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
- Habituation
Translating Needs Into Functionalities

External influences - because:

“Work takes place in a culture, which defines expectations, desires, policies, values, and the whole approach people take to work”


Includes:
- Influencers (represented as bubbles)
- Extent of influence (overlap of bubbles)
- Influences (as arrows - mind direction)
- Breakdowns
Translating Needs Into Functionalities

**Make data actionable**

- Adjust personas
- Affinity diagrams
- Breakdowns
- Cultural model

**Artifact models**

Physical objects that support the work (created and/or used in the process) - because you want to know what objects people need and interact with

**Sketch or photo**

Complete with comments and notes on:

- Structure
- Related purpose and tasks
- Functionality

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
Physical work environment (plan) - because you want to know how people adapt their environment to accomplish work

Includes:
- Structures that limit and define space
- Walls, desks, file cabinets, etc.
- Hardware, software, communication tools
- Artifacts and their location in relation to each other

Complete with comments and notes
Translating Needs Into Functionalities

**Sequence of work steps and the intention behind steps** - because you want to know how work is organized in stages

**Includes:**
- Intent behind step
- Triggers, that initiate sequence
- Steps, at a high level of details (actions, not movements)
- Loops and branches showing order and iteration
- Breakdowns (where things go wrong)
Translating Needs Into Functionalities

**Identify right time and place**

**Physical model**

**Sequence model**

**Flow model**

**Directions of communication and coordination**

Defines how work is broken up across people and how people coordinate

**Includes:**

- Interviewee (in the middle - circle)
- Other groups/people (circles)
- Physical/virtual places (usually rectangles)
- Artifacts as they pass between people
- Breakdowns (where things go wrong)
Translating Needs Into Functionalities: Preparation

- Cultural Model
  (External influences)
- Artifact Model
  (Physical objects)
- Flow Model
  (Communication and coordination)
- Affinity Diagram
- Work Models
- Physical Model
  (Physical work environment)
- Sequence Model
  (Work steps)

Personas
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
- Habituation
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

**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

**Fast**

**Effortless**

**Emotional**

**Stereotypic**

**Slow**

**Effortful**

**Logical**

**Calculating**
Translating Needs Into Functionalities

**thinking**
- Memory
- Attention
- Motivations
- Habituation

**Turn problems into tasks**

**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

Cognitive load

Steps

Choices

Information

Least amount of work possible

Homogeneous

People can't multitask!

Break error-prone tasks into smaller steps.

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

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

**Focused attention is limited and selective**

- Inattentional blindness

- **Surface** (awareness of features) and **content attention** (awareness of information)

- **Attention is dynamic - allow hierarchy**
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
  - Habituation
Course Review

Value Proposition

Understand your users

Translate needs into functionalities
Create Design Ideas

Create Ideas

Design
Create Design Ideas

Create Ideas

Creativity - process of producing a new idea which has value to someone

Nature vs Nurture

Generating ideas: memories ➔ ordinary ➔ extraordinary
Create Design Ideas

Create Ideas

1. Preparation
2. Provocation
3. Incubation
4. Eureka moment
5. Verification
6. Realization
Create Ideas

Creative process

1. Preparation
2. Provocation
3. Incubation
4. Eureka moment
5. Verification
6. Realization
Create Design Ideas

**Sketches**
- illustration of how the basic concept works

**User stories**
- description of a feature from an end-user perspective

**Wireframes**
- static representation of the UI layout and user flow

As a user / <persona>, I want / need <action> so that I can <user goal>.


Image: https://www.behance.net/gallery/13421913/Wireframes-Restaurant-App
Create Design Ideas

Design

Interface - a surface/place where two independent systems, bodies or spaces meet / form a common boundary, and communicate with each other

Communication - exchanging of information
Create Design Ideas

Design

- **Signifier** - indicators of any type that communicate the action needed so the affordance can take place
- **Affordance** - the possible use for an object when interacting with it
- **Constraints** - restrictions that limit the possible actions available with an object
- **Feedback** - conveys effects of user’s actions
- **Discoverability** - whether it’s possible to figure out how to use an object by interacting with it
- **Mapping** - indication of the relationship between objects
- **Conceptual Model** - understanding of how the system works, communicated through the design
Course Review

Value Proposition

Understand your users

Translate needs into functionalities

Create design ideas
Information Architecture - structural design of shared information environments

Richard Saul Wurman

Create Design Ideas → Prototype Design

Users flow through your product → Catalog user's information → Presentation of the information → Decision driving function
Create Design Ideas → Prototype Design

Knowledge Organisation

- Taxonomy
- Folksonomy
- Domain Analytics Approach
Knowledge Organisation

Taxonomy
Practice of classification based on hierarchical relationship.
- Parent-child hierarchies

Folksonomy
Practice of classification based on non-hierarchical relationship.
- Public tags and their frequencies

Domain Analytics Approach
Practice of classification based on sociological-epistemological view.
- Indexing is suited to fulfill a task by specific group

Create Design Ideas → Prototype Design
Prototype Design

Prototype - *interactive* design model of the product

- Low-fidelity
- High-fidelity
Prototype Design

Prototype - *interactive* design model of the product

- Low-fidelity
- High-fidelity

- **Breadth** - number of covered features
- **Depth** - degree of functionality
- **Appearance** - building means
- **Input methods** - device mediation
Prototype Design

- Interactive design model of the product

Prototype

- Low-fidelity
- High-fidelity

Testing and Evaluation

Visualization

Static representations of the product

- Sketches
- Wireframes
- Mockups

Create Design Ideas
Course Review

Value Proposition

1. Understand your users
2. Translate needs into functionalities
3. Create design ideas
4. Prototype design

Diagram:
- Value Proposition
- Understand users
- Translate needs
- Create design ideas
- Prototype design

Clock icon indicating continuous process.
Course Review

Value Proposition → Understand your users → Translate needs into functionalities → Create design ideas → Test & Evaluate → Prototype design
Prototype Design

Paper Prototyping Evaluation

1. Identify testing goals
2. Identify items to test
3. Choose testers
4. Prepare materials
5. Assign team roles
6. Run evaluation
Course Review

Value Proposition

Understand your users

Translate needs into functionalities

Create design ideas

Prototype design

Test & Evaluate
Course Review

Value Proposition

Understand your users

Translate needs into functionalities

Create design ideas

Prototype design

Test & Evaluate
Prototype Design

Designing User Interface

- Elements & characteristics
- Elements composition
- Spatial organisation
- Information processing
- Interaction

Visual Design

“Cognitive” Design
Prototype Design

High Fidelity Prototype Evaluation

- Heuristic Evaluation
- Eye Tracking
- Focus Groups

- Tree Testing
- A/B Testing
- Walk Through

- Click Testing
- Keystroke Level Modeling
- Five Second Test
User Centered Design in Computer Systems

History

- Waterfall Model
- GUI and WIMP
- Agile Development

User Centered Design in Computer Systems

- HFE and Ergonomics
- Socio-Technical Systems Design
- Cognitive Psychology
- Cooperative Design
- Interaction Design
NLS - oN-Line System - developed by Douglas Engelbart and his colleagues at the Augmentation Research Center, SRI

First demonstrated December 19, 1968 at the Fall Joint Computer Conference, San Francisco.
Was called “The mother of all demos”

“We were not just building a tool, we were designing an entire system for working with knowledge.” Douglas Engelbart