CONTEXTUAL INQUIRY

CS 130

Creative Software Architectures for Collaborative Projects

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Content adapted from Essentials of Software Engineering 3rd edition by Tsui, Karam, Bernal
Jones and Bartlett Learning

THE ORIGINS OF DESIGN

ORIGINS OF "DESIGN"

ROOTED IN THE MILITARY-INDUSTRIAL COMPLEX

- How could innovations be systematically managed?
  - change from lone inventors shouting "Eureka!"
  - to a process by which technological breakthroughs could be systematically created

ORIGINS OF "DESIGN"

1920'S

- A development process model for creating Royal Navy battleships

[How do you design? Dubberly]

ORIGINS OF "DESIGN"

WORLD WAR II AND COLD WAR

- Attempts to out-innovate Germany and Japan resulted in management processes for projects like
  - Enigma
  - The Manhattan Project
- This became the design-methods movement (1962-1972)
  - Attempted to systematize and rationalize the design process
  - Turn design into a science by making it repeatable

[How do you design? Dubberly]

ORIGINS OF "DESIGN"

BUSINESS PROCESS DESIGN

- 1950's Edward Demming founded the quality management process
  - Eventually became Total Quality Management which swept japan in the 1980's
  - Total Quality Leadership which swept the military in the 1990's
- ISO standards
- Six-sigma
- Lean Management

[How do you design? Dubberly]

ORIGINS OF "DESIGN"

SOFTWARE

- 1975 Fred Brooks writes "The Mythical Man Month" as an answer to the IBM chairman's question about "What is programming so hard to manage?"
- Led to
  - the Waterfall Method
  - Agile
  - Kanban

[How do you design? Dubberly]

WHAT IS DESIGN?

WHAT IS DESIGN?

ACHIEVING GOALS WITHIN CONSTRAINTS

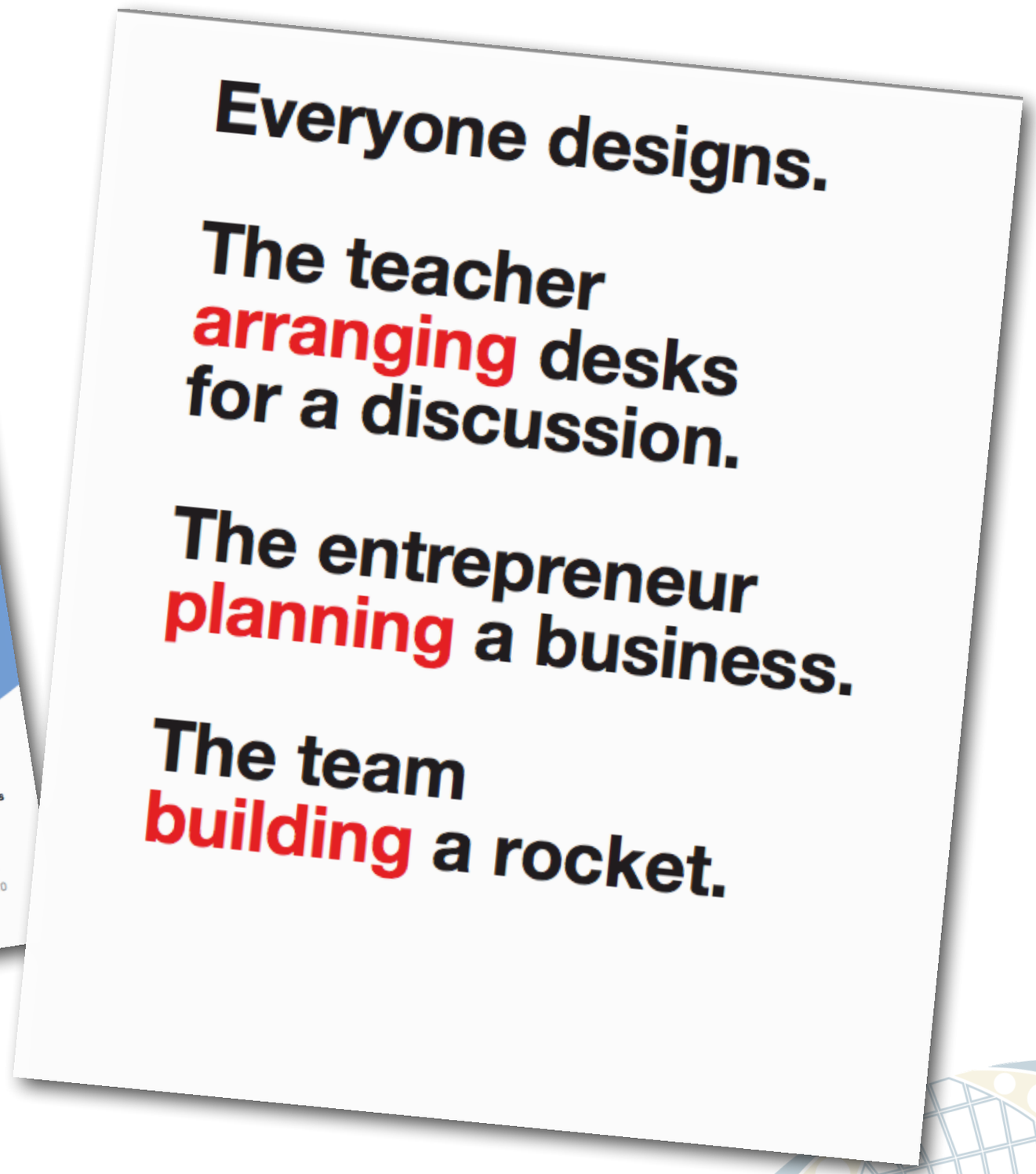
- goals
  - who is it for?
  - why do they want it?
  - what is the designer trying to achieve?
- constraints
  - materials, platforms
- trade-offs

GOLDEN RULE OF DESIGN

UNDERSTAND YOUR MATERIALS

- For Human-Computer Interactions
  - understand computers
    - limitations, capacities, tools, platforms
  - understand people
    - psychology, social
    - expect human error
- understand the interaction between them

HOW DO YOU DESIGN?



HOW DO YOU DESIGN?

Their results differ.

So do their goals.
So do the scales of their projects
and the media they use.

Even their actions
appear quite different.

What's similar
is that they are designing.

What's similar
are the processes
they follow.

Our processes
determine the quality
of our products.

If we wish to improve our products,
we must improve our processes;
we must continually redesign
not just our products
but also the way we design.

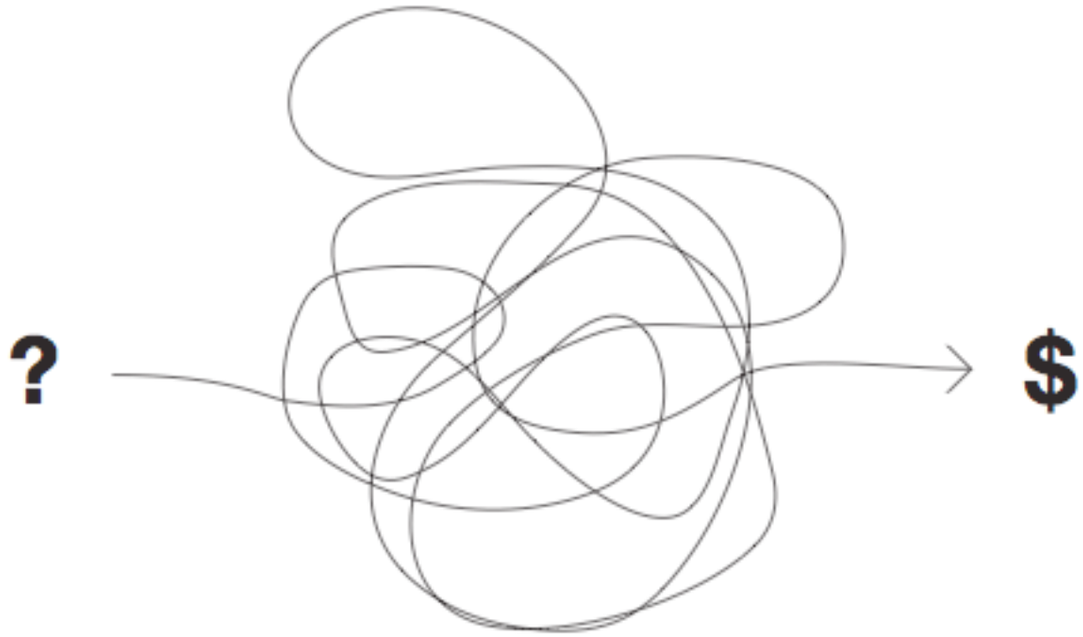
That's why we study the design process.

To know what we do
and how we do it.

To understand it
and improve it.

To become better designers.

DESIGN PROCESS DIAGRAMS



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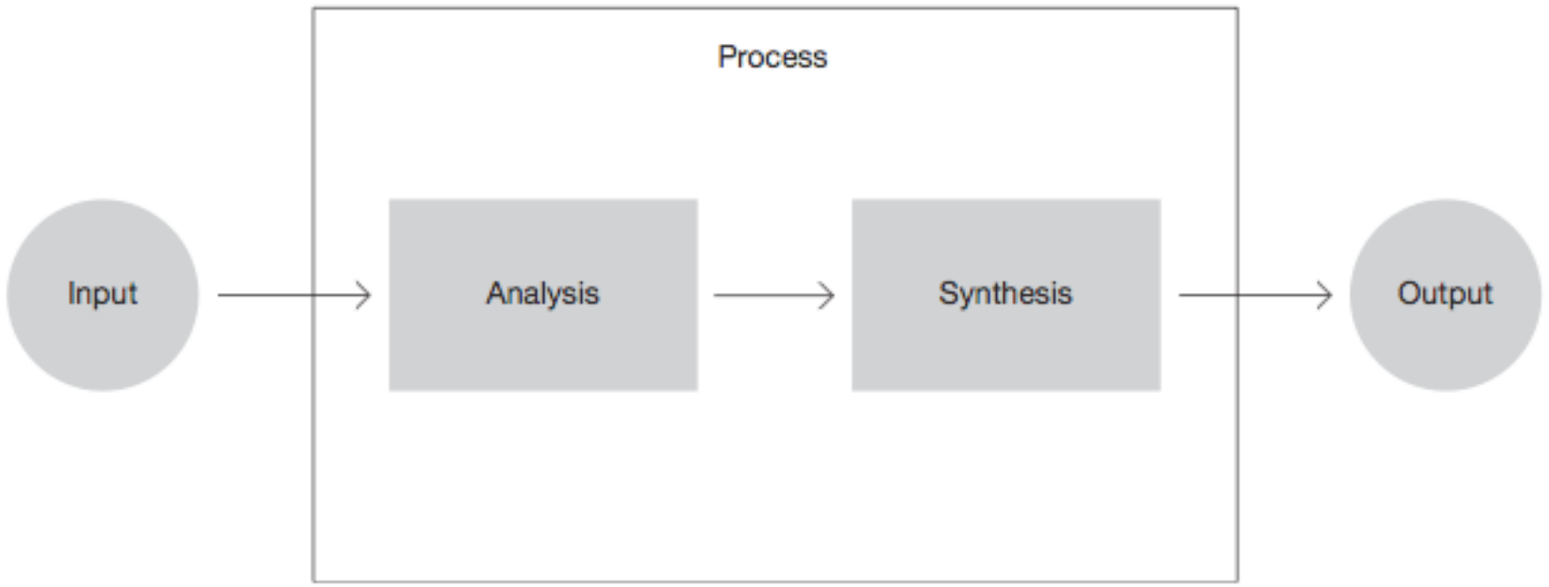

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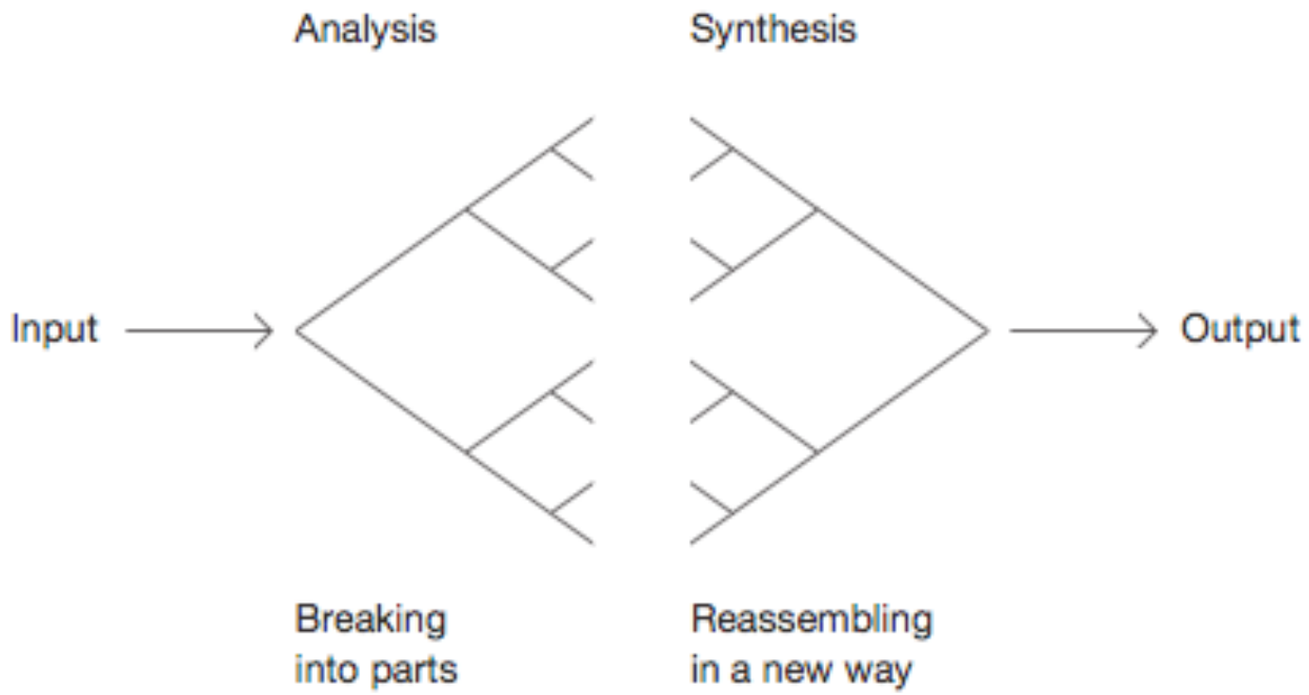

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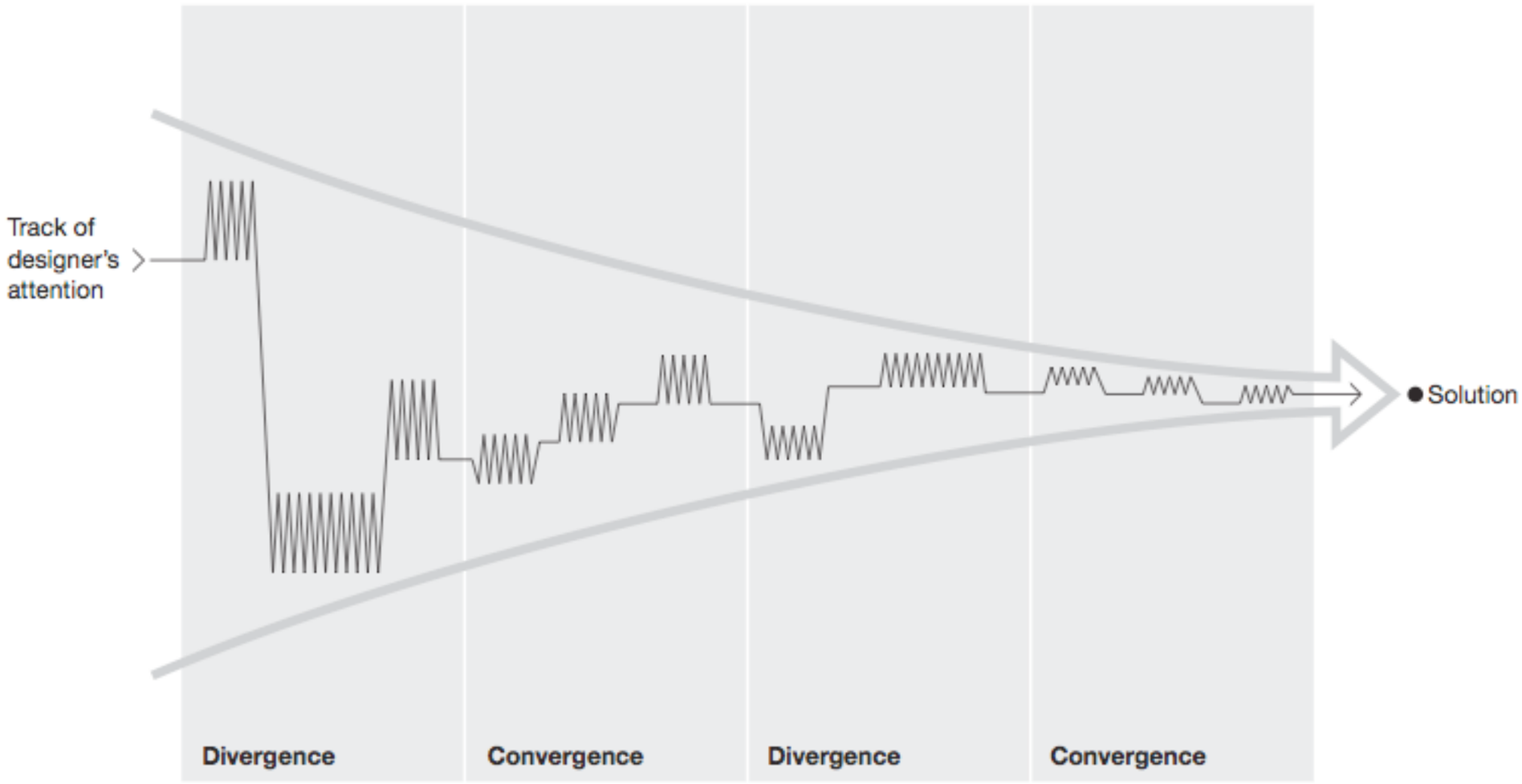
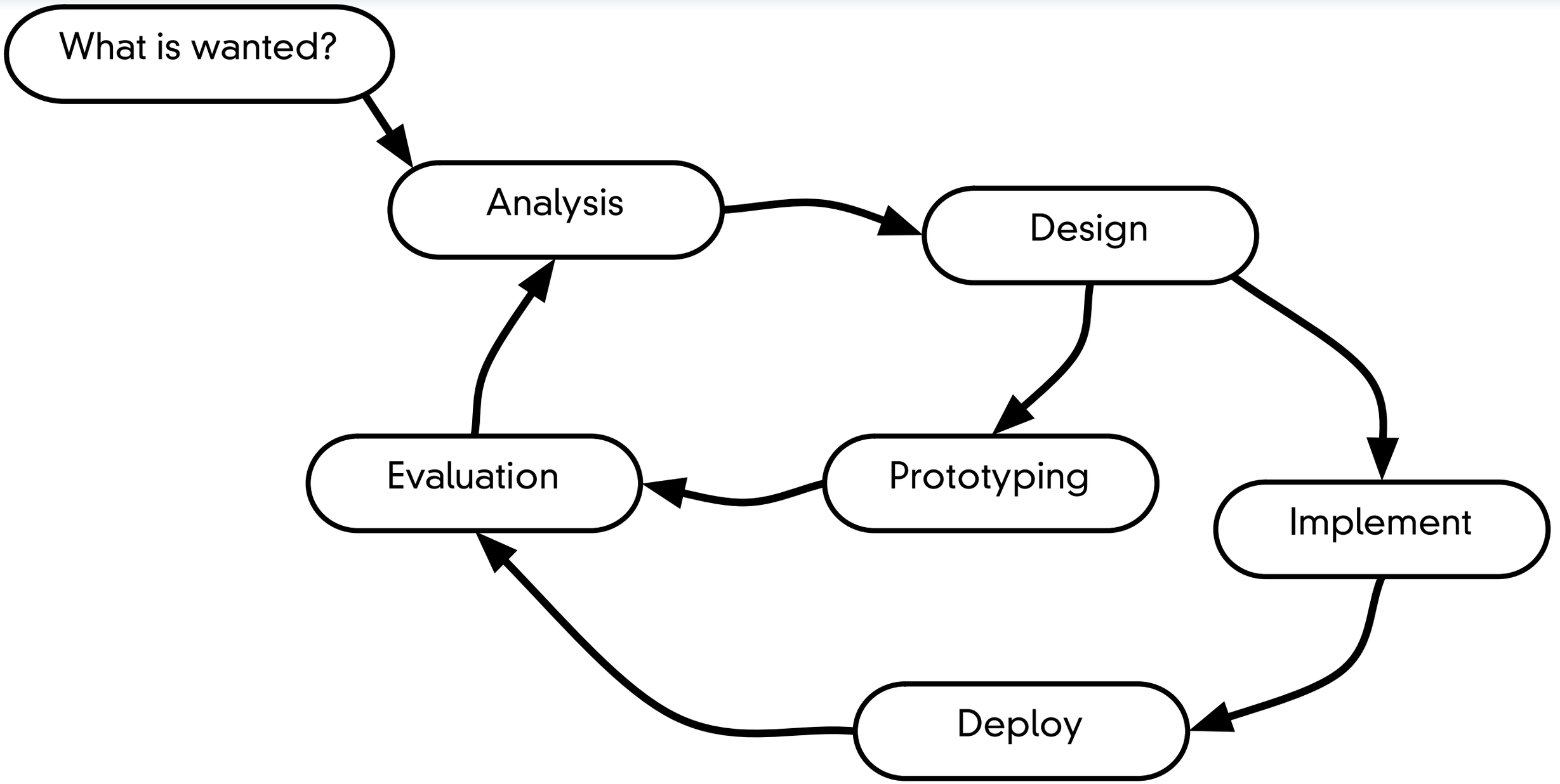


DESIGN PROCESS



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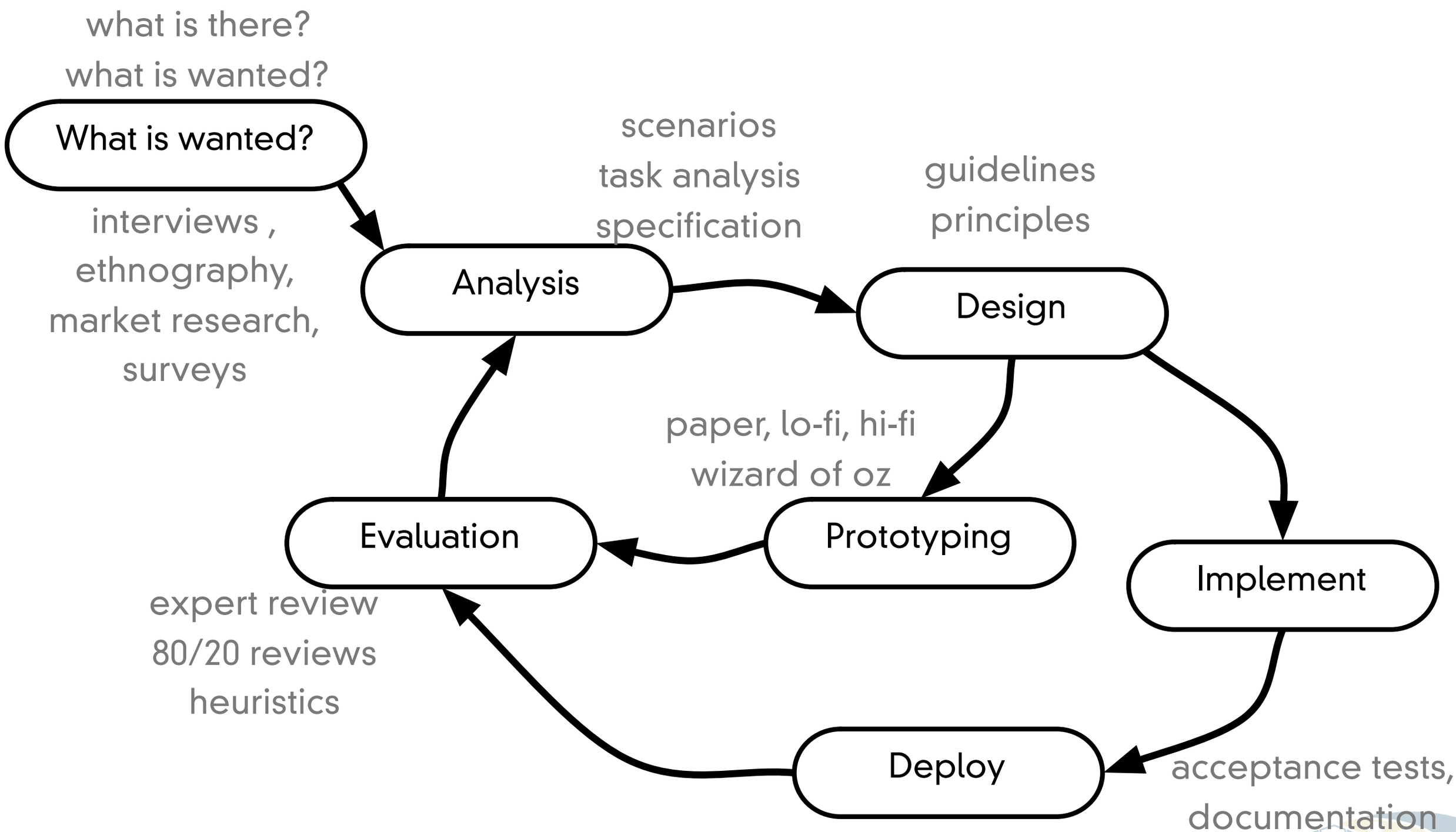
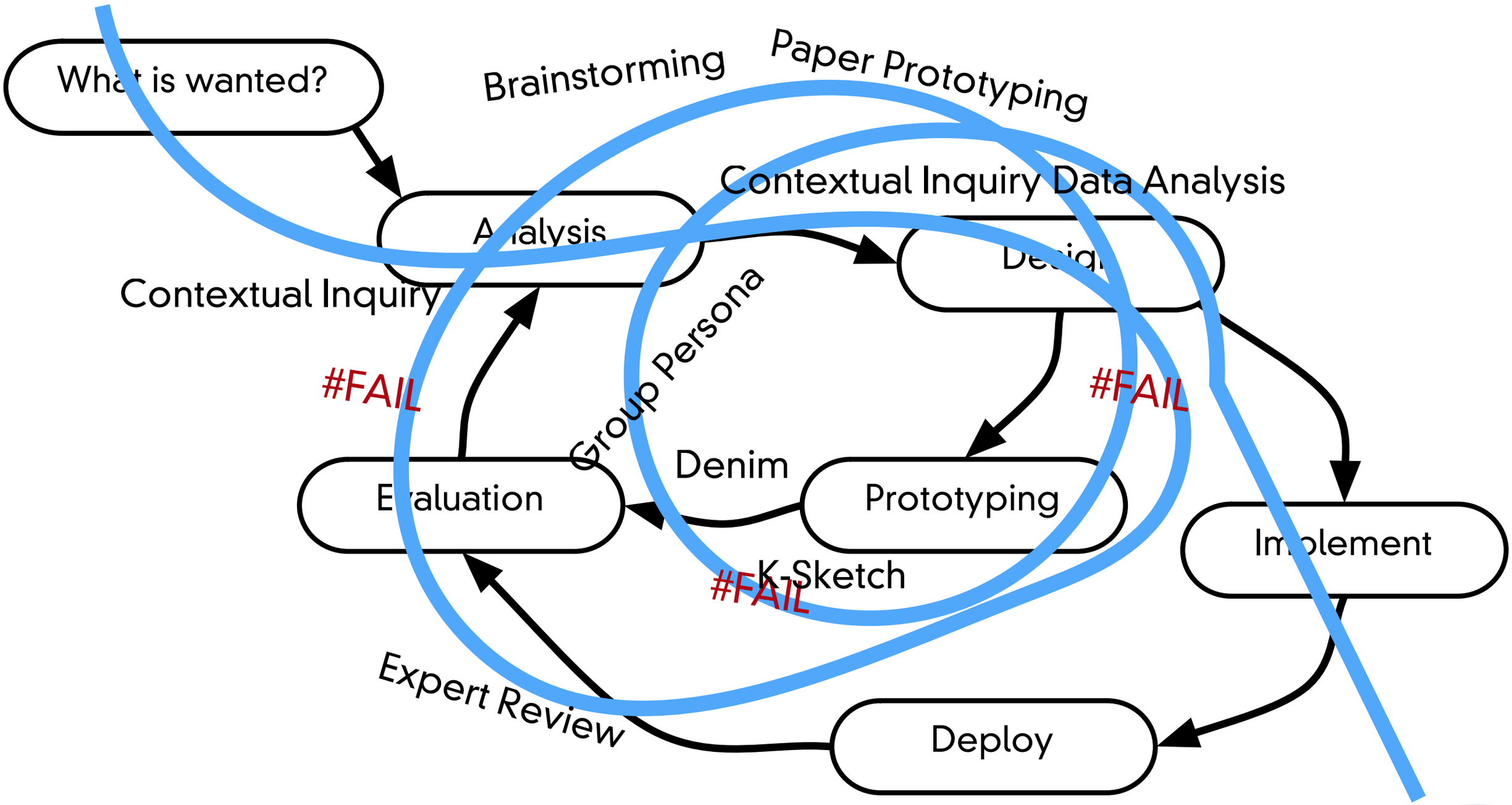


STEPS

- requirements
  - what is there and what is wanted …
- analysis
  - ordering and understanding
- design
  - what to do and how to decide
- iteration and prototyping
  - getting it right … and finding what is really needed!
- implementation and deployment
  - making it and getting it out there

DESIGN PROCESS



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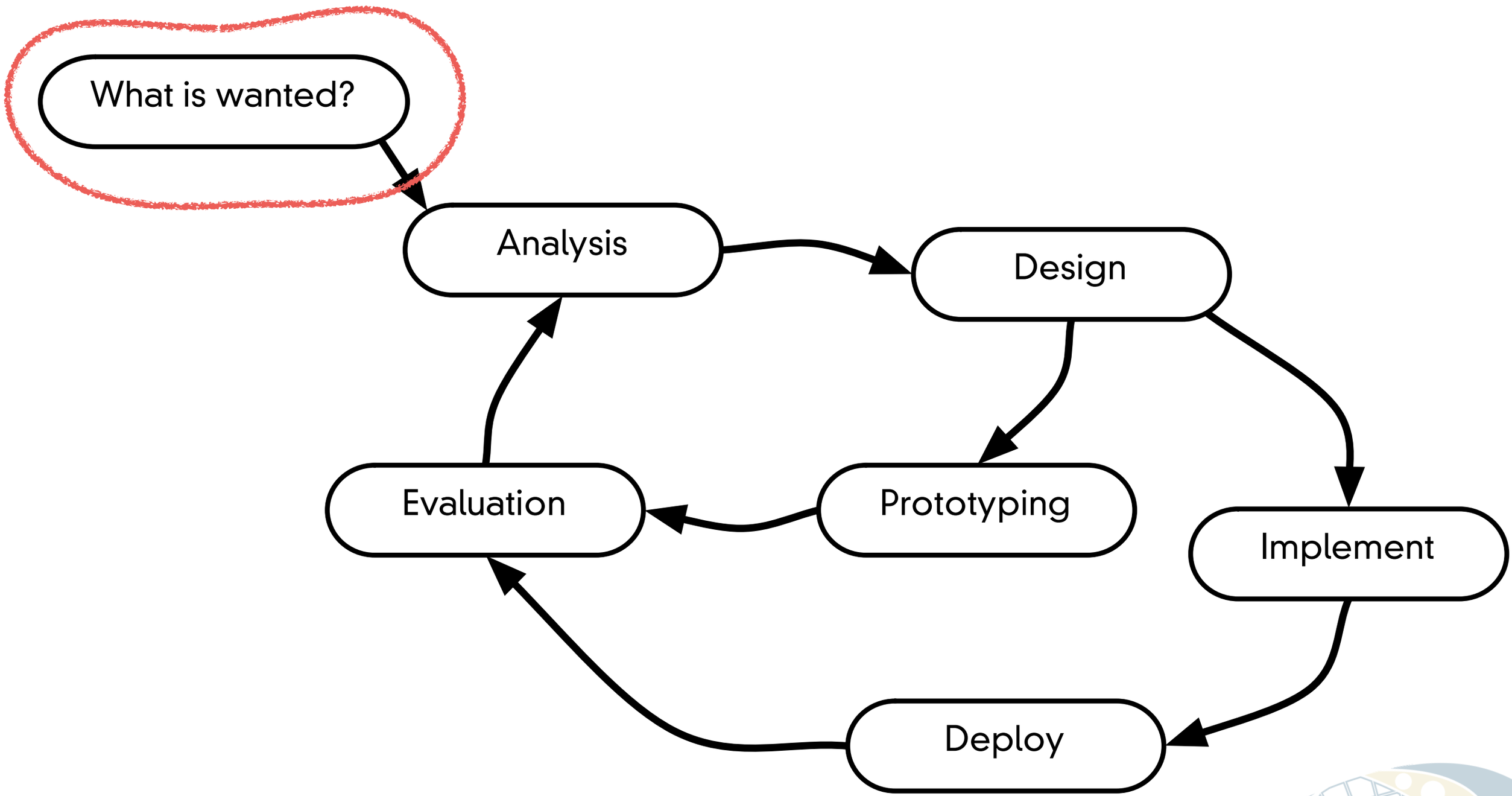


WHAT IS WANTED

WHAT IS WANTED

REQUIREMENT ENGINEERING

- It can take two distinct flavors
  - a Human-Computer Interaction “Ethnographic Style”
    - Go out and discover the requirements
      - Ask, Look, Learn, Try
  - a Software Engineering “Management Style”
    - list requirements, get key people to answer questions for requirements, interview executives

IDEO METHODS

PRINCIPLES OF USER ENGAGEMENT

- User-centered
  - Allow people who are going to be using the product a significant role in developing it
- Recognize that as a designer
  - You have skills and talents that you can bring
  - But you don’t understand the context without doing work

IDEO METHODS

METHODOLOGICAL CATEGORIES

- Learn: Analyze Information you've collected to identify patterns and insights
- Look: Observe people to discover what they do rather than what they say they do
- Ask: Enlist people's participation to elicit information relevant to your project
- Try: Create simulations to help empathize with people and to evaluated proposed designs

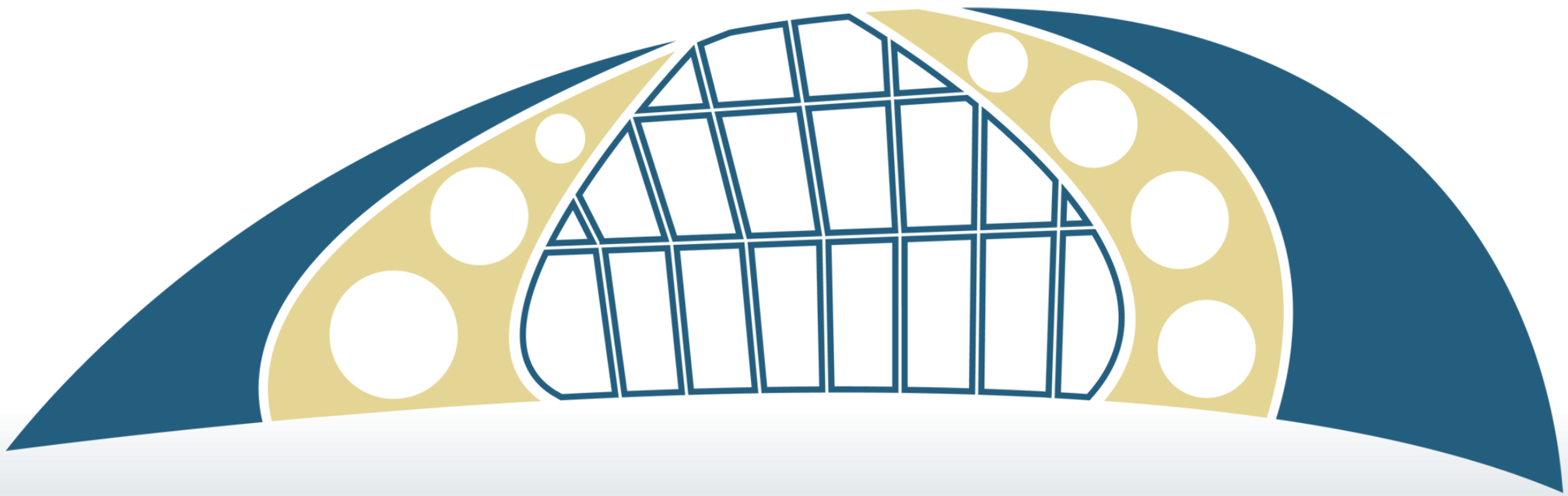
IDEO METHODS

RESPECT YOUR PARTICIPANTS

- Methods depend on other people (strangers?)
  - sharing time
  - sharing thoughts
  - sharing feelings
- Safeguard their
  - health
  - safety
  - privacy
  - dignity

INTERACTION GUIDELINES

- Approach people with courtesy
- Identify yourself, your intent, and what you are looking for
- Offer to compensate participants
- Describe how your information will be used and why it's valuable
- Get permission to use information, photos and videos
- Keep all information gathered confidential
- Let people know they can decline or stop participation at any time
- Maintain a relaxed, nonjudgemental and enjoyable atmosphere



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