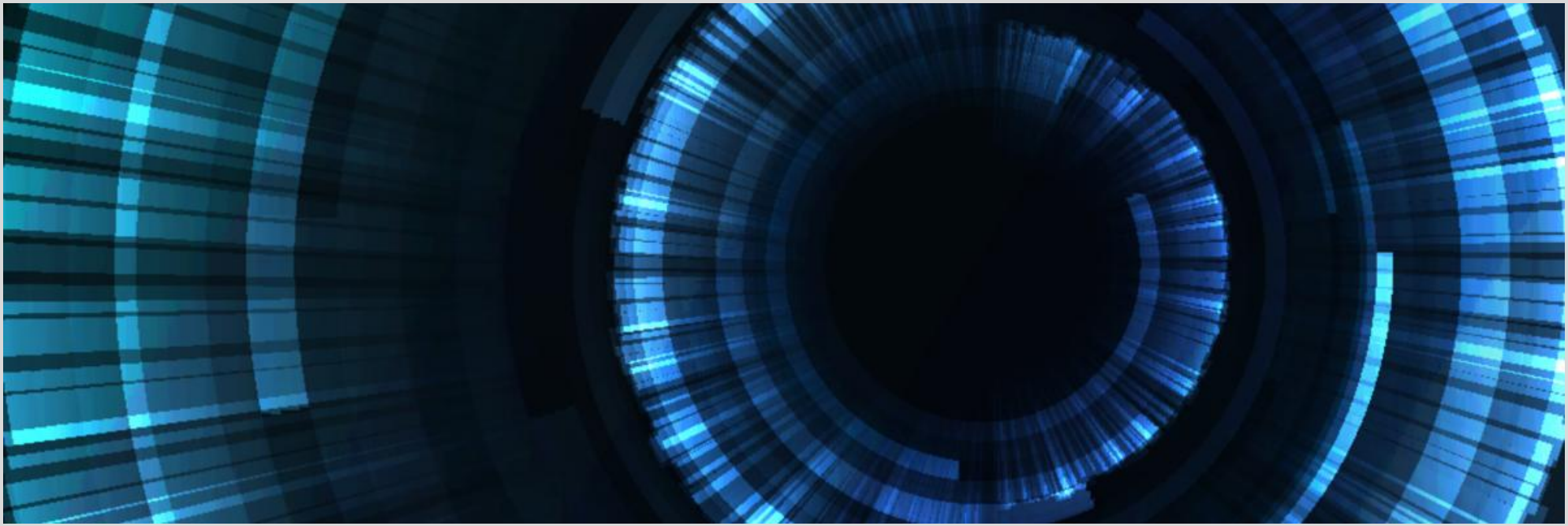
Human Computer Interaction



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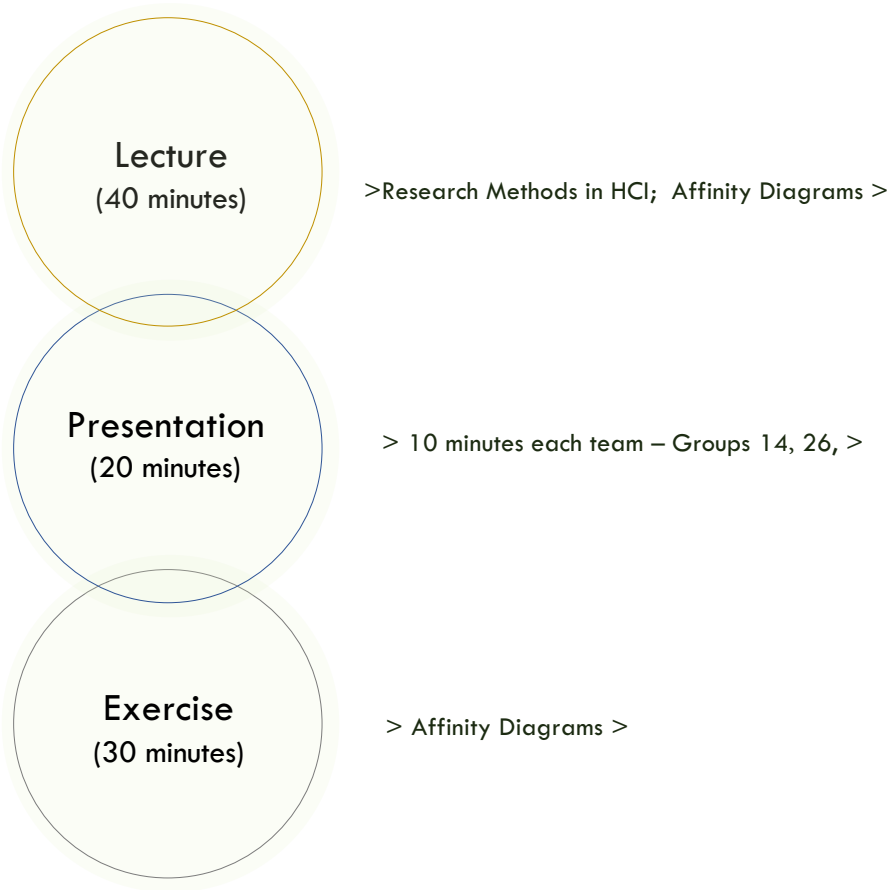
Agenda – 28th February



Schedule : February 28 & March 02 // March 07 & March 09

This week

6. Affinity Diagrams and 7. Storyboards

Activities/Assignments

Affinity Diagram & Storyboard (Due Mar 05)

- Create an Affinity Diagram from the Findings and Insights of the Interviews taken for the Final Project.
- Develop a key sequence from your scenarios into a visual story
  – Create ONE Storyboard of a key user journey

Next Week

8. Information Architecture and 9. Low Fidelity Prototype

Activities/Assignment

Information Architecture (Due Mar 12)

- Develop an an Information Architecture diagram for your prototype system
  – Create ONE workflow of a user journey

Schedule : March 09 // March 21, 23 // March 28, 30 // April 02, 03 // April 04, 05, 06

Lecture topics

Prototyping & Evaluation Techniques

Low Fidelity	(physical sketches)	09 March	(Due Mar 19)
Medium Fidelity	(digital wireframes)	14 March	(Due Mar 19)
High Fidelity	(realistic design elements)	21 March	(Due Apr 26)
Evaluation	(user feedback)	28 March	(Due Apr 02)

Lectures and Open Studio

Lectures: Mondays: March 14, 21, 28 Open Studio: Wednesdays: March 16, 23, 30

••••• SUBMIT HIGH-FIDELITY PROTOTYPE : 03 APRIL •••••

With a link to clickable prototype on Google Classroom

••• FINAL PROJECT PRESENTATION : 04, 05, 06 APRIL •••

With a link to clickable prototype on Google Classroom

All Assignments with Submission Dates

Affinity Diagram & Storyboard		-----	(Due Mar 05)
Information Architecture		-----	(Due Mar 12)
Interviews (Data Gathering + Analysis)		-----	(Due Mar 12)
Low Fidelity	(physical sketches)	-----	(Due Mar 19)
Medium Fidelity	(digital wireframes)	-----	(Due Mar 19)
High Fidelity	(realistic design elements)	-----	(Due Mar 26)
Evaluation	(user feedback)	-----	(Due Apr 02)

SUBMIT HIGH-FIDELITY PROTOTYPE : 03 APRIL

With a link to clickable prototype on Google Classroom

SUBMIT FINAL PROJECT PRESENTATION : 04 APRIL

With a link to clickable prototype on Google Classroom

Quiz Schedule

Quiz 1 ——— 17th January

Quiz 2 ——— 02nd February

Quiz 3 ——— 09th March

Quiz 4 ——— 23rd March

Quiz 5 ——— 30th March

Team Schedule

This Week

Monday 28th February

TEAMS - 14, 26

Wednesday 02nd March

TEAMS - 08, 36, 44

Next Week

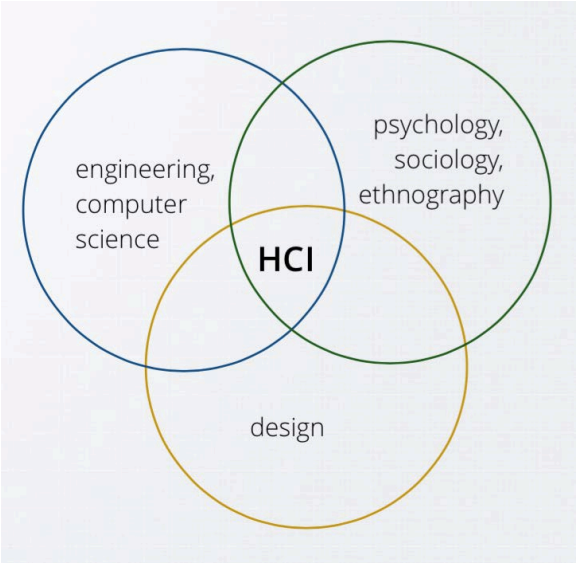
Monday 07th March

TEAMS - 5, 24, 30.... 03 (after class)

Wednesday 09th March

TEAMS - 16, 27, 40

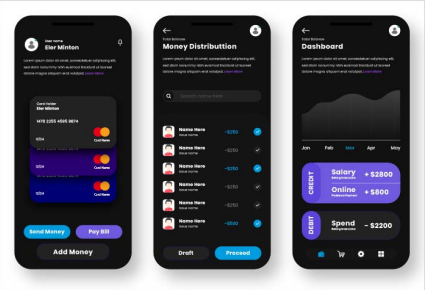
HCI: Multidisciplinary approach



- Computer science
  - Technology capabilities
- Cognitive psychology
  - Mental processes (information processing)
  - Memory, perception, problem solving, etc
- Social science & anthropology
  - Interactions between technology, work, and organization
  - Language, culture, artefacts

HCI: Multidisciplinary approach

- Industrial design
  - Size, shape, and other physical specifications of components (interface)
- Ergonomics
  - Physical capabilities when working with and around technology
- Digital Products
  - Digital capabilities and specifications when working with and around technology



Conceptualising Interaction

- Reality check where fuzzy ideas and assumptions about the benefits of the proposed product are scrutinized in terms of their feasibility:
  - How realistic is it to develop what they have suggested, and how desirable and useful will it actually be?
  - From a user experience (UX) perspective, it can lead to better clarity, forcing designers to explain how users will understand, learn about, and interact with the product.
  - When beginning a design project, it is important to be clear about the underlying assumptions and claims.

Conceptual Models Interface Metaphors Interaction Types

- Other sources of conceptual inspiration and knowledge that are used to inform design and guide research are **paradigms, visions, theories, models, and frameworks** (Carroll, 2003).

Paradigms Visions Theories Models Frameworks

What is a Paradigm

- A paradigm refers to a general approach that has been adopted by a community of researchers and designers for carrying out their work in terms of shared assumptions, concepts, values, and practices.

- A set of practices that a community has agreed
  - Questions to be asked and how they should be framed
  - Phenomena to be observed
  - How findings from studies are to be analyzed and interpreted (Kuhn, 1972)

HCI paradigms

In the 1980s, the prevailing paradigm in human-computer interaction was how to design user-centered applications for the desktop computer. Questions about what and how to design were framed in terms of specifying the requirements for a single user interacting with a screen-based interface. Task analytic and usability methods were developed based on an individual user's cognitive capabilities. Windows, Icons, Menus, and Pointers (WIMP) was used as a way of characterizing the core features of an interface for a single user.

This was later superseded by the graphical user interface (GUI). Now many interfaces have touch screens that users tap, press and hold, pinch, swipe, slide, and stretch.

A big influence on the paradigm shift that took place in HCI in the 1990s was Mark Weiser's (1991) vision of ubiquitous technology. He proposed that computers would become part of the environment, embedded in a variety of everyday objects, devices, and displays. He envisioned a world of serenity, comfort, and awareness, where people were kept perpetually informed of what was happening around them, what was going to happen, and what had just happened. Ubiquitous computing devices would enable a person to switch calmly and effortlessly between activities without having to figure out how to use a computer when performing their tasks.

The next big paradigm shift that took place in the 2000s was the emergence of Big Data and the Internet of Things (IoT). New and affordable sensor technologies enabled masses of data to be collected about people's health, well-being, and real-time changes happening in the environment (for example, air quality, traffic congestion, and business). Smart buildings were also built, where an assortment of sensors were embedded and experimented with in homes, hospitals, and other public buildings.

What is a theory?

- An analytical framework used to study and interpret phenomena

Numerous theories have been imported into human-computer interaction, providing a means of analyzing and predicting the performance of users carrying out tasks for specific types of computer interfaces and systems (Rogers, 2012).
These have been primarily **cognitive, social, affective,** and **organizational** in origin. For example, cognitive theories about human memory were used in the 1980s to determine the best ways of representing operations, given people's memory limitations.

What is a method?

- The approach to collecting & analyzing data

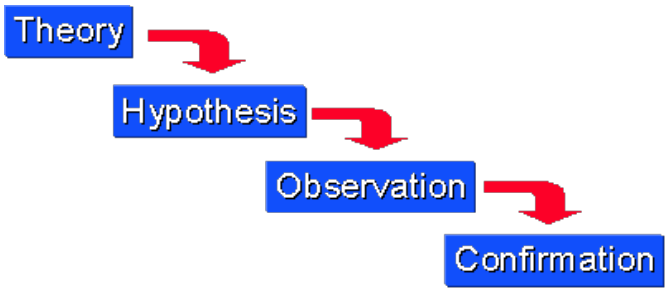
What are epistemological approaches?

- The theory of knowledge, especially with regard to its methods, validity, and scope, and the distinction between justified belief and opinion.

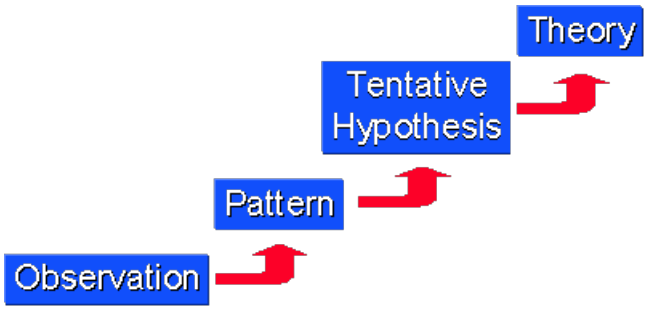
Positivism	- Deductive Reasoning (testing existing theory)	Objective	Value-free	Quantitative
Interpretivism	- Inductive Reasoning (developing a theory)	Subjective	Biased	Qualitative

https://www.youtube.com/watch?v=URWcOJWfSnI

Key differences

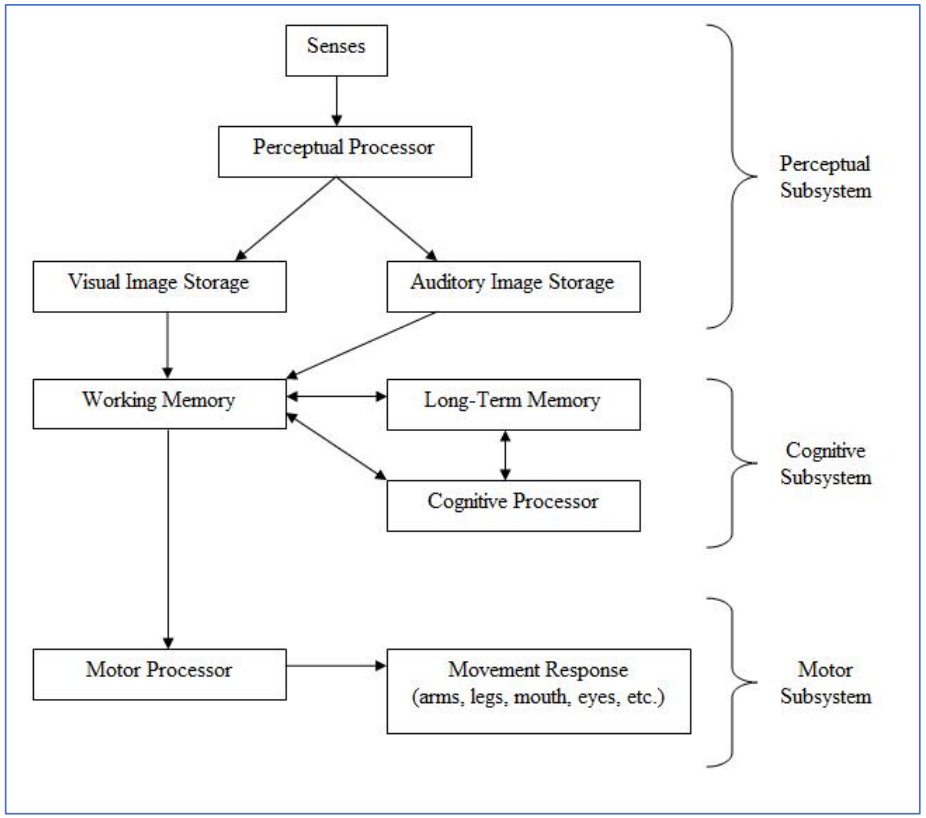


- Deduction - used to confirm or deny the truth value of statement (hypothesis)



- Induction - moves from particular observations to empirical (based on experiments and practical experience, not on ideas) generalisations and on to theories.

Classical HCI Mental Model



- Model human processor

Stuart K. Card, Thomas P. Moran, & Allen Newell (1983)

  - Mental processes are modelled in computational terms
    - as inputs, outputs and symbolic representation
  - Human cognition
    - three interacting systems: perceptual, motor and cognitive

(Conceptual) Models

- Mental representation of a device's operation

Don Norman, The Design of Everyday Things (1988)

  - Natural understanding of perceived use (*visibility*)
  - Link between what you want to do and what is perceived possible (*mapping*)
  - Perceived and actual properties of the thing (*affordance*)

Affinity Diagrams

Simple qualitative analysis

- Recurring patterns or themes
  - Emergent from data, dependent on observation framework if used
- Categorizing data
  - Categorization scheme may be emergent or pre-specified
- Looking for critical incidents
  - Helps to focus in on key events

Prof Vijay Bapat, IDC School of Design, IITB, Mumbai

Creating an Affinity Diagram

- Note interview or observational data on a post-it note
- Categorizing data
  - Cluster similar data from across all the interviews/observations
- Sort data into groups
  - Create themes

Sorting - Affinity Diagrams

- Team members physically sort the cards into groupings
  - **Record all notes or observations** on individual cards or sticky notes
  - **Look for patterns** and notes or observations that are related
  - **Create a group** for each pattern or theme
    - Give each theme or group a name
  - Look for **ideas that are related** to those you've already set aside and add them to that group (sub-themes)
  - **Look for other ideas** that are related to each other and establish new groups (main theme)
  - Create a statement of what you learned about each group

  - This process is repeated until all of the ideas in a group

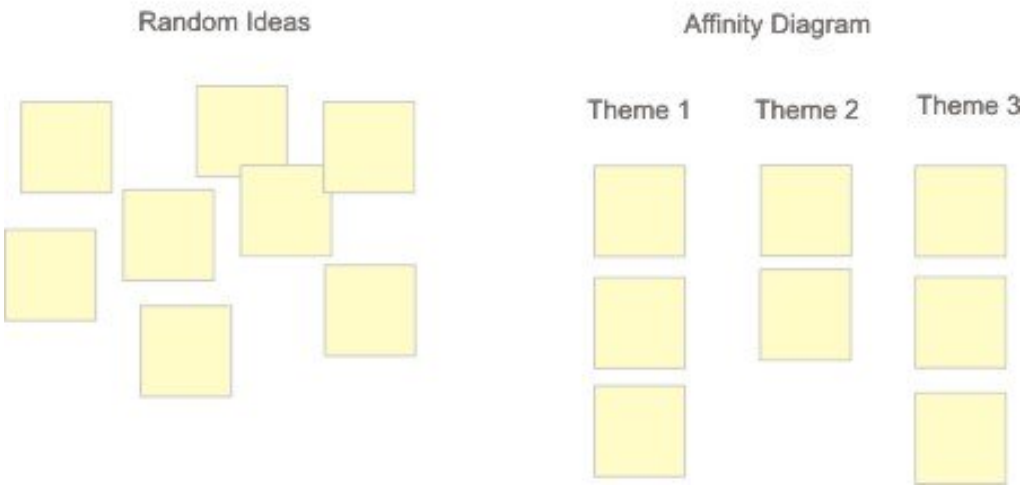
Sorting - Affinity Diagrams

- Ideally, all of the ideas can be sorted into related groups
- If there are some notes that don't fit into any of the groups, don't force them into groupings where they don't really belong, let them stand alone under their own headers
- Also, where a note seems to belong in two groups make a second note and put them in both

Sorting - Affinity Diagrams

1) Organize Ideas Into Common Themes

Figure 1



2) Describe the problem or insight

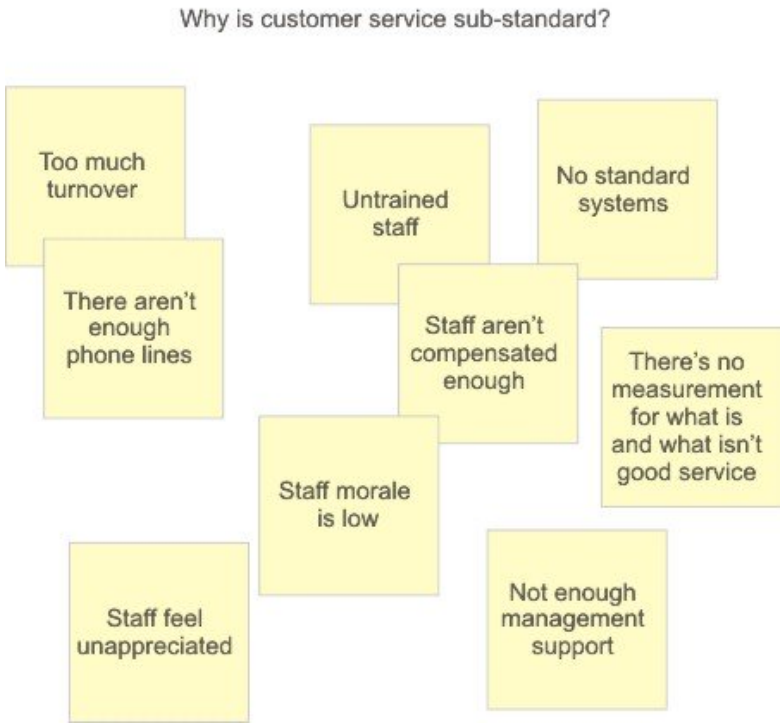
Figure 2

Customer Service is sub-standard.

Sorting - Affinity Diagrams

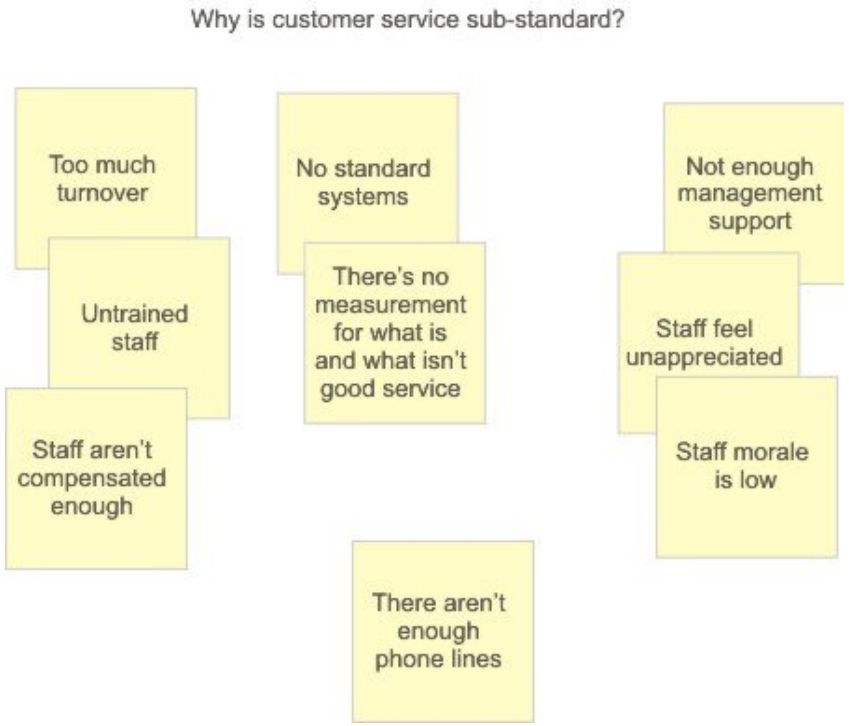
3) Sort ideas into natural themes

Figure 3



4) Create group consensus

Figure 4

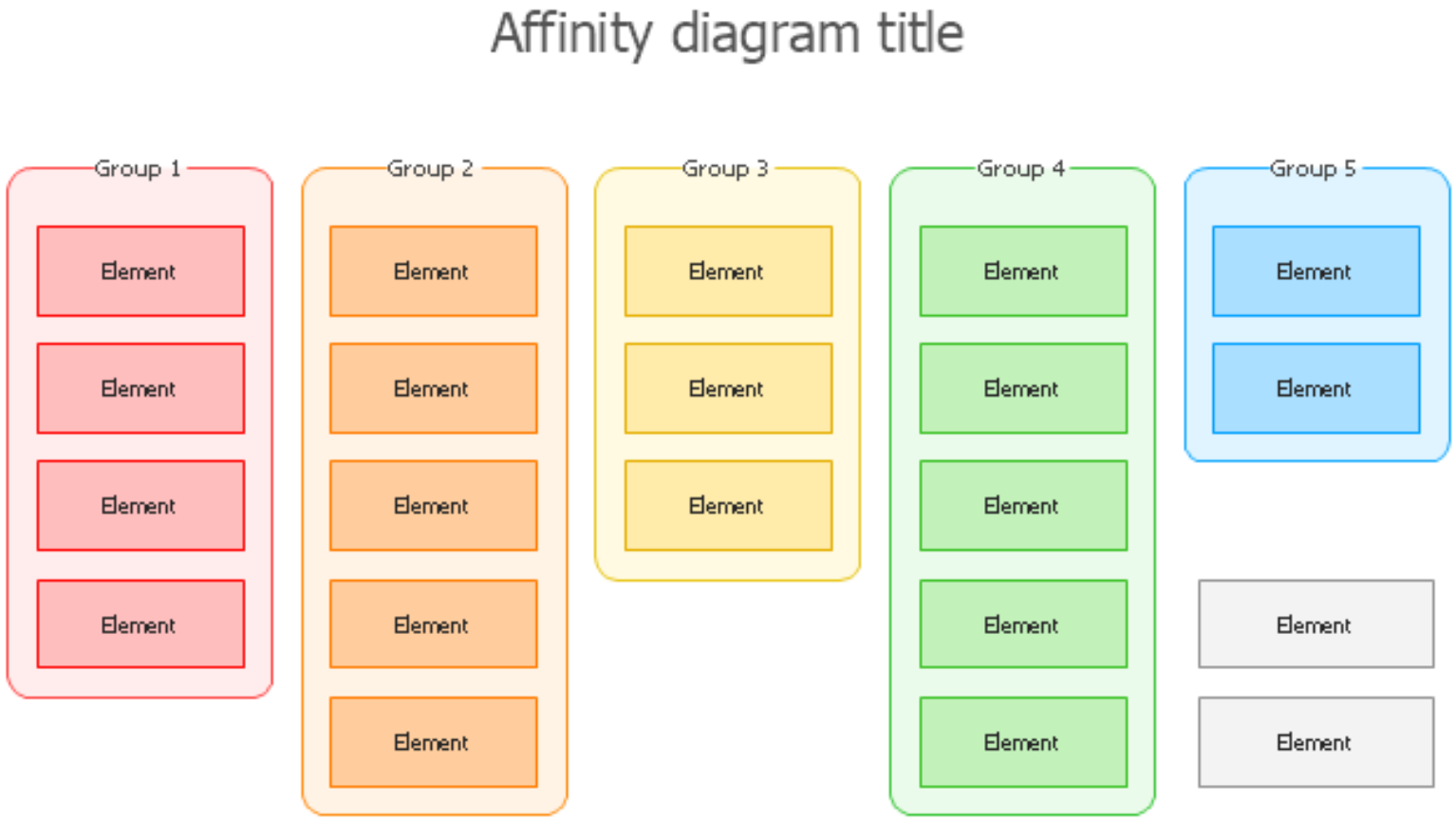


Sorting - Affinity Diagrams

5) Iterate …

Figure 5: Why is customer service sub-standard?

Sorting - Affinity Diagrams



Affinity Diagrams

Affinity Diagram examples

Examples – Affinity Diagram

GARDEN ELVES

Examples – Affinity Diagram

Sic Mundus Creatus Est

Affinity Diagram

Exercise

Steps to Creating an Affinity Diagram

- *Record all notes or observations on individual cards or sticky notes*
- *Look for patterns and notes or observations that are related*
- *Create a group for each pattern or theme*
- *Give each theme or group a name*

https://zacknaylor.medium.com/how-to-create-an-affinity-diagram-for-ux-research-cdc08489952d

Assignment 6

Submission Date: Saturday, 5th March 2022

Affinity Diagram:

GROUP PROJECT:

Objectives:

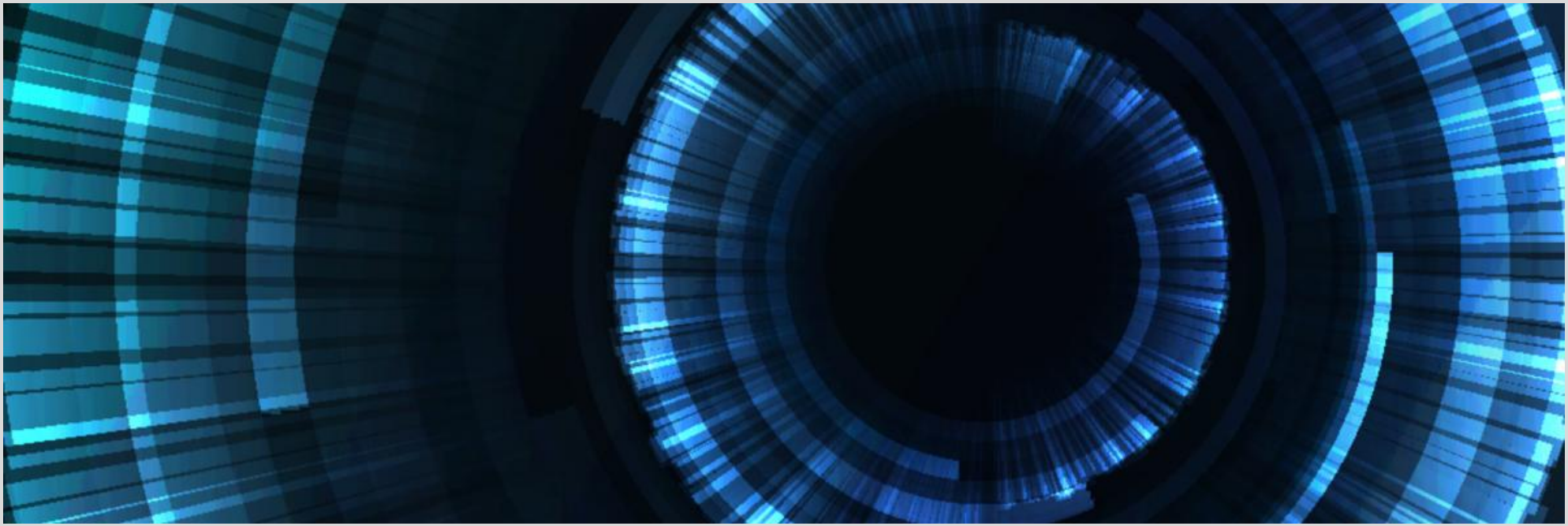
- Identify themes from your interviews of your Final Project
- Themes should be domain specific... themes should not be too broad
- Collect or collate and include the interviewee quotes that provide evidence for your analysis.

6. Affinity Diagram

1) Record all notes or observations on individual cards or sticky notes
2) Look for patterns and notes or observations that are related
3) Create a group for each pattern or theme
4) Give each theme or group or cluster a name
5) Prioritise your findings and discuss next steps in your design process (INFORMATION ARCHITECTURE)

Create a PDF

Human Computer Interaction



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HUMAN CENTERED DESIGN