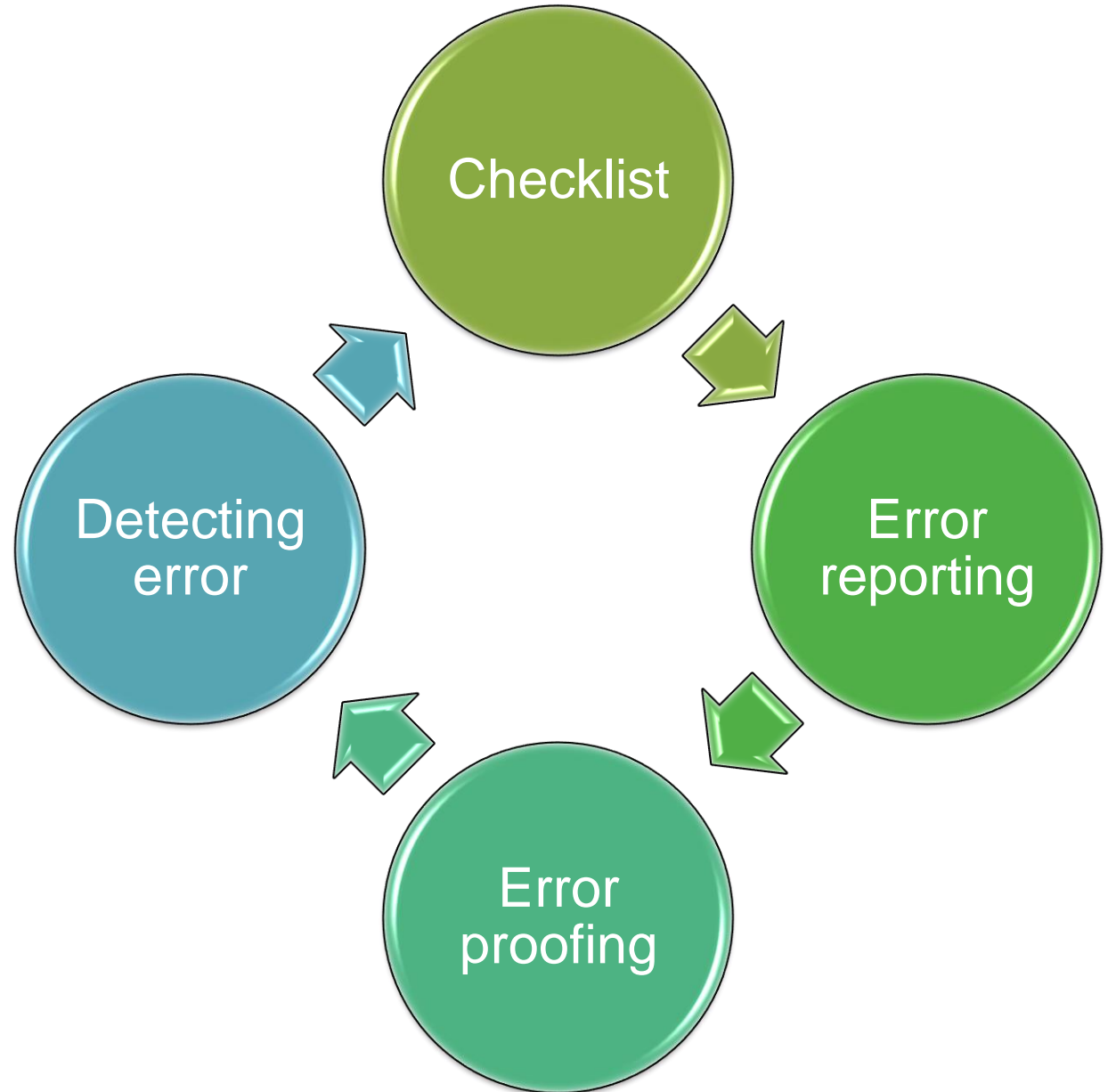
- Team member 1 – task: Join the owl club
- Team member 2 – task: Purchase a ticket to a future b-ball game

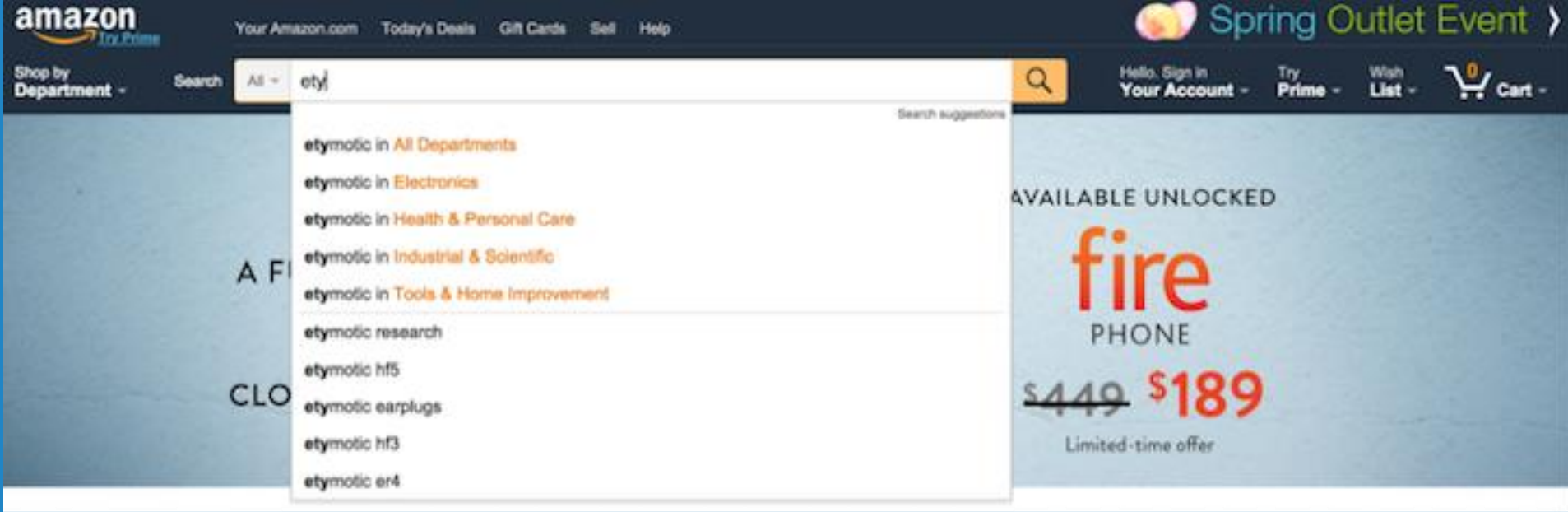
Slips vs. Mistakes



Tools

How do we ensure safe/good practices & behaviors?





Classes of Errors

In-class Activity – Slips & Mistakes

Source: <https://www.nngroup.com/articles/slips/>

Breakout

Go back to selected site

Identify the 3 most important issues
using Norman's terms

One person reports back to the class