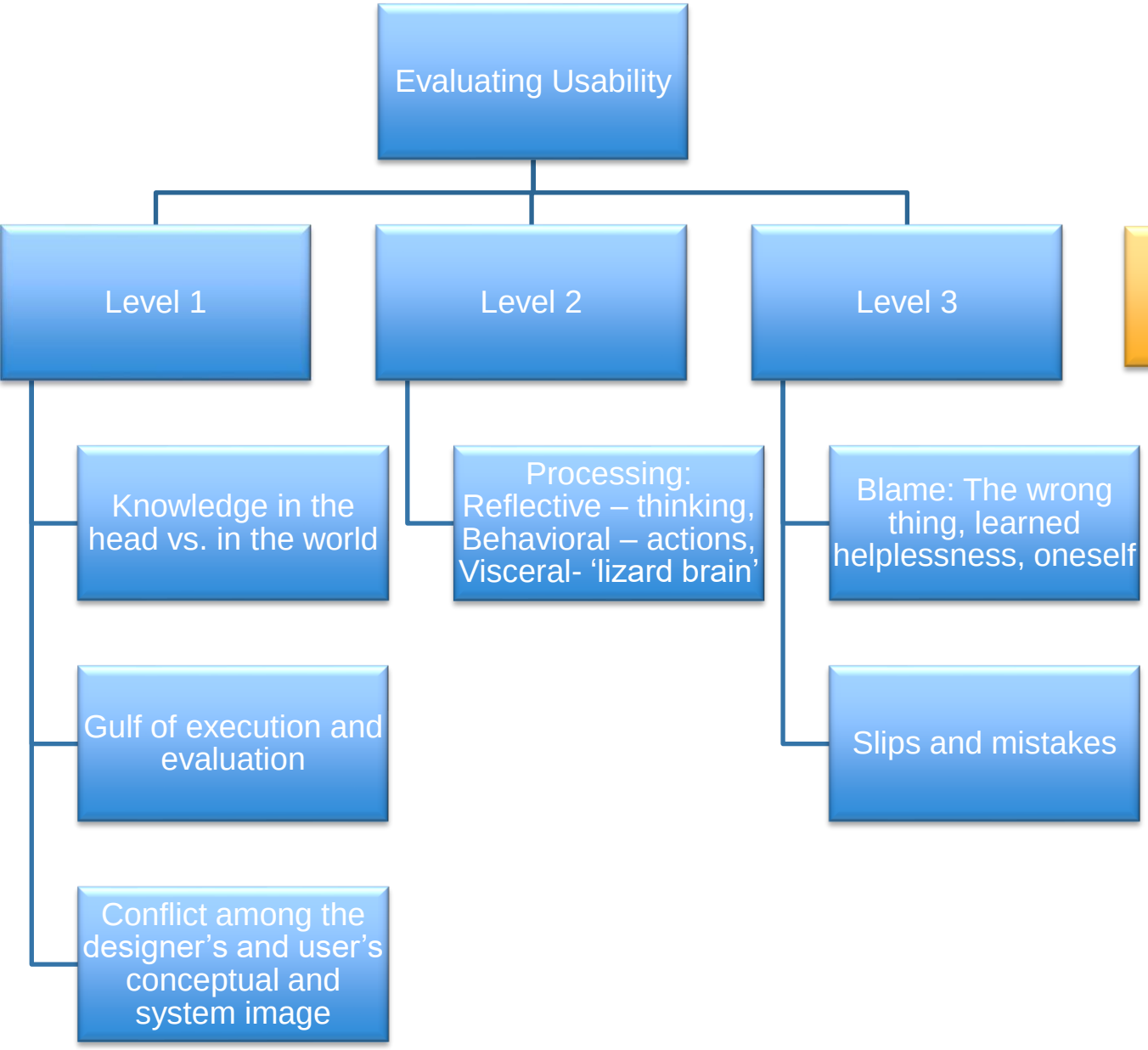
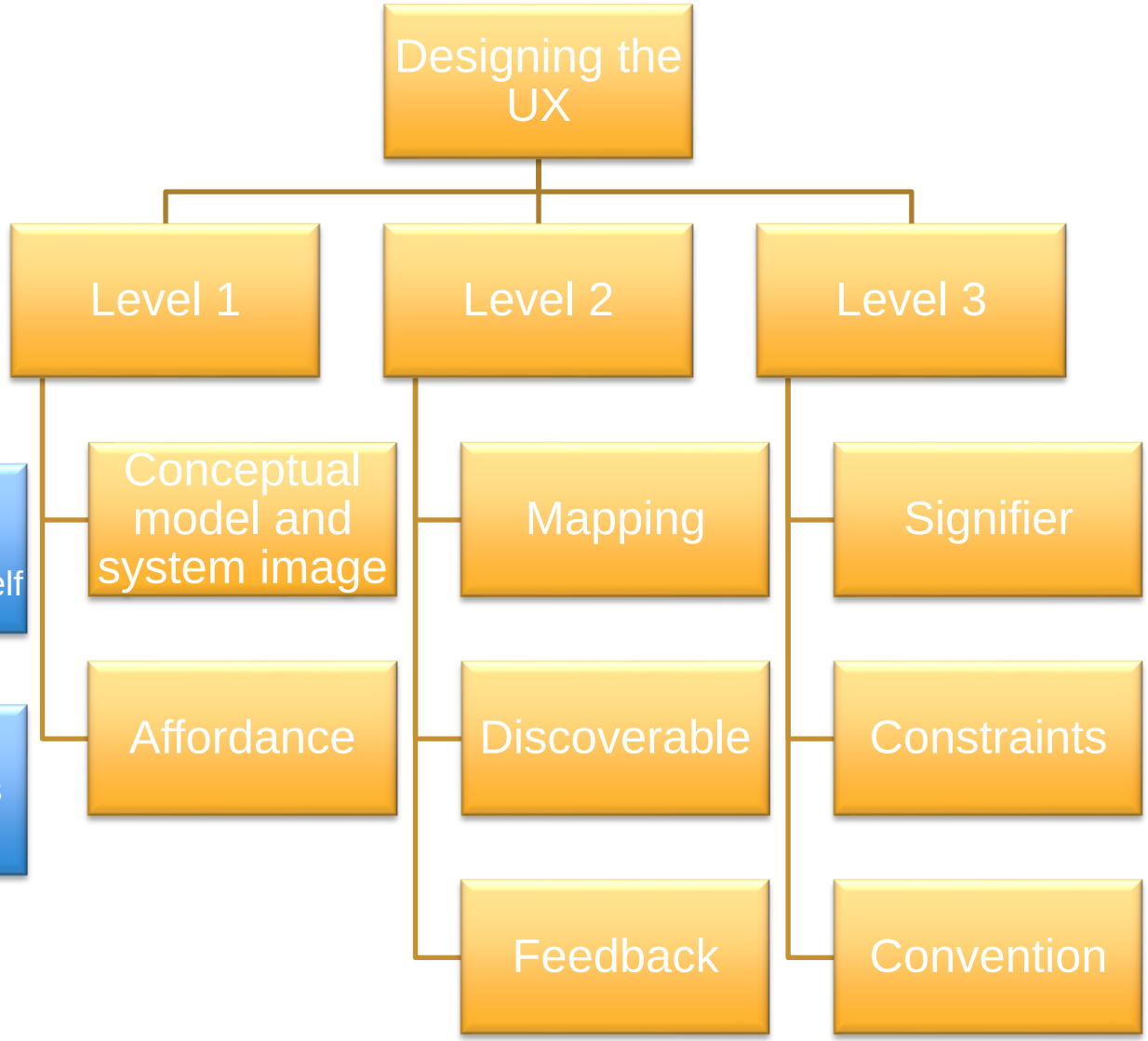
Human Error? No Bad Design; Slips & Mistakes

MIS3506 * Lavin * Fall 2023

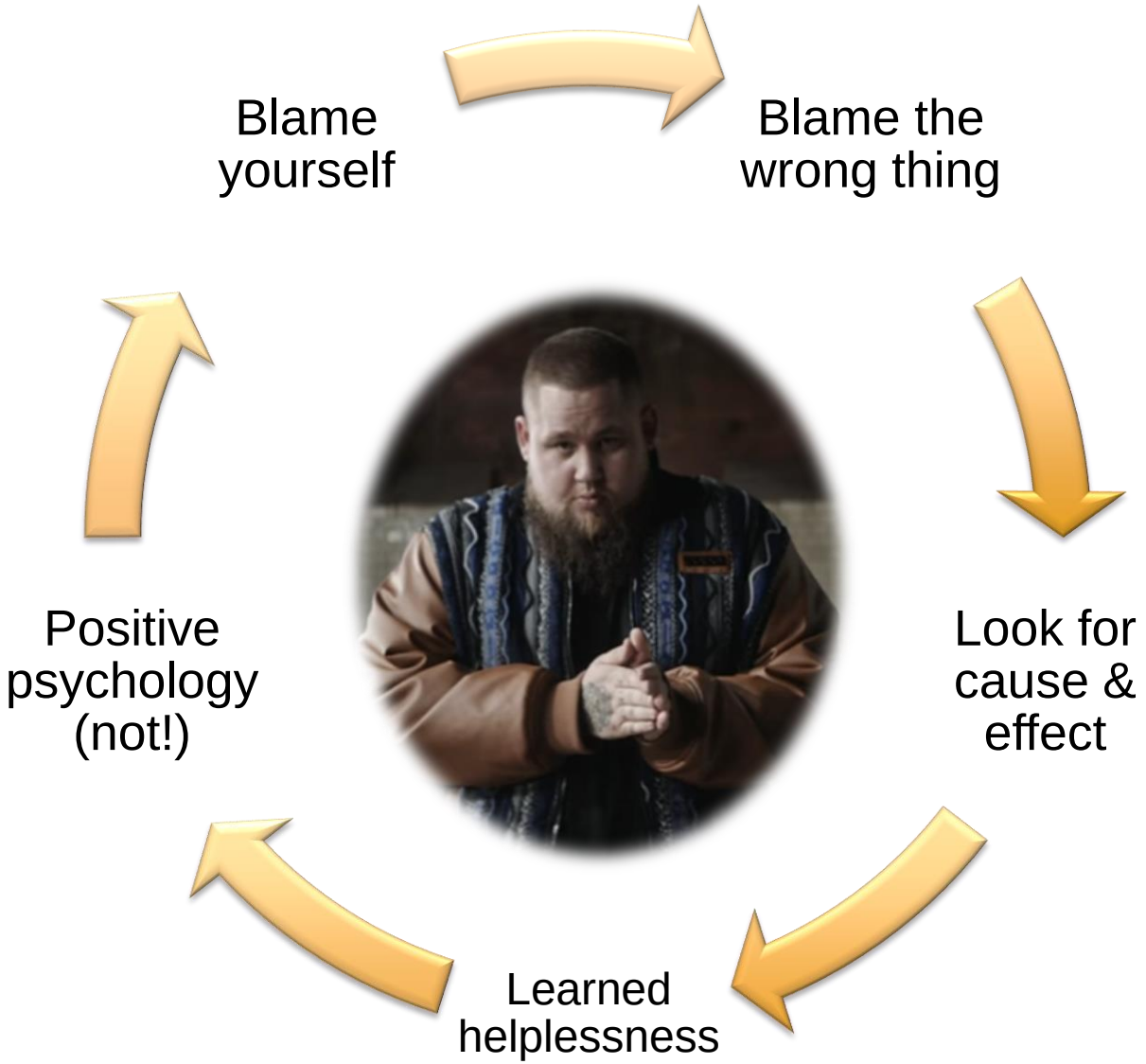

Evaluating Usability
Level 1
Level 2
Level 3
Knowledge in the head vs. in the world
Gulf of execution and evaluation
Conflict among the designer's and user's conceptual and system image
Processing: Reflective – thinking, Behavioral – actions, Visceral- 'lizard brain'
Blame: The wrong thing, learned helplessness, oneself
Slips and mistakes


Designing the UX
Level 1
Level 2
Level 3
Conceptual model and system image
Affordance
Mapping
Discoverable
Feedback
Signifier
Constraints
Convention

I Am Only Human (after all)

What do we mean by being "human"?

- What is "human error"?



Source: https://www.youtube.com/watch?v=L3wKzyIN1yk

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

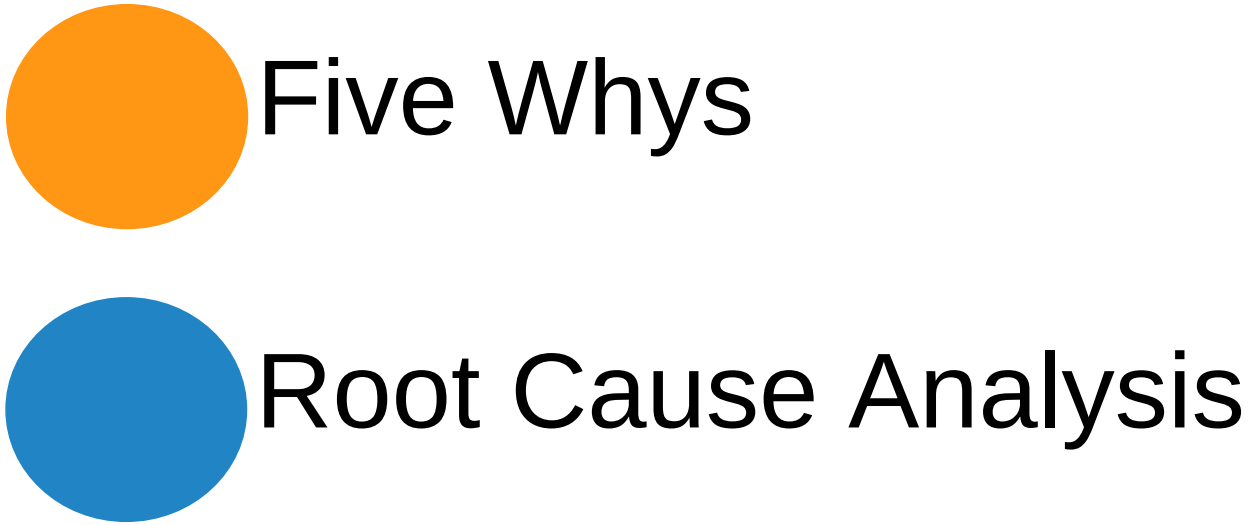
Defining the Problem

Understanding **WHY** there is error

Source: https://www.zensar.com/blogs/2016/07/diagnosing-the-problem-definition/

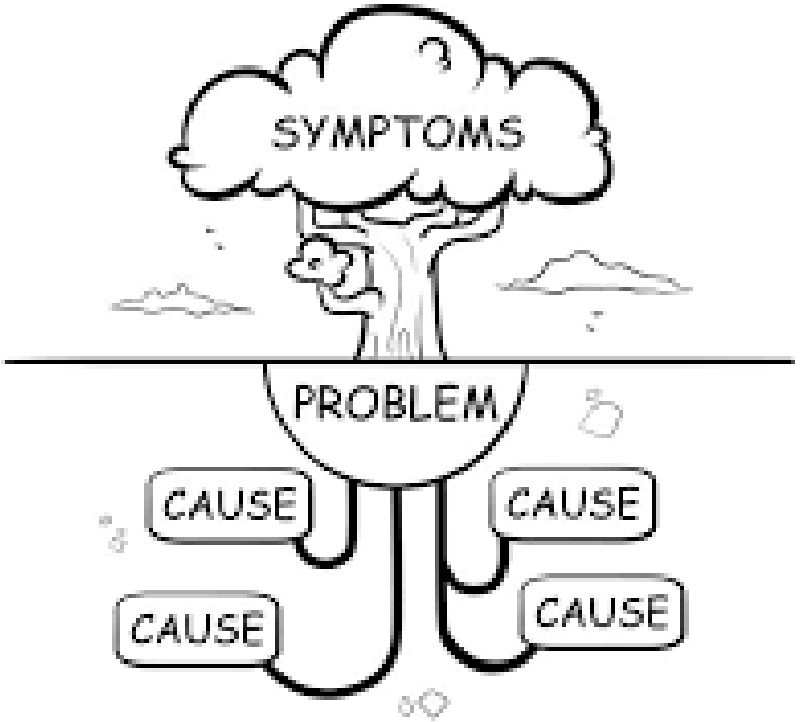
Diagnosing Error

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

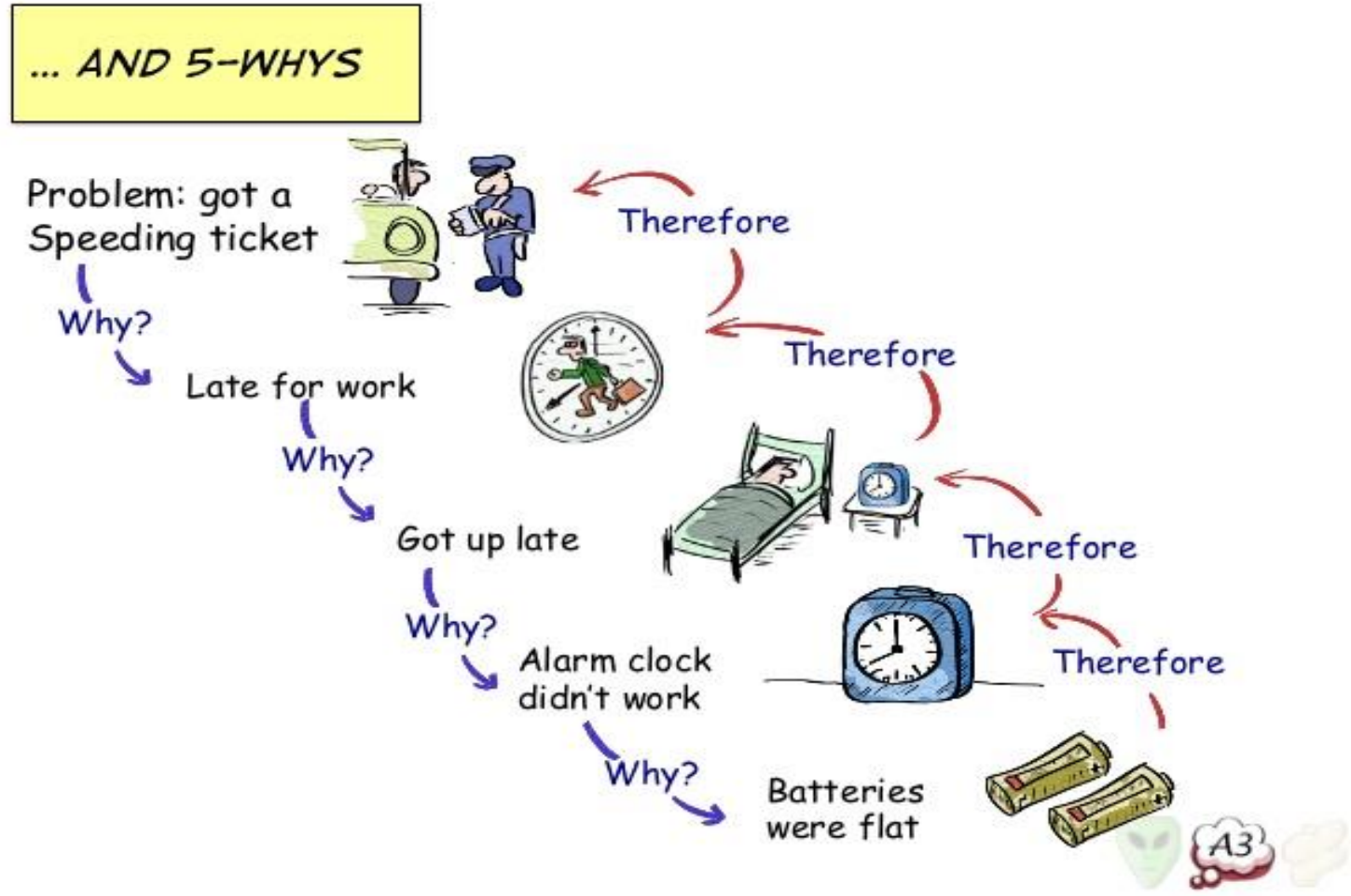


Root Cause Analysis

- **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

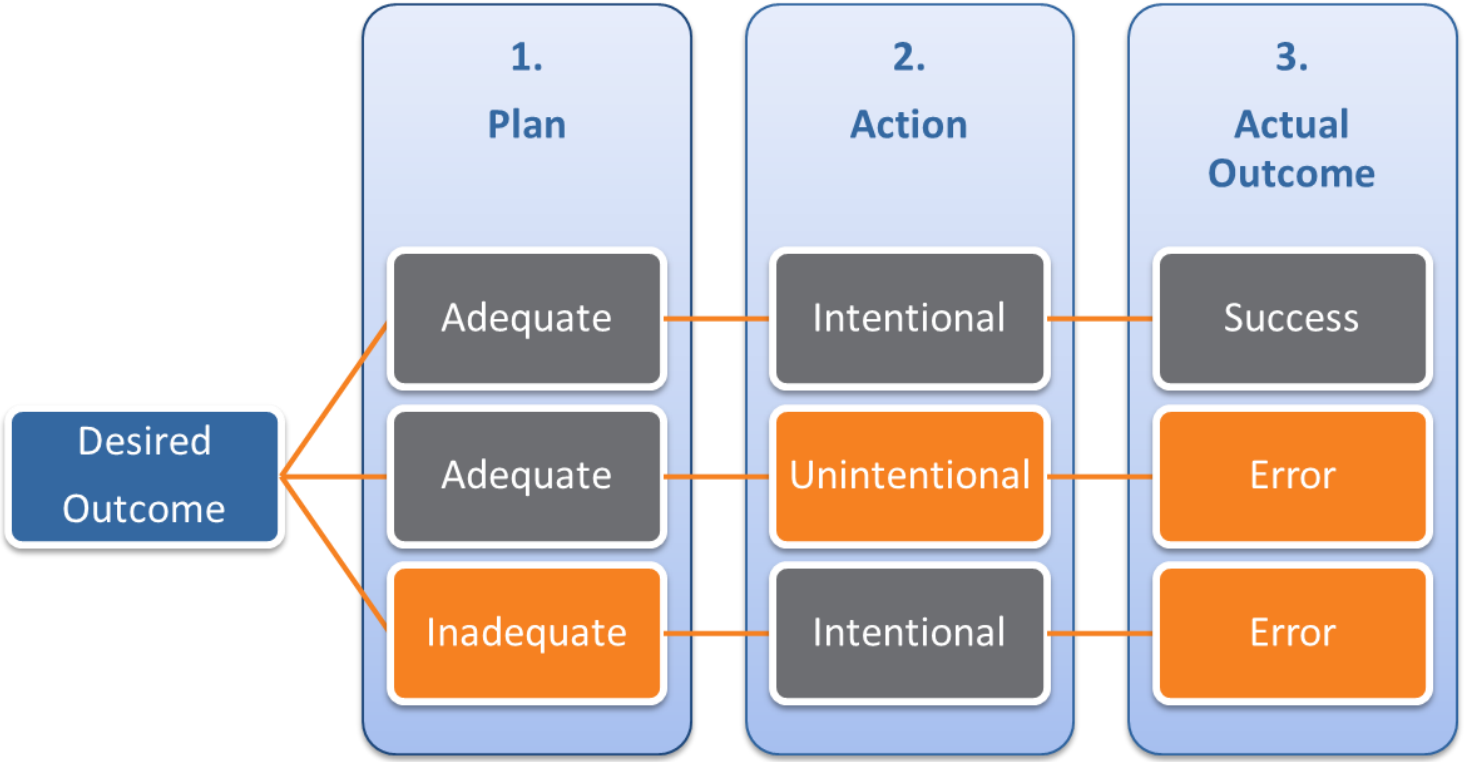

... AND 5-WHYS
Problem: got a Speeding ticket
Why?
Late for work
Why?
Got up late
Why?
Alarm clock didn't work
Why?
Batteries were flat
Therefore
Therefore
Therefore
Therefore
A3

Diagnosing Error

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

Diagnosing “Human” Error

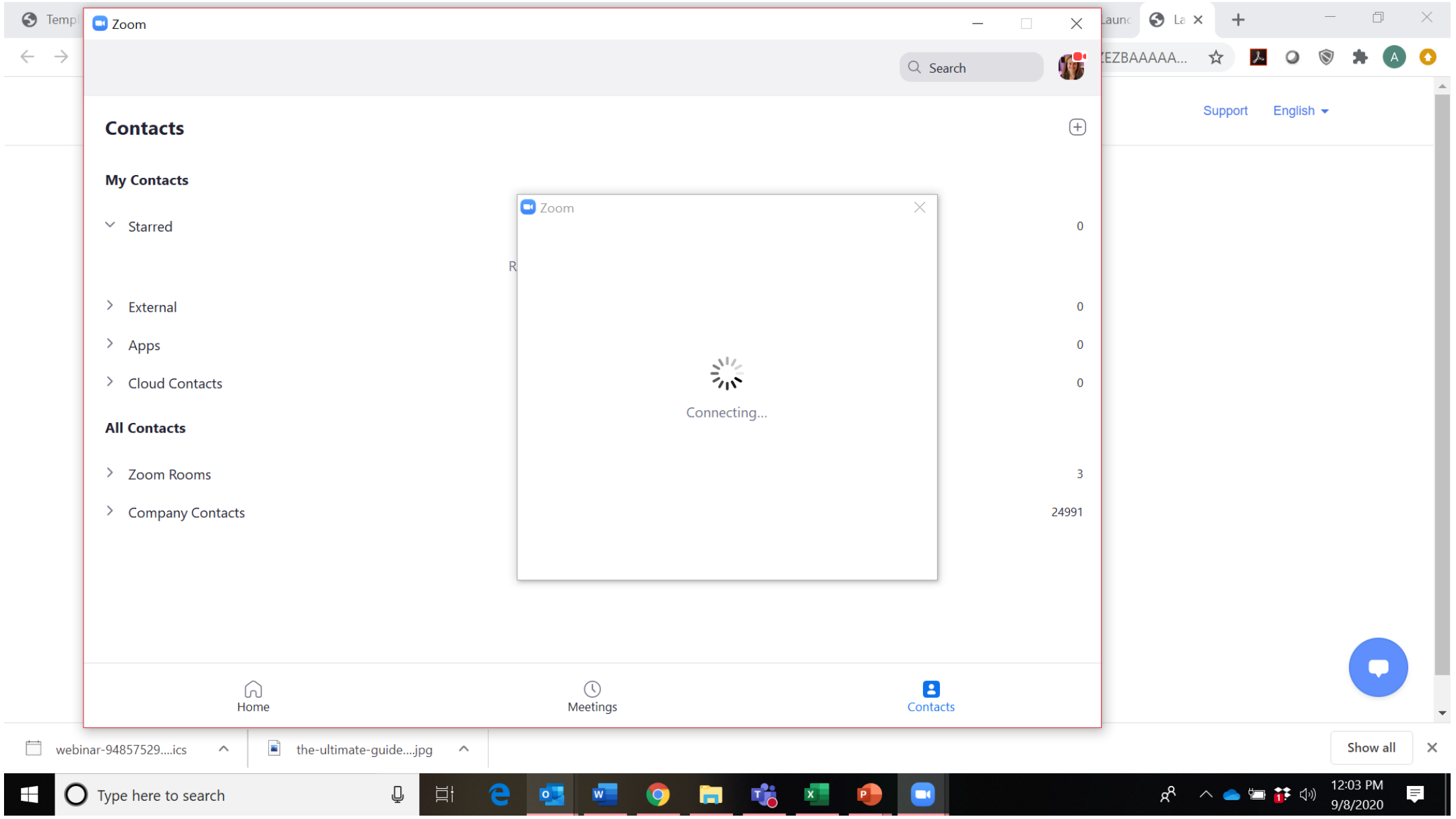
Failures can occur in planning & execution



Source: https://www.nopsema.gov.au/resources/human-factors/human-error/

3.
Do Users Suck?

Mistakes vs. Slips vs. Choice & Usability


Zoom
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Cloud Contacts
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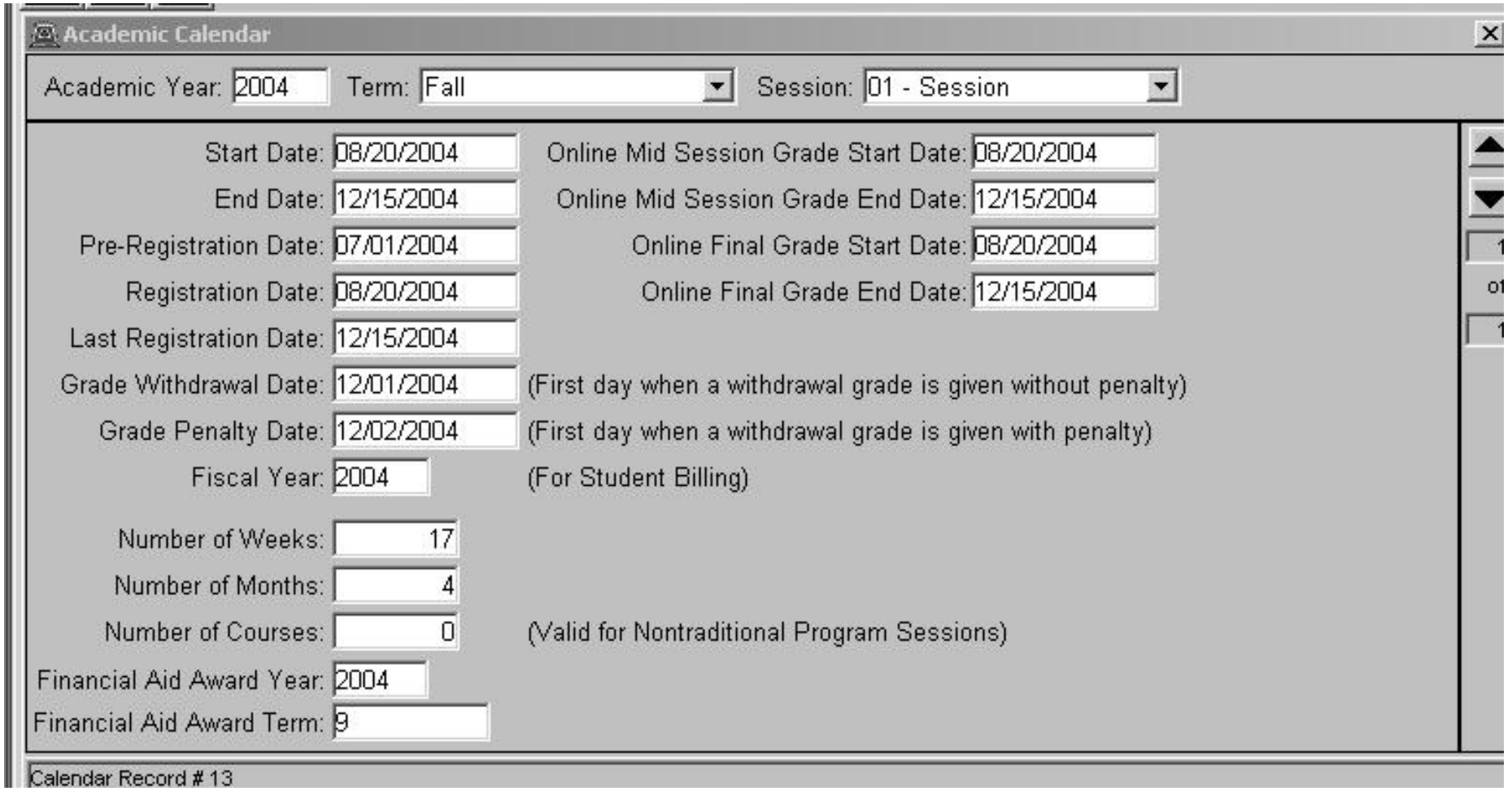

Academic Calendar
Academic Year: 2004
Term: Fall
Session: 01 - Session
Start Date: 08/20/2004
End Date: 12/15/2004
Pre-Registration Date: 07/01/2004
Registration Date: 08/20/2004
Last Registration Date: 12/15/2004
Grade Withdrawal Date: 12/01/2004
(First day when a withdrawal grade is given without penalty)
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
Online Mid Session Grade Start Date: 08/20/2004
Online Mid Session Grade End Date: 12/15/2004
Online Final Grade Start Date: 08/20/2004
Online Final Grade End Date: 12/15/2004
Calendar Record # 13

An anecdote….

Understanding "Why"

What are the causes?

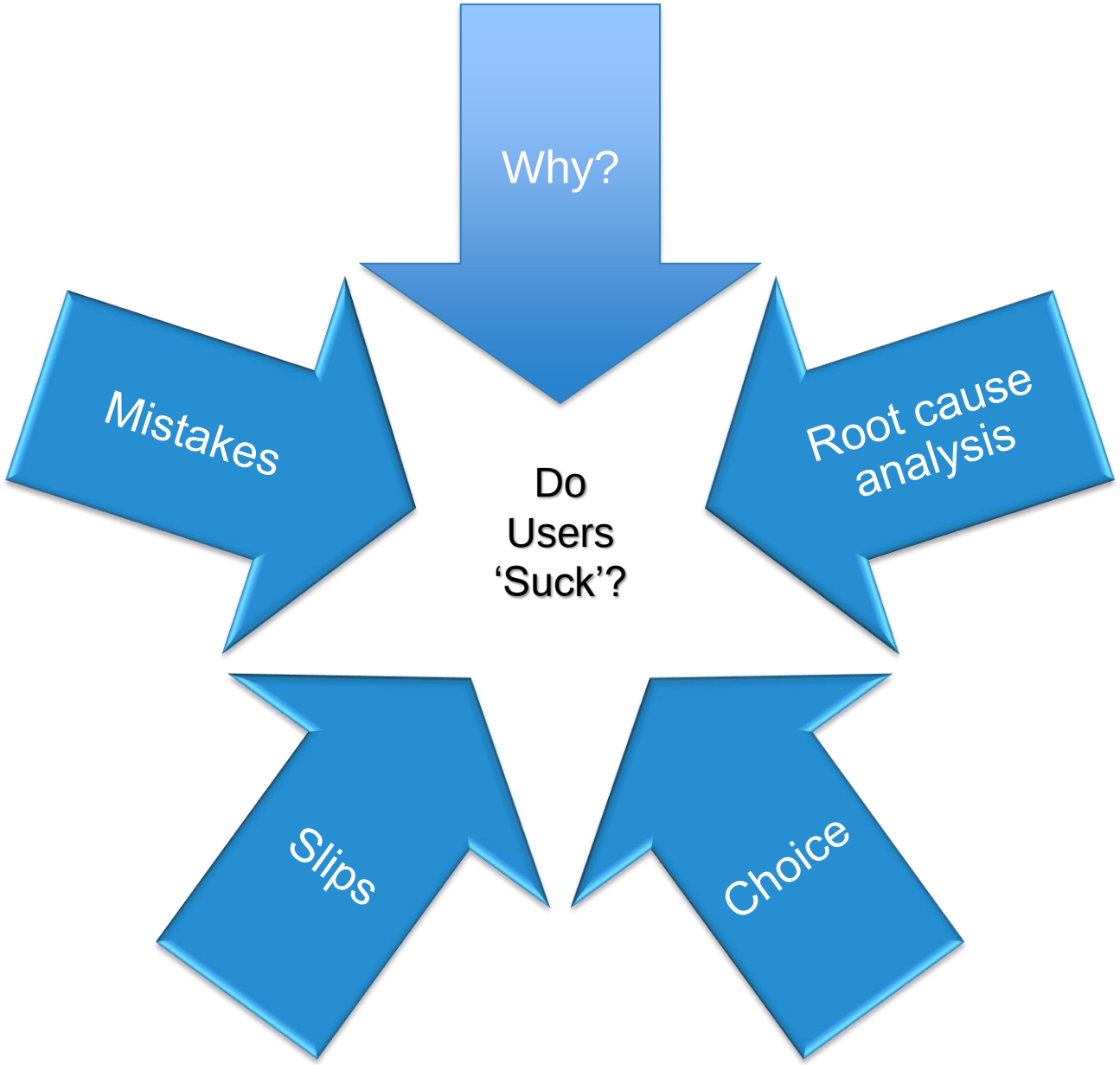
What are the results?

- Financial loss
- Injury

What are the reasons?

- Alertness
- Specifications
- Interruptions

Who is to blame?



Error: any action that differs from the general understanding of appropriate behavior

Slip – An error of execution
We have the right goal, but end up performing a different action
Unconsciously – *error of doing*

Mistake – An error of evaluation
Action is executed correctly, but the goal, plan or understanding of the situation is wrong
Consciously – *error of thinking*

Slip

- Action Based
- Memory Lapse

Slips – Everyday Errors

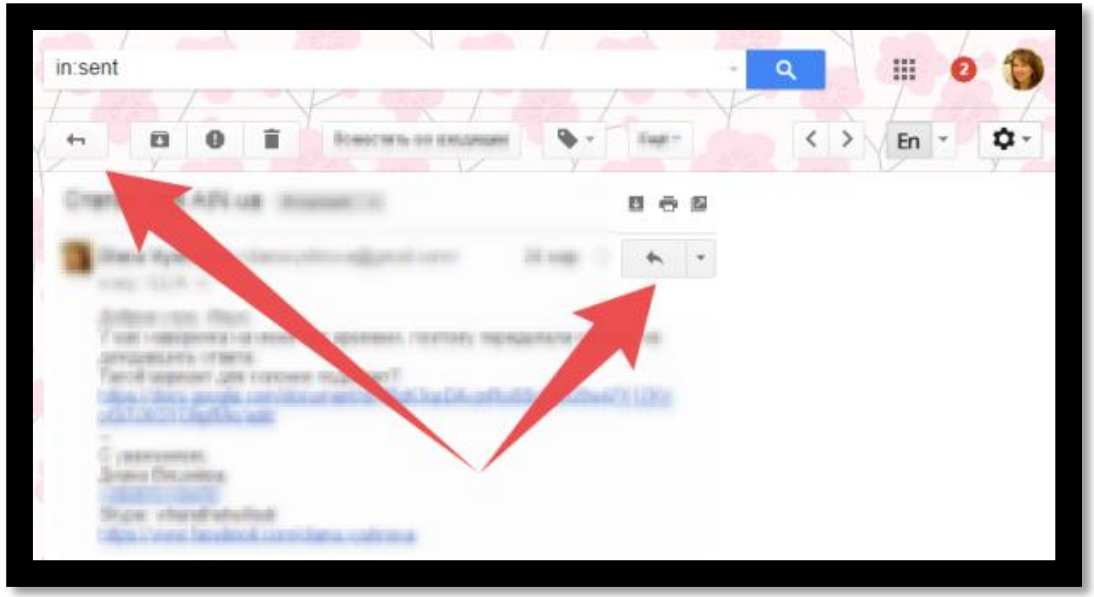
- Intending to do one thing and doing another
- Occur more frequently to skilled people?

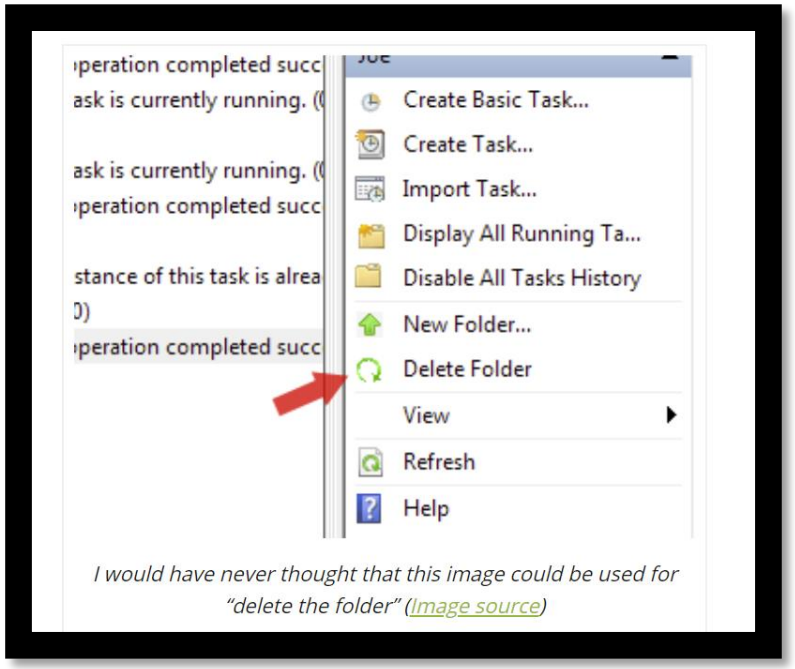
Slips – Capture Slips

- Perform a frequent activity
- Partial memory-lapse

Slips – Description-Similarity

- Wrong & Right Items Look Similar

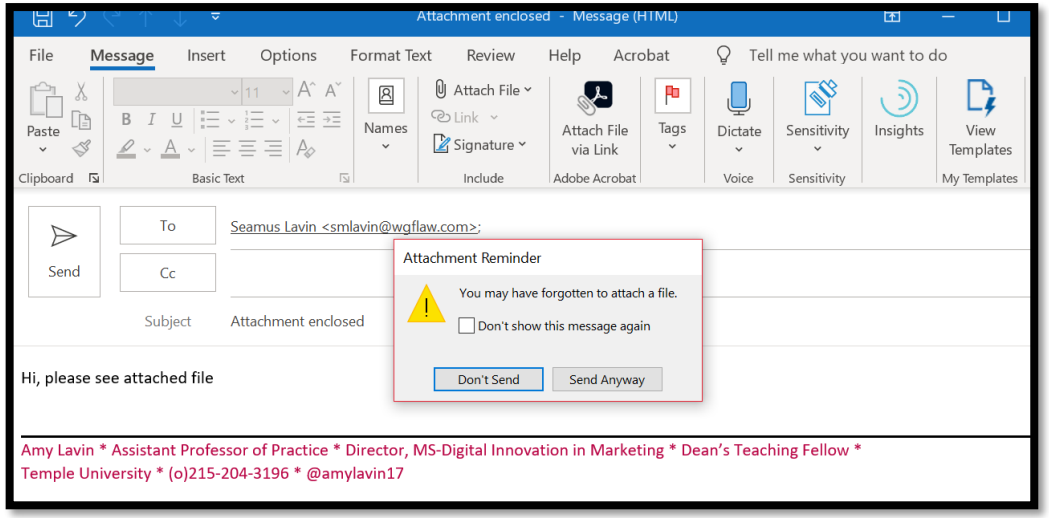




I would have never thought that this image could be used for "delete the folder" (Image source)

Slips – Memory-Lapse

- Failure to perform all steps
- Interruption of steps



Slips – Mode Error

- Different states – different meanings

Mistake

- Rule Based
- Knowledge Based
- Memory Lapse

Mistakes - Rule Based

- Experience
- Formal Procedures

Mistakes – Knowledge Based

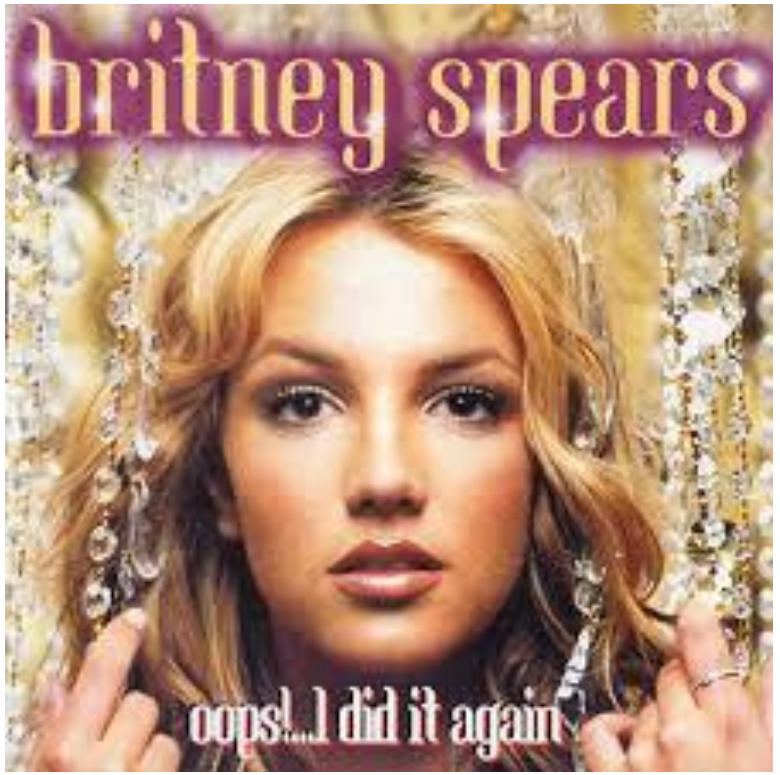
- New situation – can't relate a similar experience

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



Slip

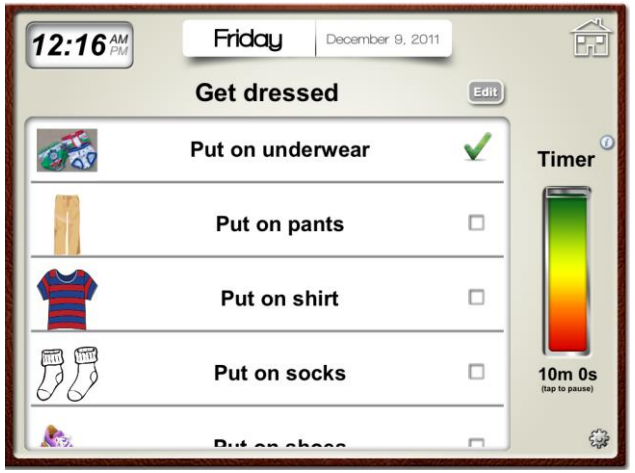
Get waylaid enroute

Mistake

The goal or plan of action is wrong

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!

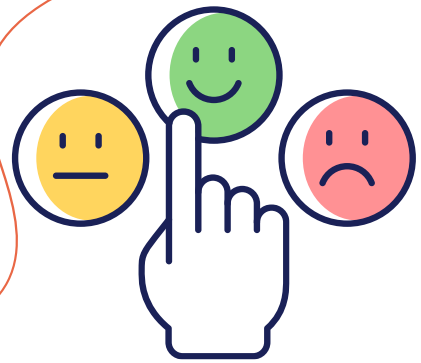
Fixing things?

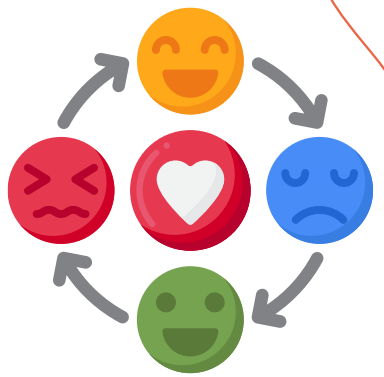
slip – better interface design

mistake – better understanding of system

4.
Usability Testing

Tools to conduct your test





What is Usability Testing?

the practice of testing **how easy a design is to use with a group of representative users**. It usually involves observing users as they attempt to complete tasks and can be done for different types of designs**. It is often conducted repeatedly,** from early development until a product's release.

Usability Test Objectives

Chief objectives of a Usability Test

Completion

Determine whether testers can complete tasks successfully and independently.

Performance

Assess their performance and mental state as they try to complete tasks, to see how well your design works.

Joy

See how much users enjoy using it.

Identify

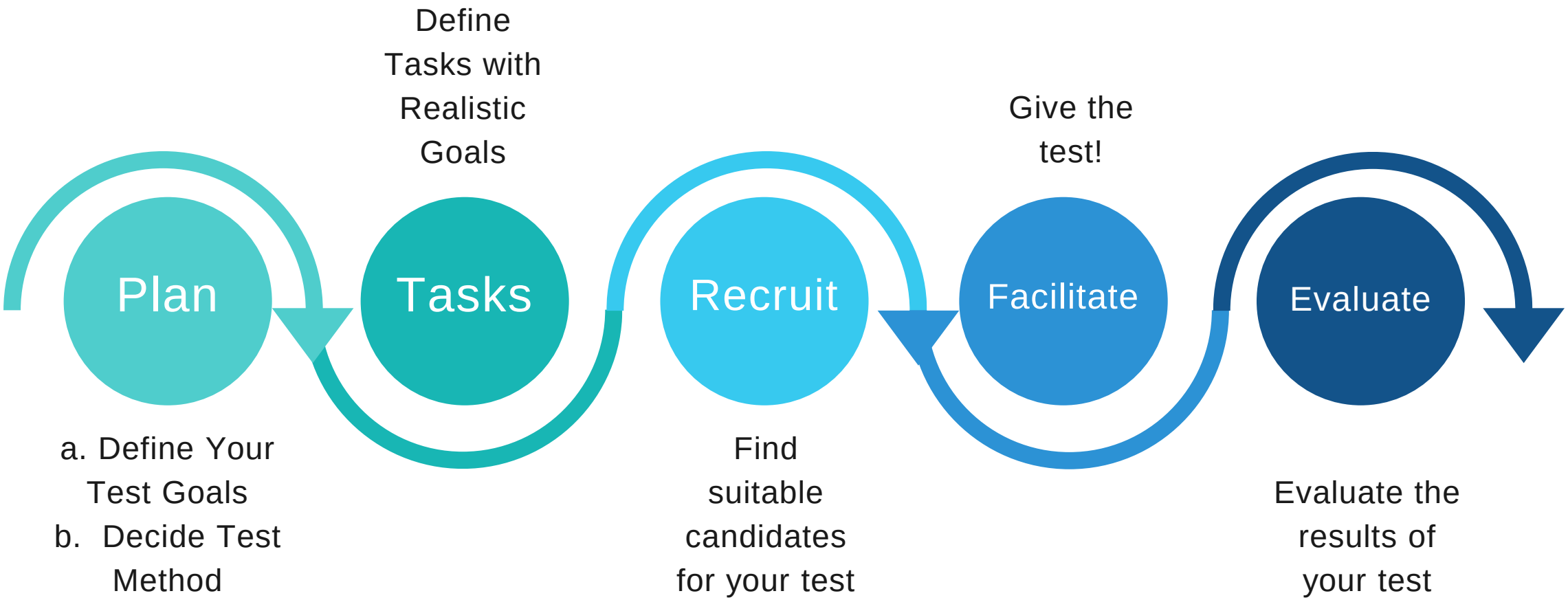
Identify problems and their severity

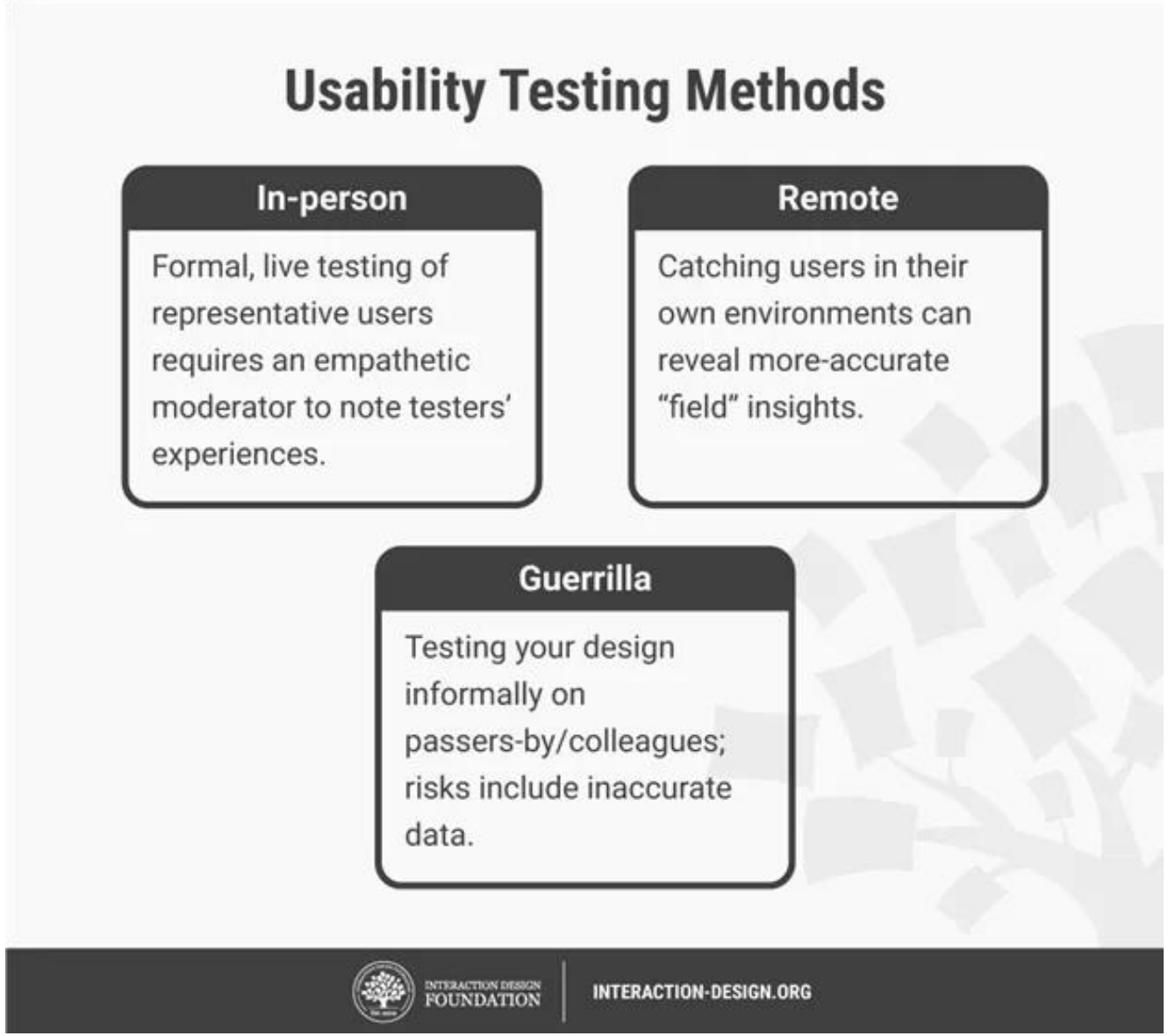
Investigate

Find solutions

USABILITY TESTING

Steps in delivering the usability test

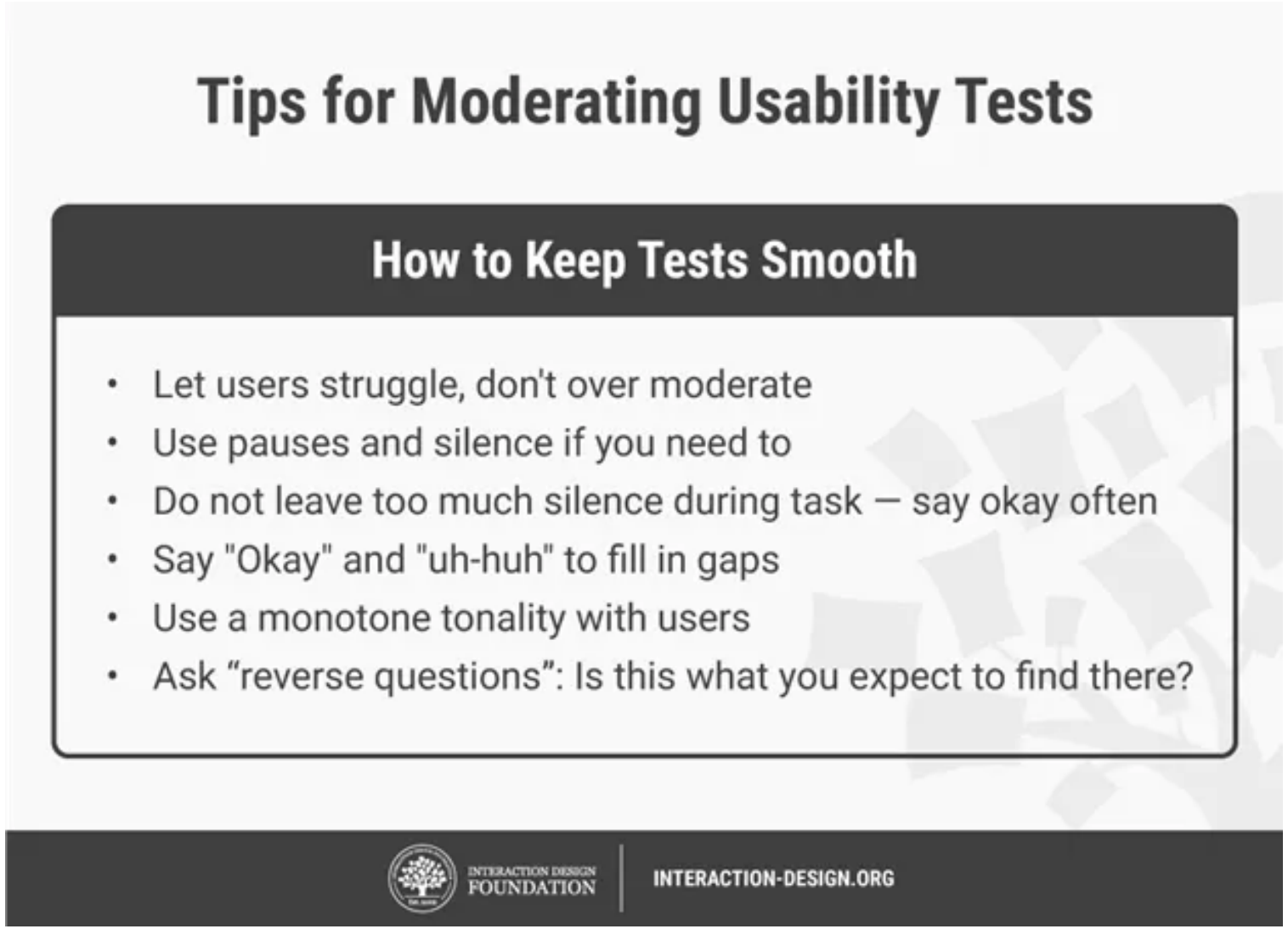




What you choose depends on your product, your audience and where you are in the design process

Pros?

Cons?



Not just functionality, but the overall experience of using your site

Scenarios

Building the Test

Step 01 — Consider your personas and audience

Step 02 — What is their motivation for using your application?

Step 03 — What are the goals of your application?

Step 04 — What tasks should users be able to complete?

TEST METRICS -

Assess the user behavior

Quantitative

Time on Task
Success and Failure Rates
Effort (number of clicks, confusion)

Qualitative

Facial Reactions
Body Language
Satisfaction levels

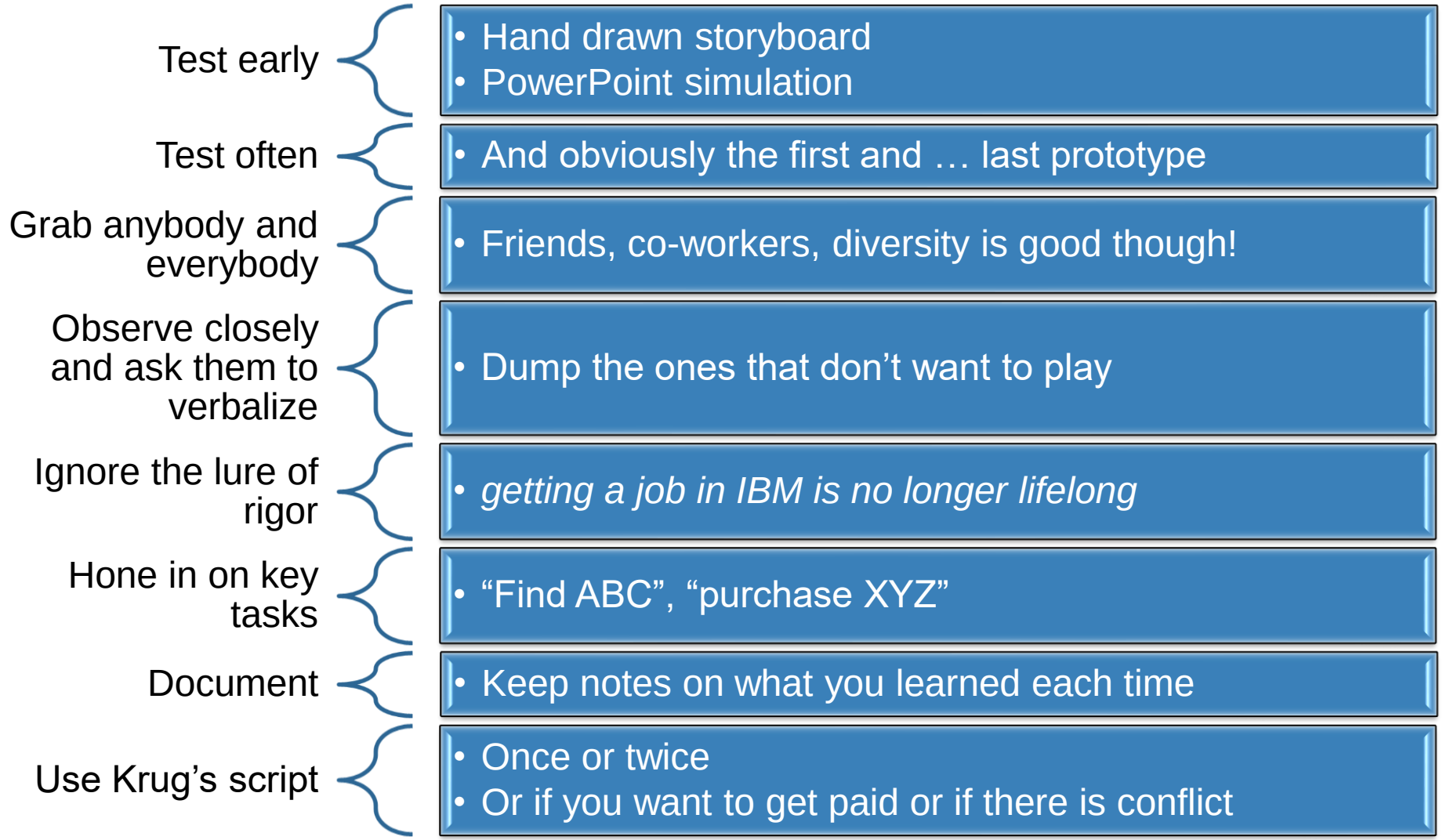
Ask for feedback

Provide a follow up questionairre that would enable honest feedback

Report

Clearly define design issues and best practices to share with the team

Usability Testing



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?

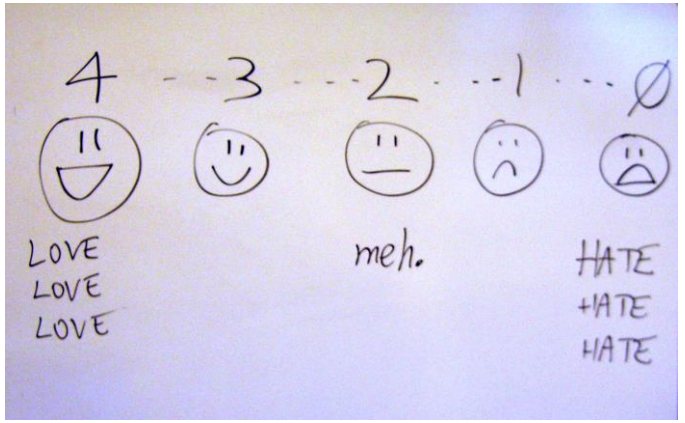
Observational test in a lab

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

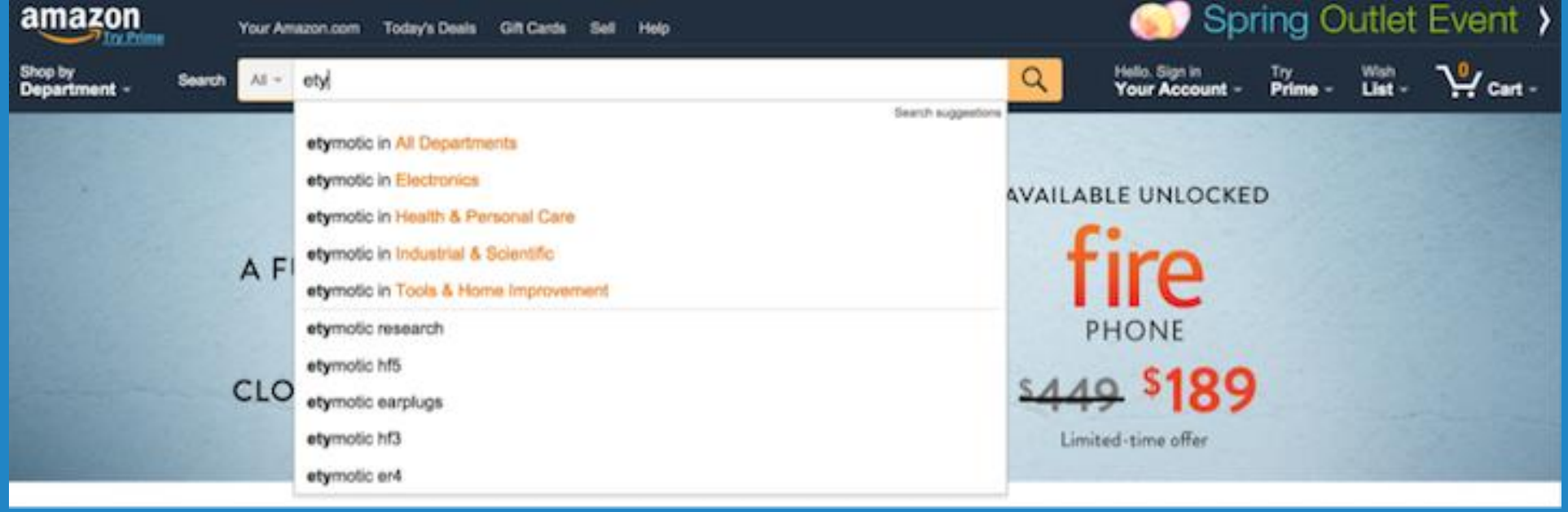
“Heuristics simply means guidelines. In user experience design, it is nearly impossible to define rigid rules. There is no fool-proof way to create experiences that are guaranteed to work. Instead, you can refer to principles to guide you in your design process, to help you evaluate your work before you test it with real users.”



https://www.interaction-design.org/literature/article/heuristic-evaluation-how-to-conduct-a-heuristic-evaluation

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/

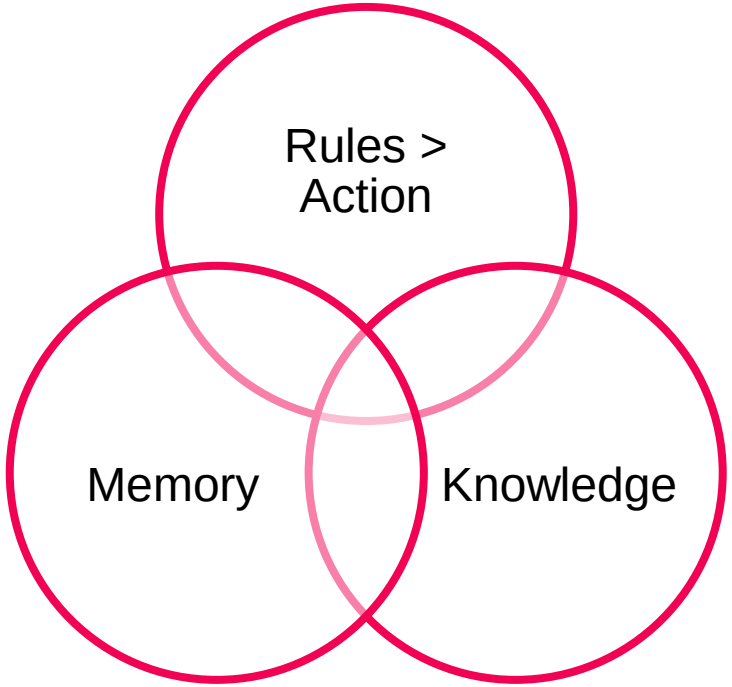
Heuristic evaluation

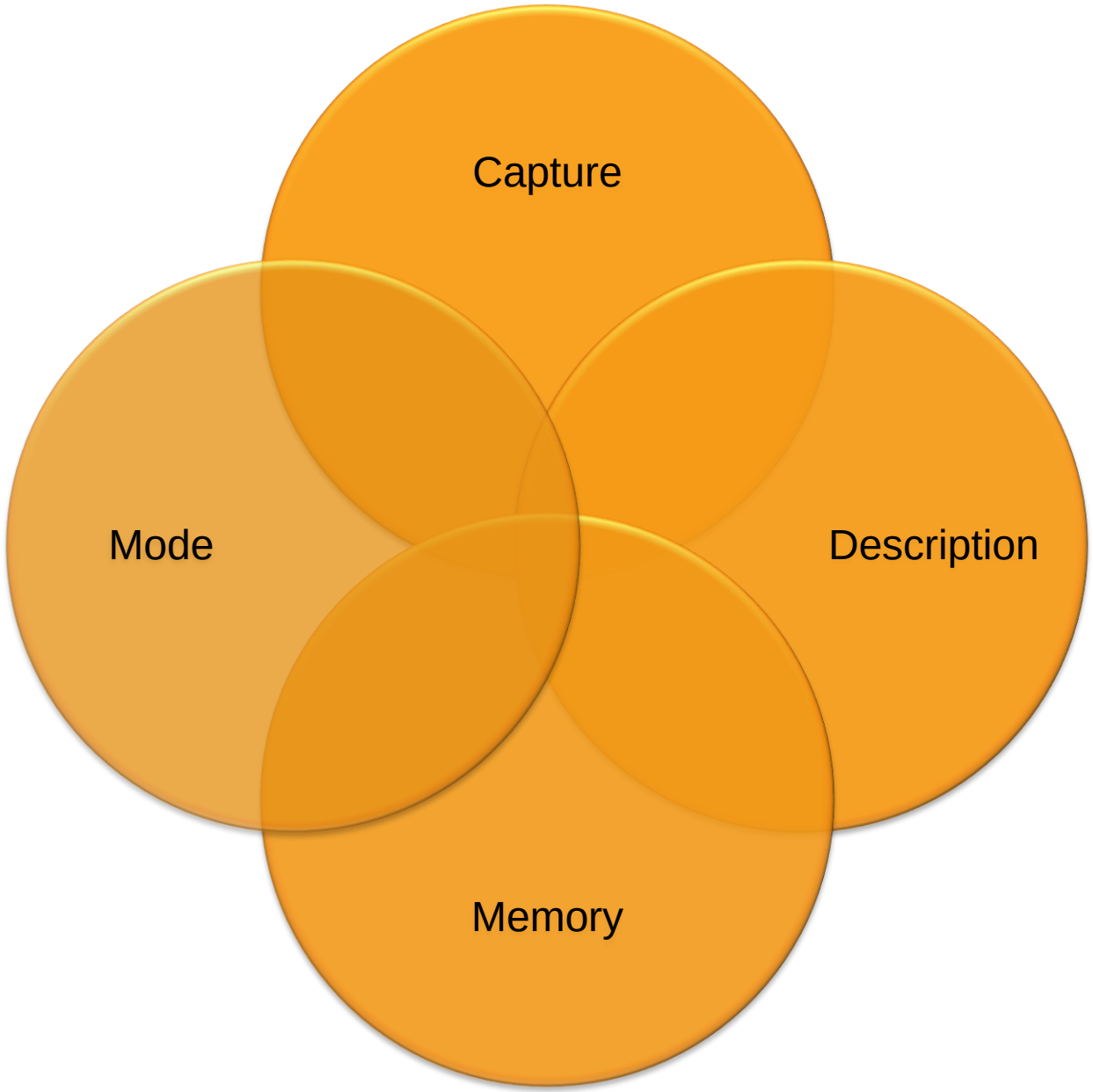
- Team member 1: Apply first five heuristic evaluation items
- Team member 2: Apply second five heuristic evaluation items

Café test

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

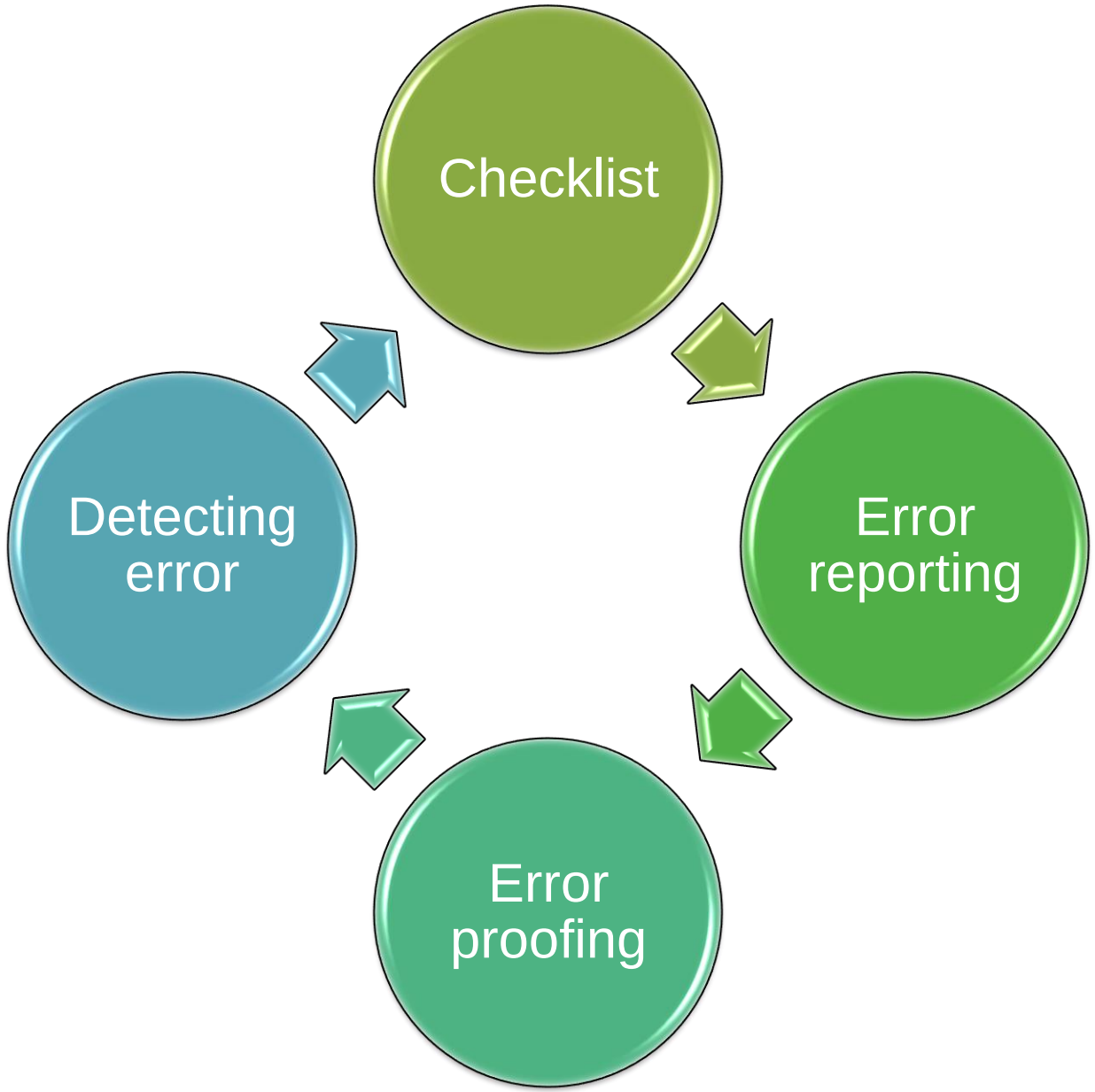
Slips vs. Mistakes

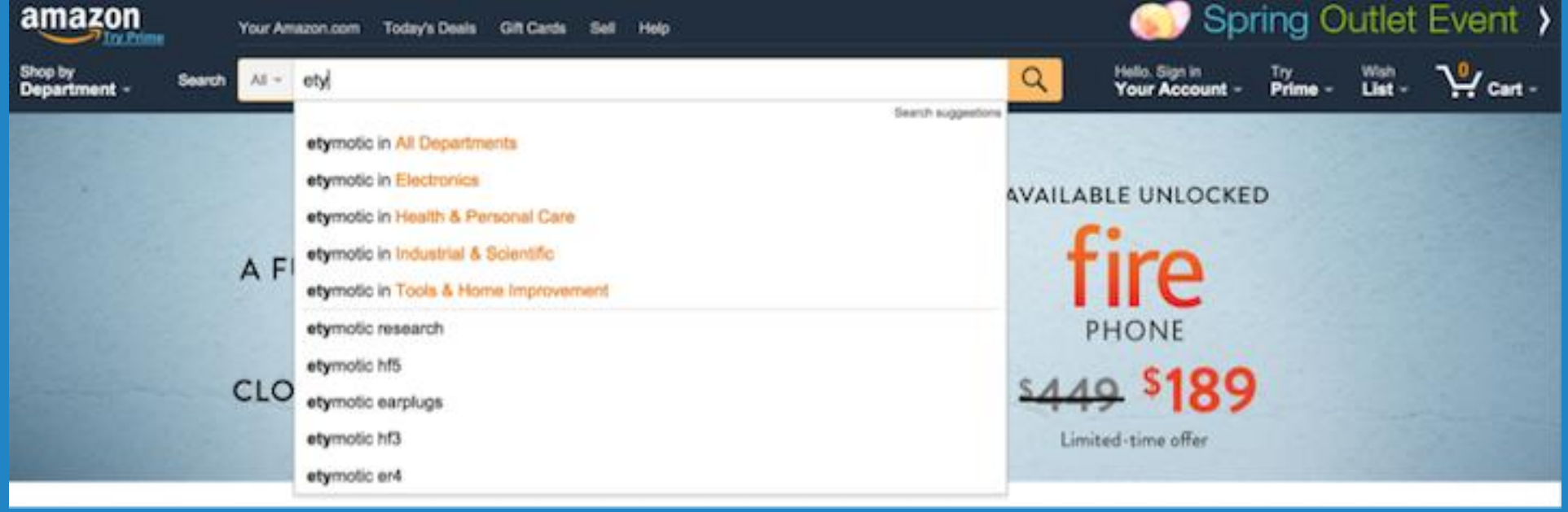




Tools

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