The diagram illustrates a cycle of steps in the development process:

1. **Understand your users**
2. **Translate needs into functionalities**
3. **Create design ideas**
4. **Prototype design**
5. **Test & Evaluate**
6. **Build final version**

The cycle begins with understanding the users and translating their needs into functionalities. This leads to the creation of design ideas, which are then prototyped. After testing and evaluating the prototype, a final version is built.
Translating Needs Into Functionalities

- Make data actionable
  - Adjust personas
  - Affinity diagrams
  - Breakdowns
  - Cultural model
  - Artifact models

- Identify right time and place
  - Physical model
  - Sequence model
  - Flow model

- Turn problems into tasks
  - Thinking
  - Memory
  - Attention
  - Motivations
  - Habitation
Translating Needs Into Functionalities

Turn problems into tasks

Thinking
- Memory
- Attention
- Motivations
- Habituation

Dual process theory

Mind cognitive load
Anticipate mistakes
Hard to read = hard to do
In group favoritism
System 1

Can do:
- Roughly assess distance
- Localize the source of a specific sound
- Complete famous expressions
- Do 2+2 sort of calculations
- Well-automated activities in easy conditions (drive a car on an empty road)
- Read and understand simple sentences

System 2

Can do:
- Roughly assess distance
- Point your attention where needed
- Dig into your memory
- Determine the desired behaviour in a social setting
- Tedious cognitive tasks
- Activities in unusual conditions
- Complex logical reasoning

Translating Needs Into Functionalities
Translating Needs Into Functionalities

The heuristic-analytic theory of reasoning, Jonathan St. B. T. Evans, 1975

The elaboration likelihood model, Richard E. Petty, John Cacioppo, 1986

The intuition-reasoning theory, Daniel Kahneman, 2003

The reflective and impulsive determinants theory, Fritz Strack, Roland Deutsch, 2004
Translating Needs Into Functionalities

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Translating Needs Into Functionalities

Turn problems into tasks

Thinking
- Memory
- Attention
- Motivations
- Habituation

Dual process theory

Cognitive load

Anticipate mistakes (easy to undo, avoid error-prompt tasks)

Perception biases (Hard to read = hard to do; in-group-out-group bias;)

Expectations determine perception
Translating Needs Into Functionalities

Cognitive load

Steps
- Least amount of work possible
- Homogeneous
- People can’t multitask!
- Break error-prone tasks into smaller steps.

Choices
- Clear differences
- Limit number of choices
- Support with information

Information
- Progressive disclosure
- Provide examples
- Make it easy to scan
- Presentation matters (hard to read = hard to do)
Translating Needs Into Functionalities

Turn problems into tasks

Thinking
- Memory
- Attention
- Motivations
- Habituation

Dual process theory
- Cognitive load
- Anticipate mistakes
  (should be easy to undo, avoid error-prompt tasks)
Translating Needs Into Functionalities

**Turn problems into tasks**

**Thinking**
- Memory
- Attention
- Motivations
- Habituation

**Dual process theory**

**Cognitive load**

**Anticipate mistakes**
(should be easy to undo, avoid error-prompt tasks)

**Perception biases**
(expectations determine perception)
Translating Needs Into Functionalities

Turn problems into tasks

Thinking
- Memory
- Attention
- Motivations
- Habituation

Dual process theory

Cognitive load

Anticipate mistakes
(should be easy to undo, avoid error-prompt tasks)

Perception biases
(expectations determine perception)

Age, socioeconomic status, cognitive abilities influence decision making
Translating Needs Into Functionalities

Turn problems into tasks

Perception - storage - retrieval

Thinking
Memory
Attention
Motivations
Habituation
Translating Needs Into Functionalities

- Turn problems into tasks
- Perception - storage - retrieval
- Recognition rather than recall
Translating Needs Into Functionalities

- Turn problems into tasks
- Perception - storage - retrieval
  Recognition rather than recall
  People can remember ~3-4 items at a time.

Thinking
Memory
Attention
Motivations
Habituation
Translating Needs Into Functionalities

- Turn problems into tasks
- Perception - storage - retrieval
- Recognition rather than recall
- People can remember ~3-4 items at a time.
- Zeigarnik effect - interrupted tasks are easier to remember (depends on the importance of the interrupted task for the person)

Thinking
Memory
Attention
Motivations
Habituation
Translating Needs Into Functionalities

Turn problems into tasks

Focused attention is limited and selective

Thinking
Memory
Attention
Motivations
Habituation
Translating Needs Into Functionalities

- Turn problems into tasks
- Focused attention is limited and selective
- Inattentional blindness

Thinking
Memory
Attention
Motivations
Habituation
Translating Needs Into Functionalities

Turn problems into tasks

Thinking
Memory
Attention
Motivations
Habituation

Focused attention is limited and selective

Inattentional blindness

Surface (awareness of features) and content attention (awareness of information)
Translating Needs Into Functionalities

- Turn problems into tasks
- Focused attention is limited and selective
- Inattentional blindness
  - Surface (awareness of features) and content attention (awareness of information)
  - Attention is dynamic - allow hierarchy

Thinking
Memory
Attention
Motivations
Habituation
Translating Needs Into Functionalities

- Turn problems into tasks
- Tension from unmet needs (based on formed expectations)

- Thinking
- Memory
- Attention
- Motivations
- Habituation
Translating Needs Into Functionalities

- Turn problems into tasks
- Tension from unmet needs (based on formed expectations)
- Work must be meaningful

Thinking
Memory
Attention
Motivations
Habituation
Translating Needs Into Functionalities

- Turn problems into tasks
- Tension from unmet needs (based on formed expectations)
- Work must be meaningful
- Reward wisely

Thinking
Memory
Attention
Motivations
Habituation
Translating Needs Into Functionalities

- Turn problems into tasks
- Tension from unmet needs (based on formed expectations)
  - Work must be meaningful
  - Reward wisely
  - Desire to belong to a group
- Motivations
  - Thinking
  - Memory
  - Attention
  - In-group/out-group biases
- Habituation
Translating Needs Into Functionalities

- Turn problems into tasks
- Tension from unmet needs (based on formed expectations)
- Work must be meaningful
- Reward wisely
- Desire to belong to a group
- In-group/out-group biases

Thinking, Memory, Attention, Motivations, Habituation
Translating Needs Into Functionalities
Translating Needs Into Functionalities

- Turn problems into tasks
- Pavlov’s conditioning
- Skinner’s operant conditioning (with reinforcement)

Thinking
Memory
Attention
Motivations
Habituation
Translating Needs Into Functionalities

- Turn problems into tasks
- Pavlov’s conditioning
- Skinner’s operant conditioning (with reinforcement)
- Based on formed patterns

Thinking
Memory
Attention
Motivations
Habituation
Translating Needs Into Functionalities

- Turn problems into tasks
- Pavlov’s conditioning
- Skinner’s operant conditioning (with reinforcement)
- Based on formed patterns
- Creating new habits: stimulus - response; breaking the pattern
Translating Needs Into Functionalities

Make data actionable
- Adjust personas
- Affinity diagrams
- Breakdowns
- Cultural model
- Artifact models

Identify right time and place
- Physical model
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