



## **Q: Why should storytelling in visualization be tailored to the audience?**



- A. To make all users interpret the data the same way
- B. To reduce the need for extra explanation
- C. To match the story's detail and visuals to user background
- D. To ensure charts display consistently everywhere
- E. To avoid confusion from colors or layouts



# CPSC 100

## Computational Thinking

### Intro to Human Computer Interaction

Instructor: Parsa Rajabi  
Department of Computer Science  
University of British Columbia



# Agenda

- Course Admin
- Learning Goals
- Human Computer Interaction
  - Introduction + Activity

# Course Admin



# Course Admin

- **PC Quiz 7**
  - Due Monday, March 31, 11:59pm
- **Lab 8 Visualization** (last lab! 🎉)
  - Due Friday, March 28, 11:59pm
- **Project Milestone 3** (*you should be ~40% done by now!*)
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# Learning Goals



# Learning Goals

After this **today's lecture**, you should be able to:

- Describe the **historical evolution** of HCI, highlighting pioneers like Douglas Engelbart and key innovations
- Describe the concept of **IoT** and give concrete examples (e.g., smart thermostats, wearable health devices).
- Distinguish between **AR** and **VR** technologies, and identify key examples (e.g., Google Glass, Meta Quest)
- Define and explain the **five key usability attributes**: learnability, efficiency, memorability, errors, and satisfaction.
- Explain why tailoring **data visualizations** to the audience's background is crucial in HCI.



# Human Computer Interaction

# Introduction to HCI

- Human-Computer Interaction (HCI) is the study and practice of **how people interact with computers** and design technologies that let humans engage with digital systems effectively and intuitively.

**Where did it  
start from?**

# Douglas Engelbart







# Douglas Engelbart (1925-2013)

- Founding father of HCI (one of)
- Augmentation Research Center
  - SRI International (Non-profit R&D org)
- Inventions
  - Computer mouse (1968)
  - NLS (oN-Line System - 1960s)



Douglas Engelbart: 2008



**What is  
challenging us  
now?**

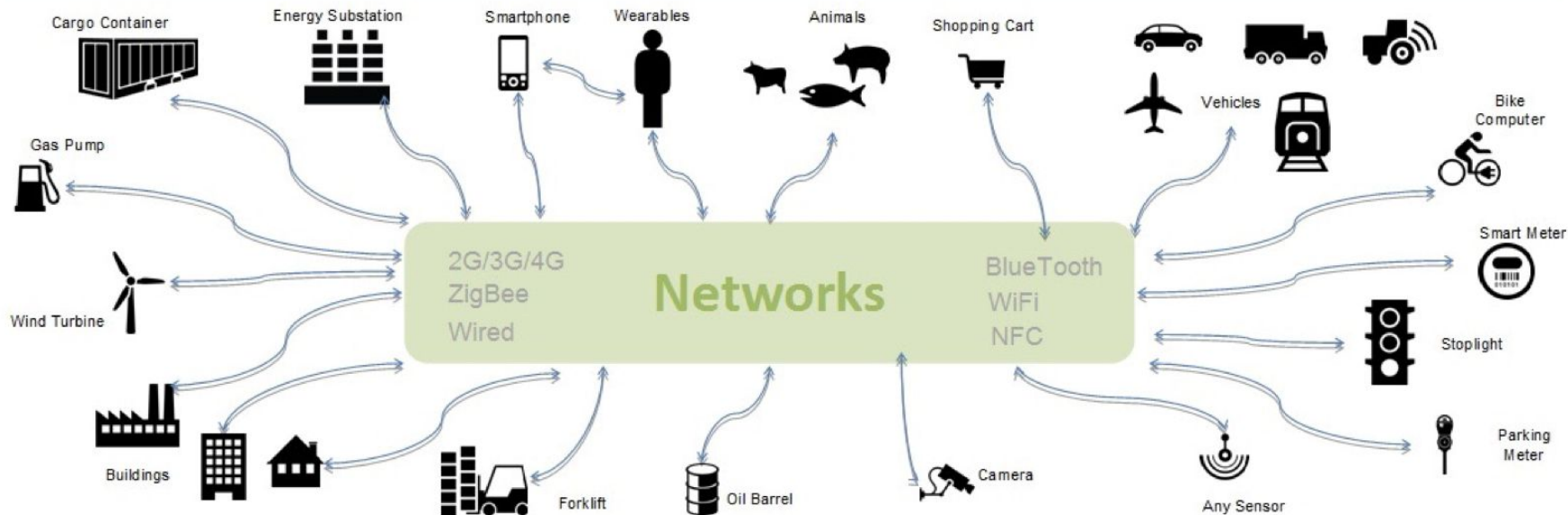




# IoT

# Internet of Things (IoT)

“Things” refer to any physical object with a device that has its **own IP address** and can **connect & send/receive** data via a **network**





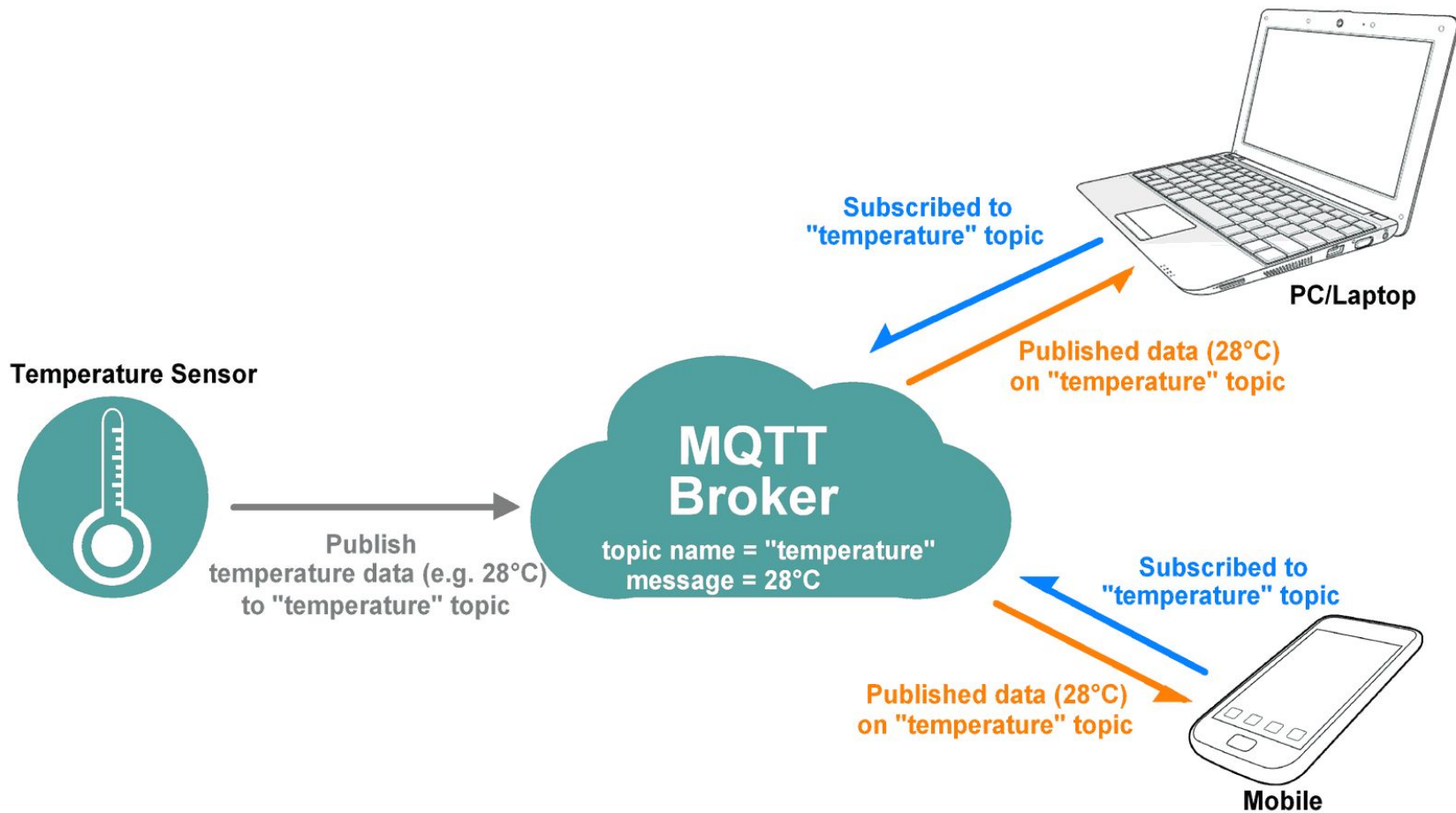
# Internet of Things (IoT)

**Everyday objects with connectivity, sensing abilities, and increased + embedded computing power.**

- **Connected home technology**
  - Thermostats, lighting, energy monitoring
- **Wearables**
  - Activity/fitness trackers
- **Medical/wellness devices**
  - Bathroom scales, blood pressure monitors

# What happens to IoT devices when there is **no internet?**







# AR + VR





# Augmented + Virtual Reality

## Virtual Reality (VR)

- Use of computers to simulate a real or imagined environment
- Three-dimensional (3-D) space



Meta Quest 2019-now

## Augmented Reality (AR)

- Uses an image of an actual place or things that adds digital information to it



Google Glass 2014-15



Introducing  
🍏 Vision Pro





# How do we *design* for the future?



# HCI: User Centered Design





# HCI: Usability

- Quality attribute
  - Assesses how easy user interfaces are to use
  - Improving ease-of-use during the design process
- Defined by 5 quality components



# HCI: Usability Components

1. Learnability
2. Efficiency
3. Memorability
4. Errors
5. Satisfaction





# HCI: Usability Components

- **Learnability:**
  - How easy is it to learn task the first time?



# HCI: Usability Components

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  - How easy is it to learn task the first time?
- **Efficiency:**
  - How quickly can tasks be done (post-learning)?



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- **Efficiency:**
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- **Memorability:**
  - How easy is it to re-establish proficiency after being away?



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  - How many errors do users make, how severe are these errors, and how easily can they recover from the errors?



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  - How pleasant is it to use the design?



# HCI: Usability Components

- **Learnability:**
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- **Satisfaction:**
  - How pleasant is it to use the design?



# Activity

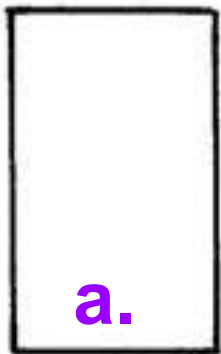




# Intro to HCI Activity

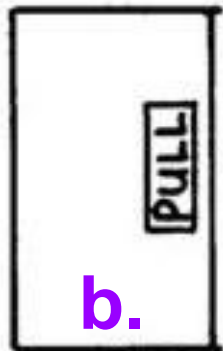
- **Follow the handout worksheet (on Canvas OR on paper)**
  1. Think of: a technological interaction from last week that irritated you.
  2. Draw/visualize it (to the best of your ability)
  3. Explain exactly HOW it failed for you. Depict activity, tasks, interactions.
  4. Doors!

PLAIN DOOR



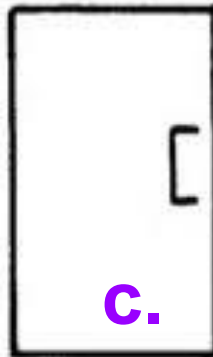
a.

LABELED DOOR



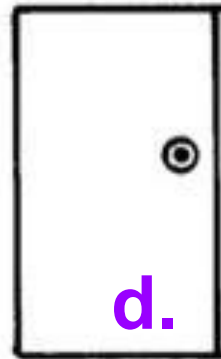
b.

HANDLE DOOR



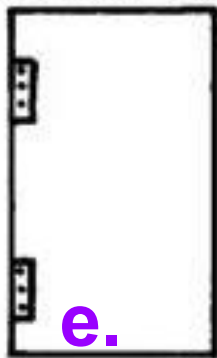
c.

KNOB DOOR



d.

HINGE DOOR



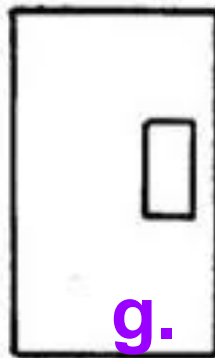
e.

BAR DOOR



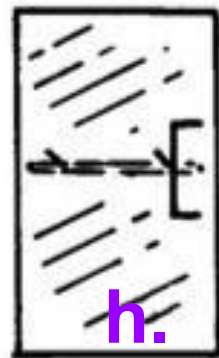
f.

PANEL DOOR



g.

GLASS DOOR



h.

## Q: How does this door work?

- A. Push to the left
- B. Push to the right
- C. Pull on the left
- D. Pull on the right
- E. Slide it along

PLAIN DOOR



- ☐ Push ☐ Left side
- ☐ Pull ☐ right side
- ☐ slide it along

## Q: How does this door work?

- A. Push to the left
- B. Push to the right
- C. Pull on the left
- D. Pull on the right
- E. Slide it along

HANDLE DOOR



- ☐ Push ☐ Left side
- ☐ Pull ☐ right side
- ☐ Slide it along



## Q: How does this door work?

- A. Push to the left
- B. Push to the right
- C. Pull on the left
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- E. Slide it along

BAR DOOR



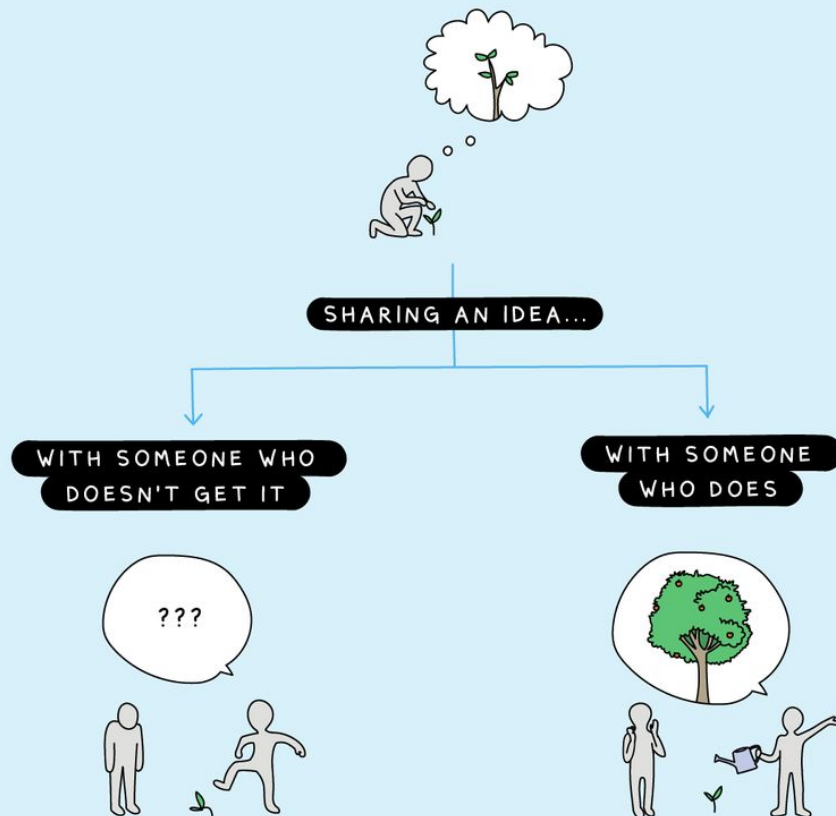
- ☐ Push ☐ Left side
- ☐ Pull ☐ right side
- ☐ Slide it along

# Wrap up



# Wrap Up

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# What was your main takeaway from today's session?

