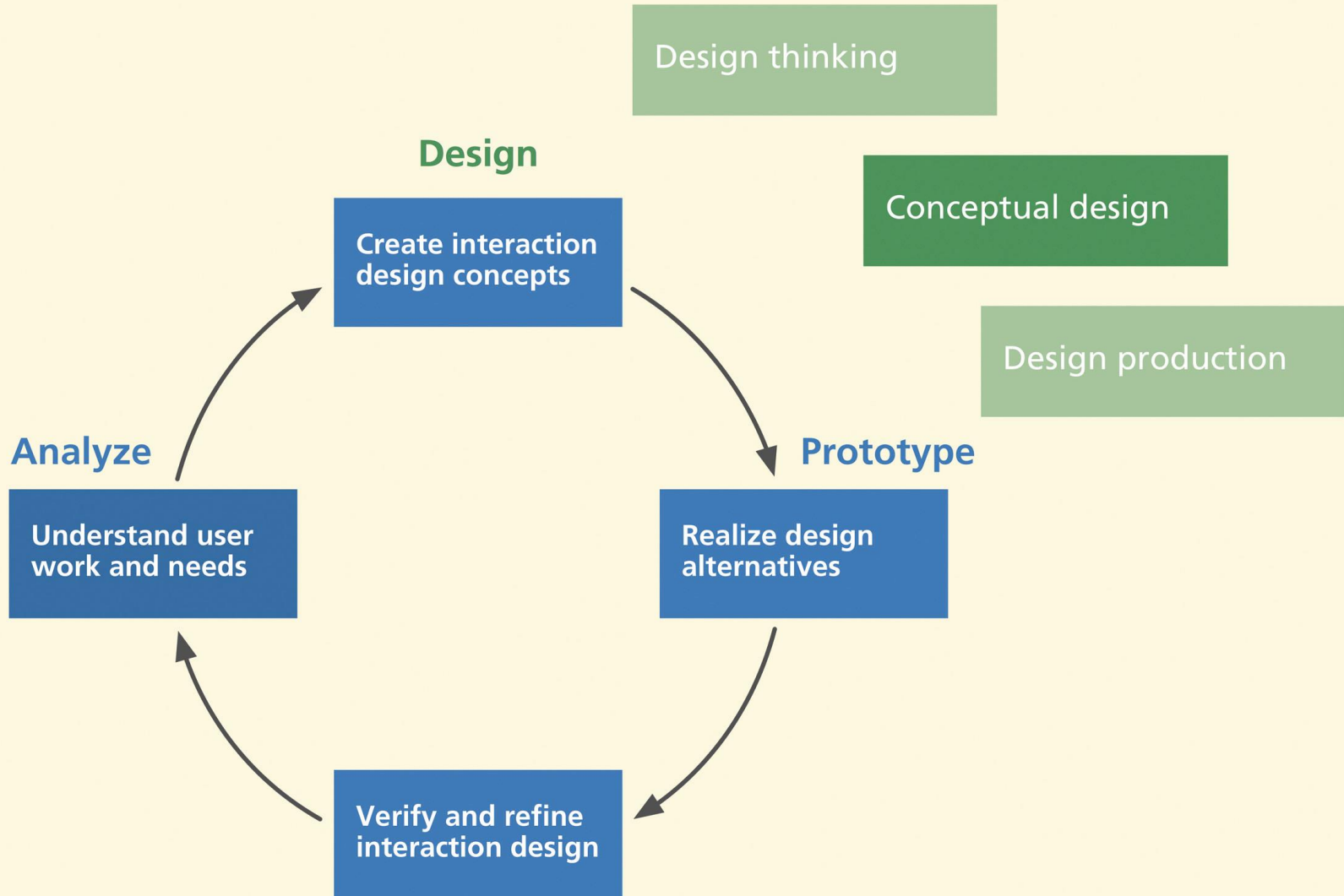# User Experience Design

Chapter 8. Mental Models and Conceptual Design

Introduction

Mental models

- **Designer's mental model**
  - **Vision of how system works as held by designer**
    - **What the system is**
    - **How it is organized**
    - **What it does and how**

Mental models

- **User's mental model**

  – **Description of how system works as held by user**

- **Conceptual design is what we use to connect the two**

Designer's mental model in ecological perspective

- **Describes how system works within its environment**

- **How system or product fits within work context**

  - **In flow of activities involving it and other parts of broader world**

Designer's mental model in interaction perspective

- **Describes how users operate system or product**

- **Task-oriented view, including**
  - **User intentions**
  - **Sensory, cognitive, and physical user actions**
 - **Includes device behavior**

Designer's mental model in emotional perspective

- **Describing intended emotional impact**
- **About expected overarching emotional response**

User's mental model

- **Internal explanation user has built about how system works**

- **It's what we do naturally in unfamiliar situations**

- **Starts with imperfect theories**

- **Draws on expertise and previous experience**

Conceptual design as mapping
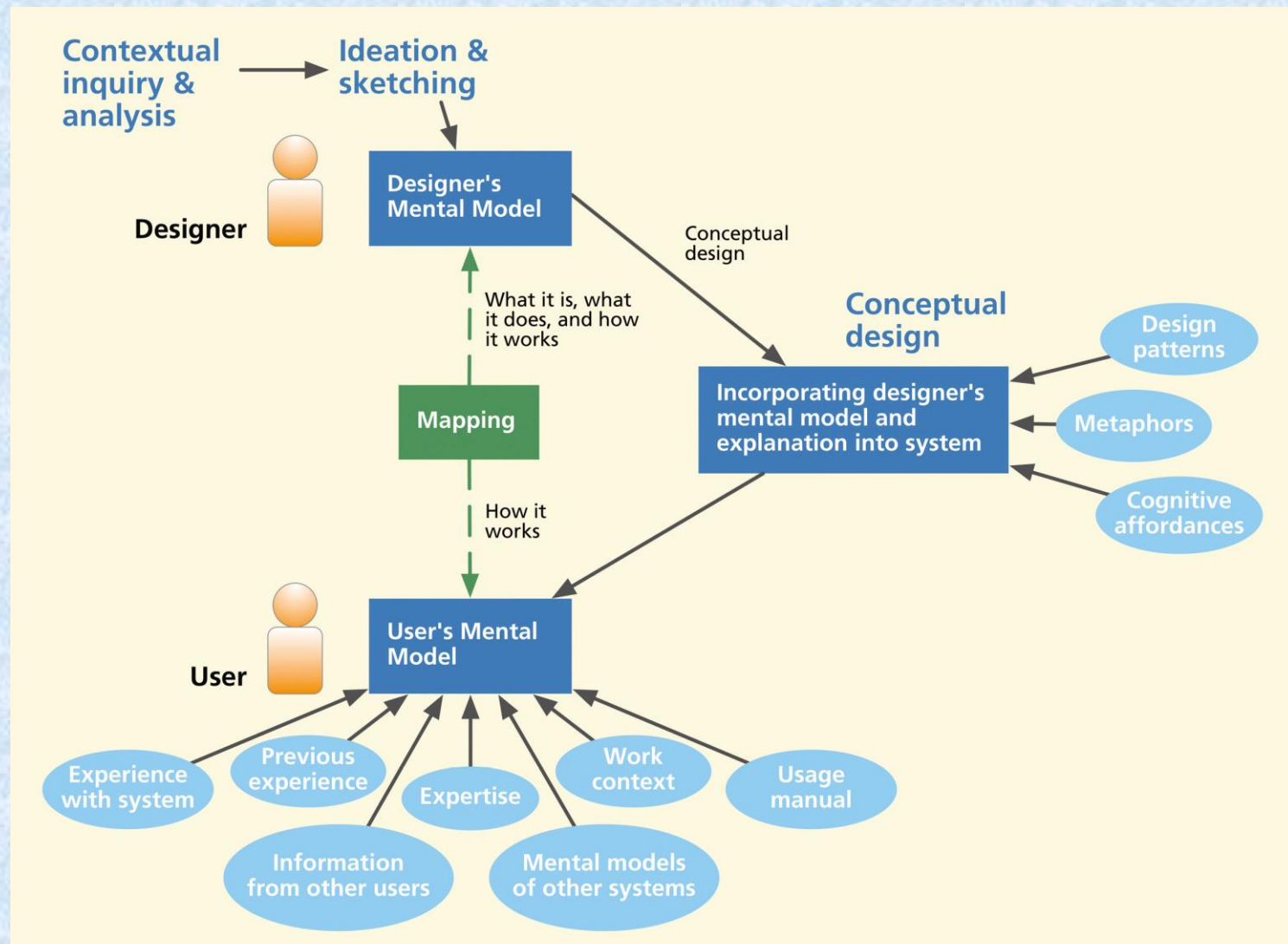
Mapping designer to users

- **Goal: Get user's mental model to match reality of designer's mental model**

- **Implementation of this mapping**
  - **Conceptual design as manifest in system**

- **The part of an interaction design containing a theme**
  - **For communicating design vision**

- **Where you innovate to plant seed of UX**

Metaphors

- **Analogies for communication and explanations**
  - **Explain unfamiliar using familiar conventional knowledge**
  - **Use what users already know about existing system or phenomena**
  - **Adapt to help user learn how to use new system**

Metaphors

- **Example, typewriter metaphor in a word processing system**
  - **One of simplest and oldest examples**
  - **So old, in fact, that it has become a 'dead metaphor" and works in reverse**

Examples of metaphors

- **Ecological perspective example**
  - **iTunes as a mother ship for iPods, iPhones, and iPads**

Examples of metaphors

- **Interaction perspective example**
  - **Actions for reading a book on an iPad, Kindle, or Nook**

Examples of metaphors

- **Emotional perspective example**
  - **Ad in Backpacker magazine for Garmin handheld GPS**
    - **"Like an old pair of boots and your favorite fleece"**
    - **"The ideal hiking companion"**

Conceptual design in three perspectives

- **Ecological perspective**

  – **To communicate design vision of system as** *black box* **within its environment**

- **Interaction perspective**

  – **To communicate design vision of how user operates system**

Conceptual design in three perspectives

- **Emotional perspective**
  - **To communicate a vision of how design elements will evoke emotional impact**
  - **Example, for a sports car:**
    - **About jaw-dropping performance**
    - **About how your heart skips a beat when you see its aerodynamic form**
    - **About fun and being independent from crowd**

Example, early conceptual design

- **Immersion in ecological perspective**
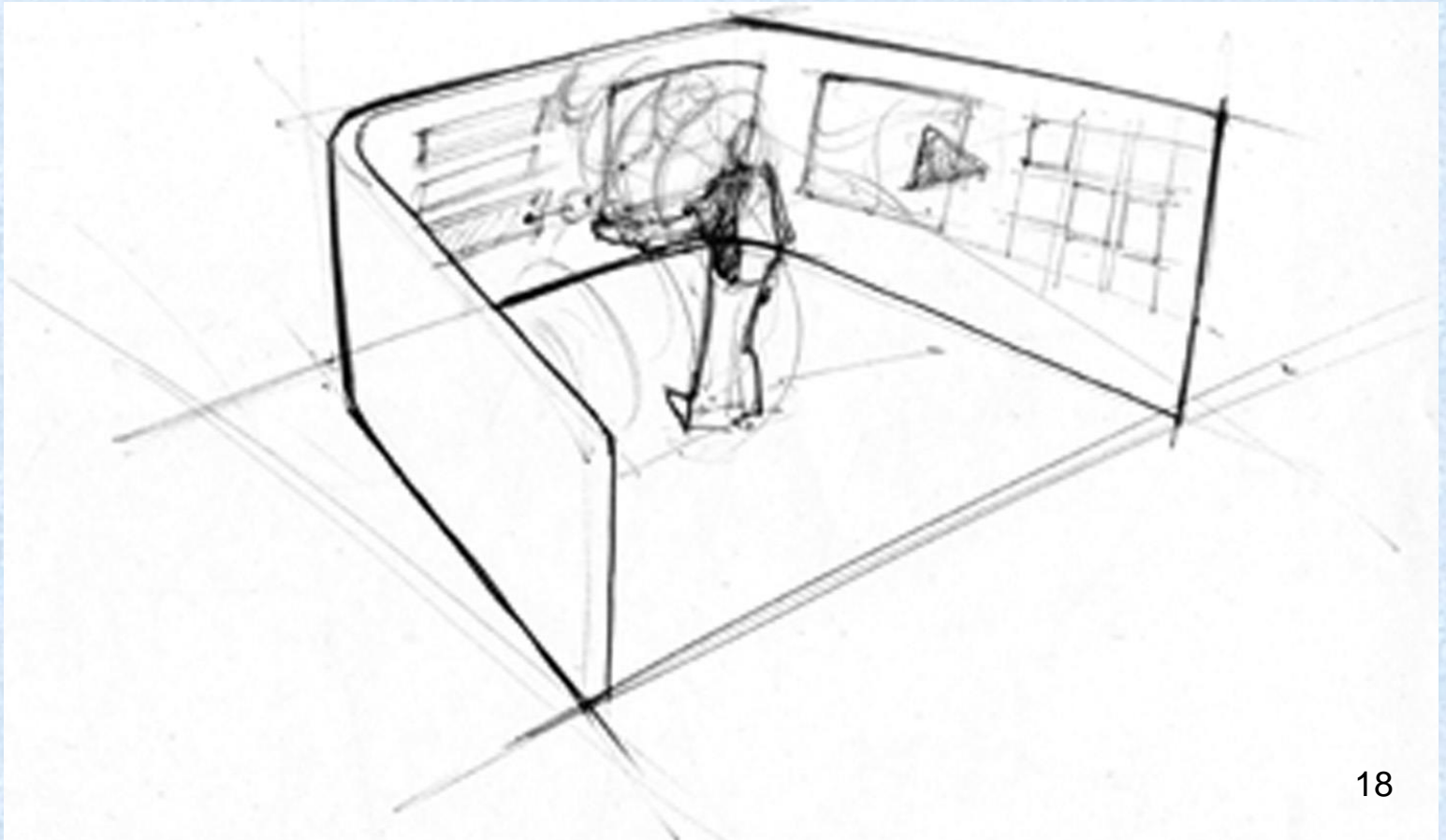
Example, conceptual design

- **Broad environmental view in ecological perspective**
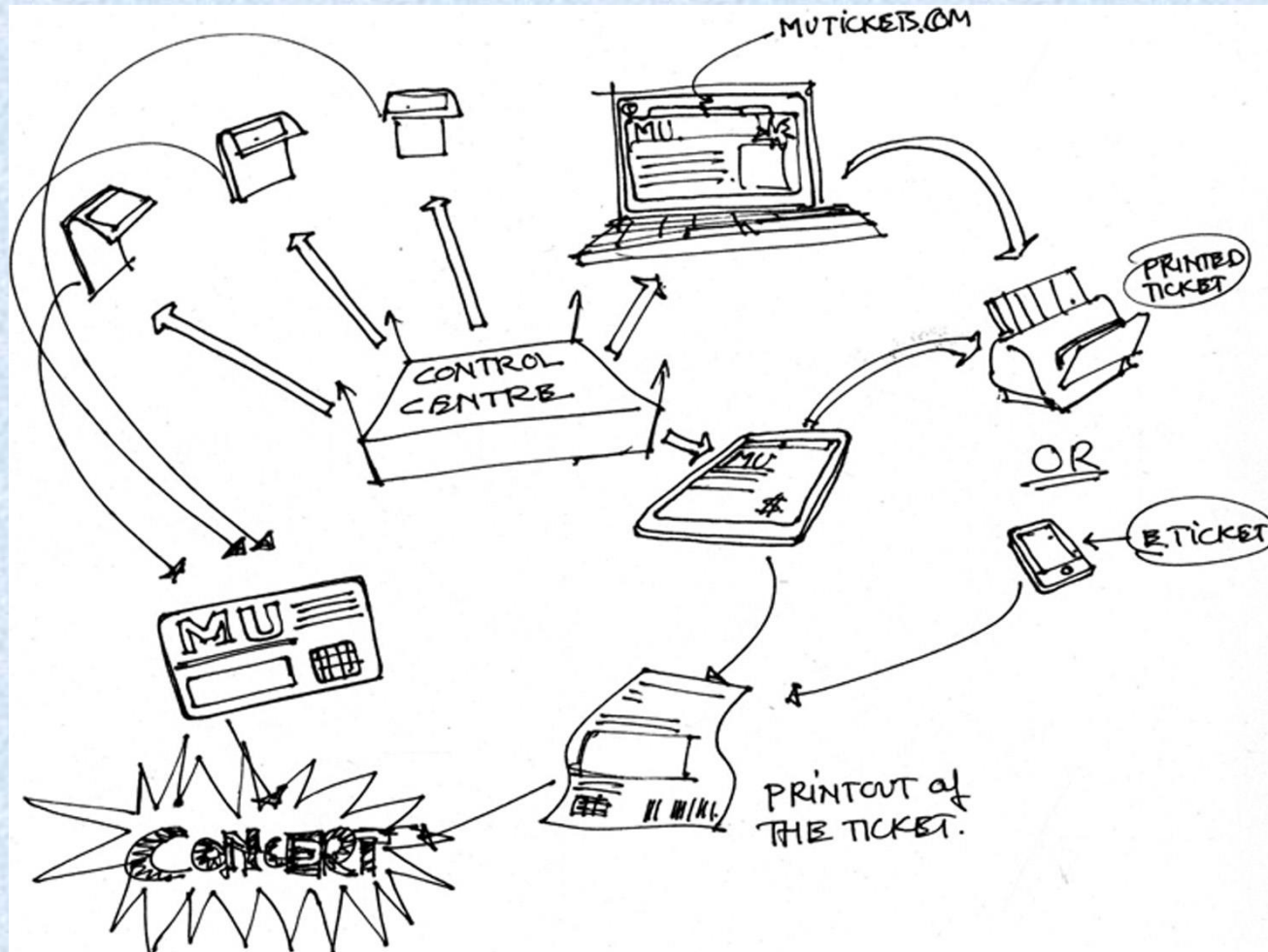
Example, ecological conceptual design

- **Focusing on feature for smart ticket to guide users to seating**
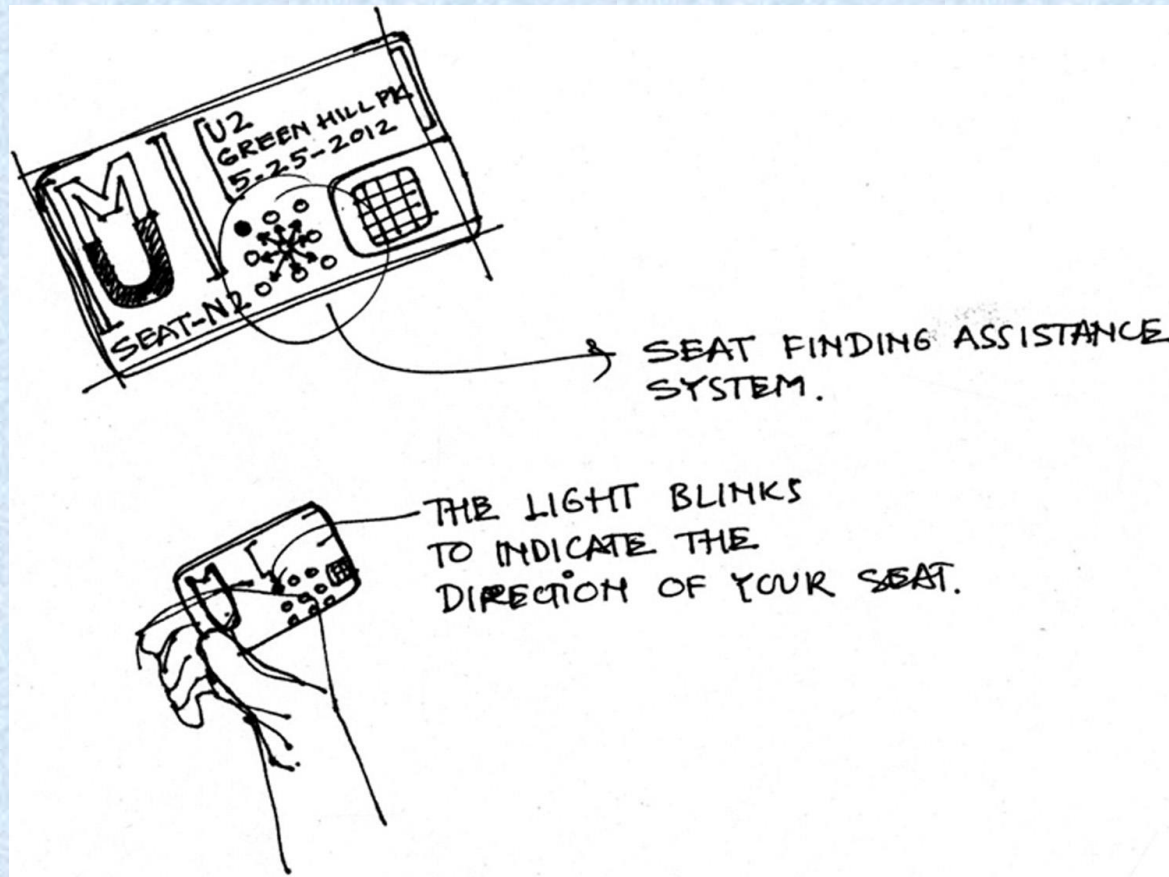
Example, ecological conceptual design

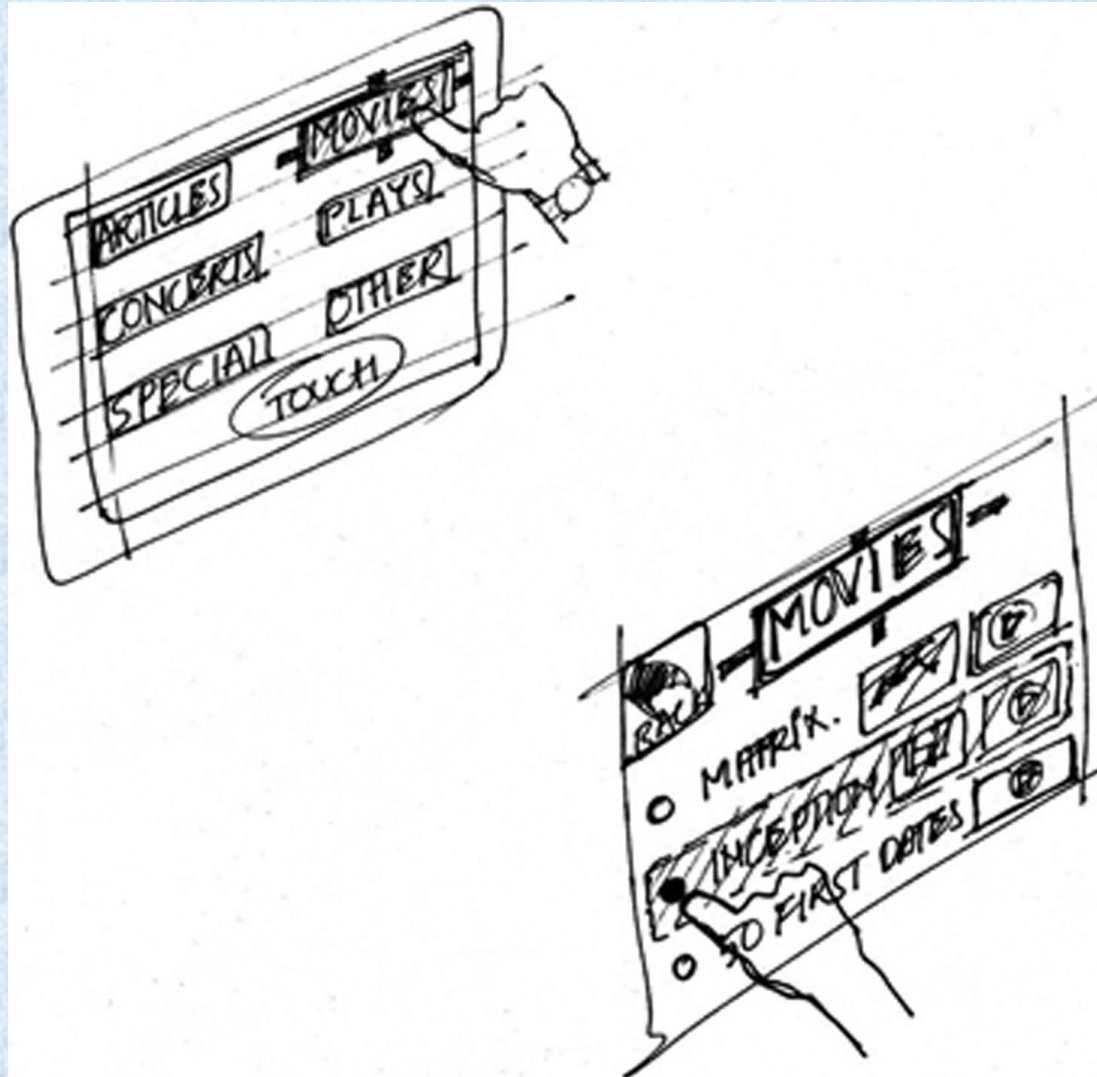- **Focusing on communication with a smartphone**
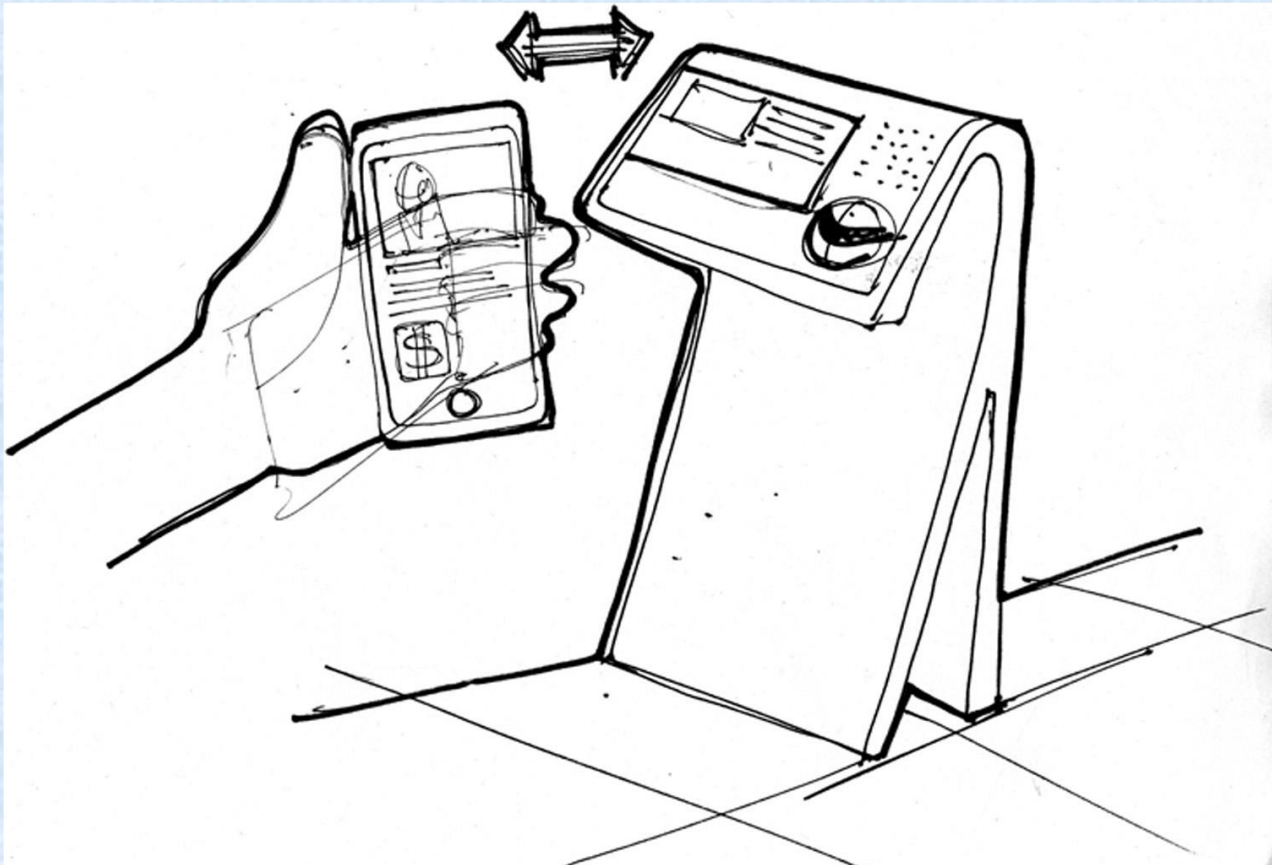
Example, ecological conceptual design

- **Focusing on social networking**
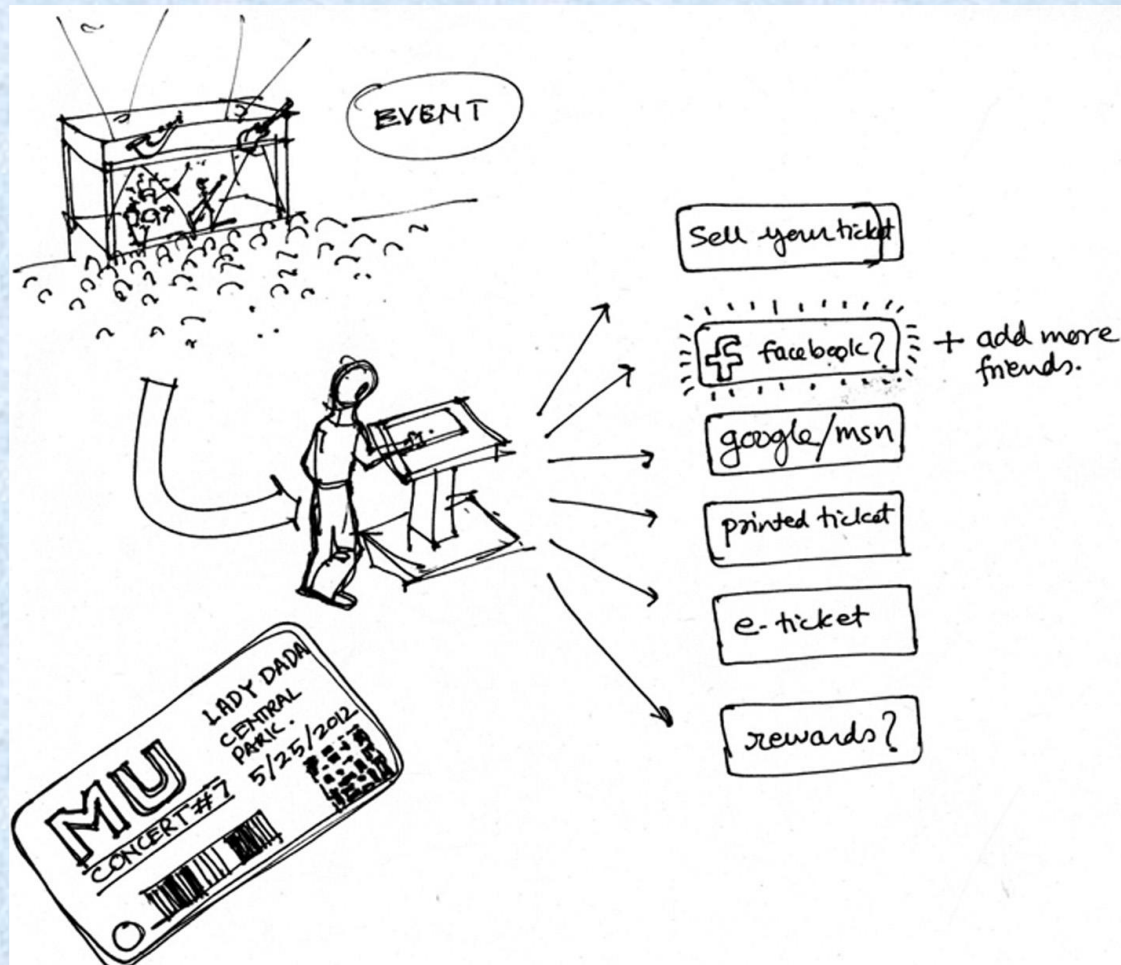
Example, conceptual design in interaction perspective

Storyboards

- **Sequence of visual "frames"**

- **Illustrating interplay between user and envisioned system**

- **Brings design to life in graphical "movie clips"**

- **Freeze-frame sketches of stories of how people will work with system.**

- **Visual design scenarios, envisioned interaction design solutions**

Storyboards

- "Comic-book" style illustration of scenario
  - Actors
  - Screens
  - Interaction
  - Dialogue showing sequences of flow from frame to frame

Include things like these in your storyboards

- **Hand-sketched pictures annotated with a few words**

- **All work practice that is part of task, not just interaction with system**
  - **Example, include telephone conversations with agents outside system**
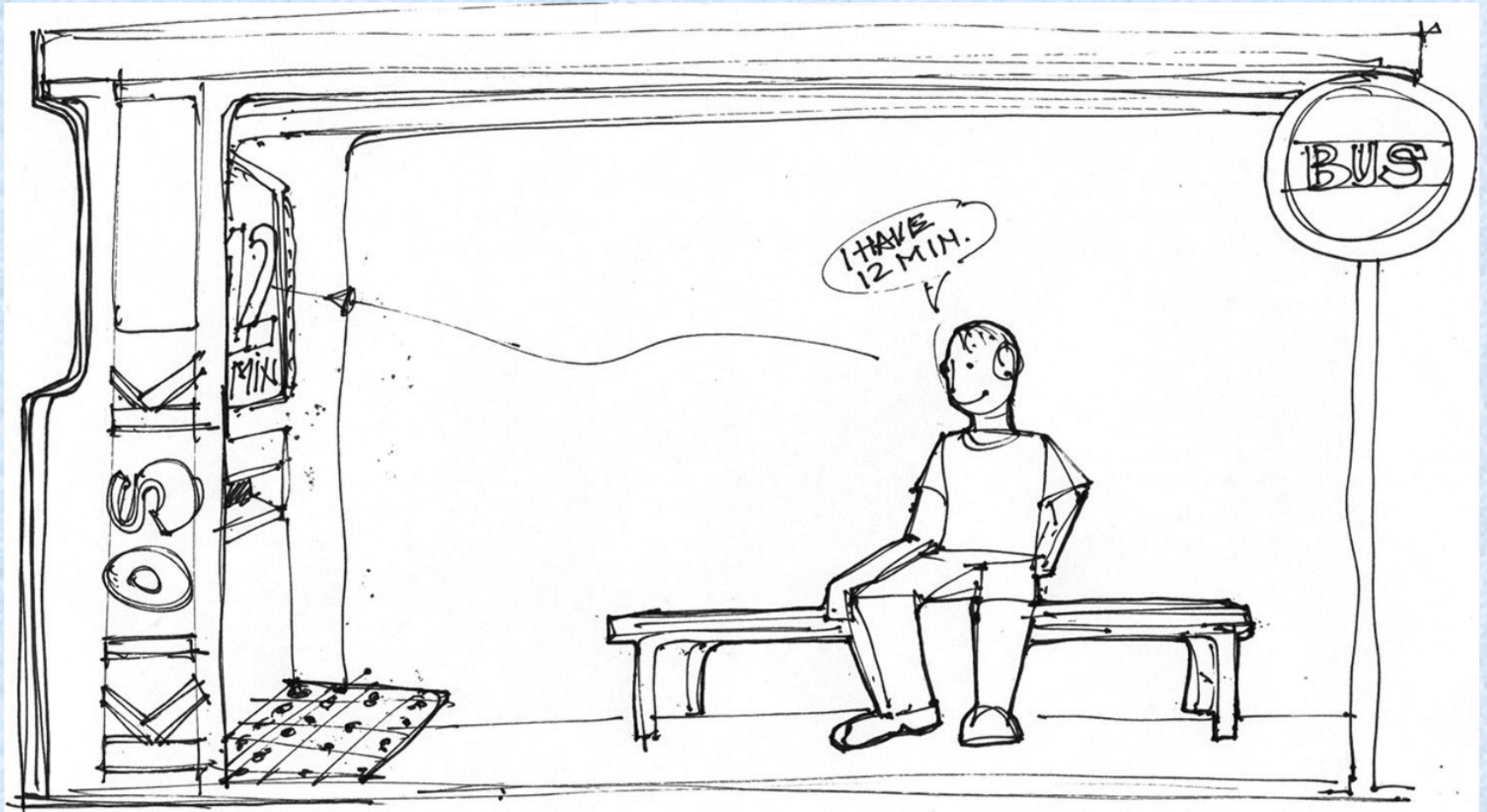
- **Sketches of devices and screens**

Include things like these in your storyboards

- **Any connections with system internals, for example, flow to and from a database**

- **Physical user actions**

- **Cognitive user actions in "thought balloons"**

- **Extra-system activities, such as talking with a friend about what ticket to buy**

Example: Ecological storyboard sketches

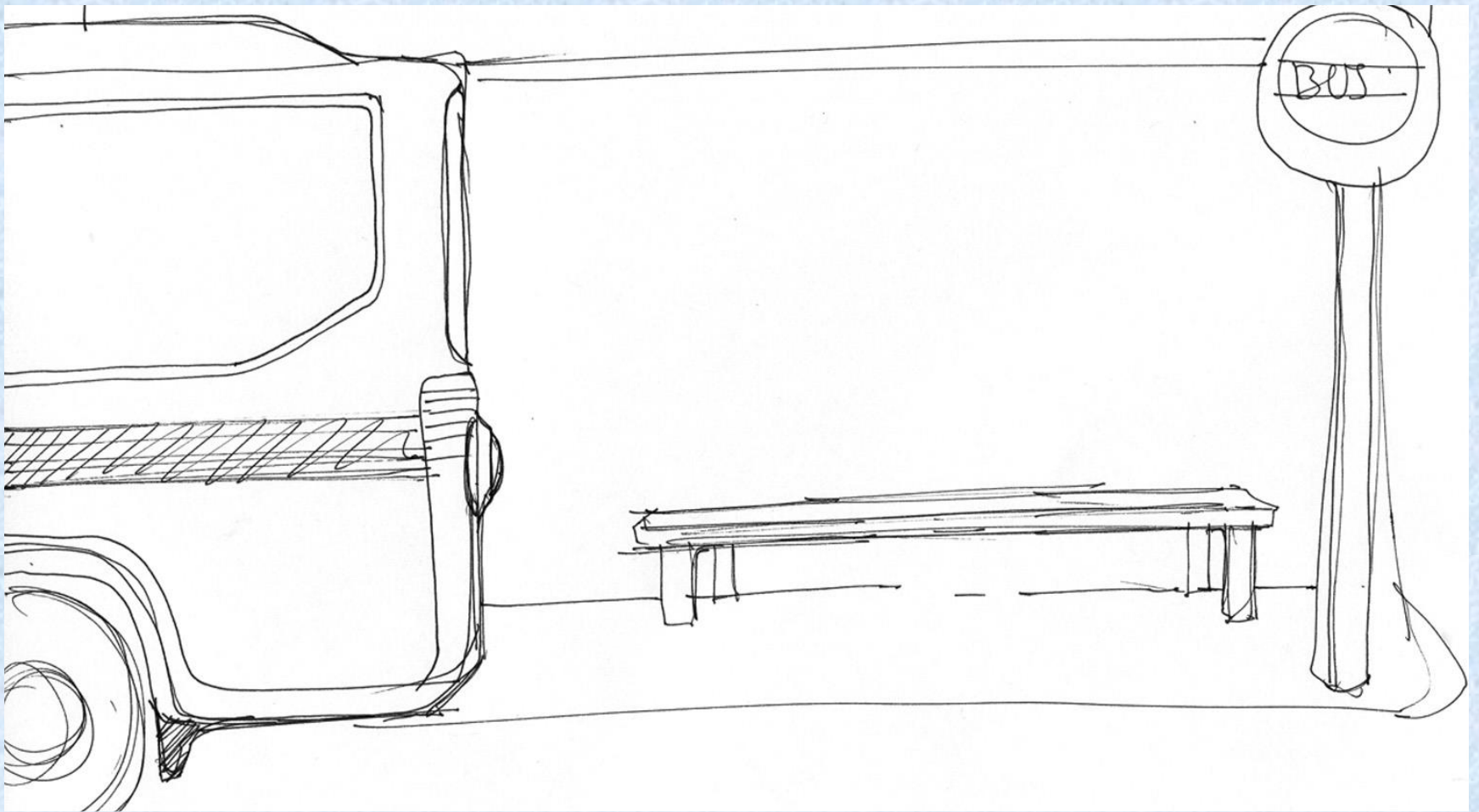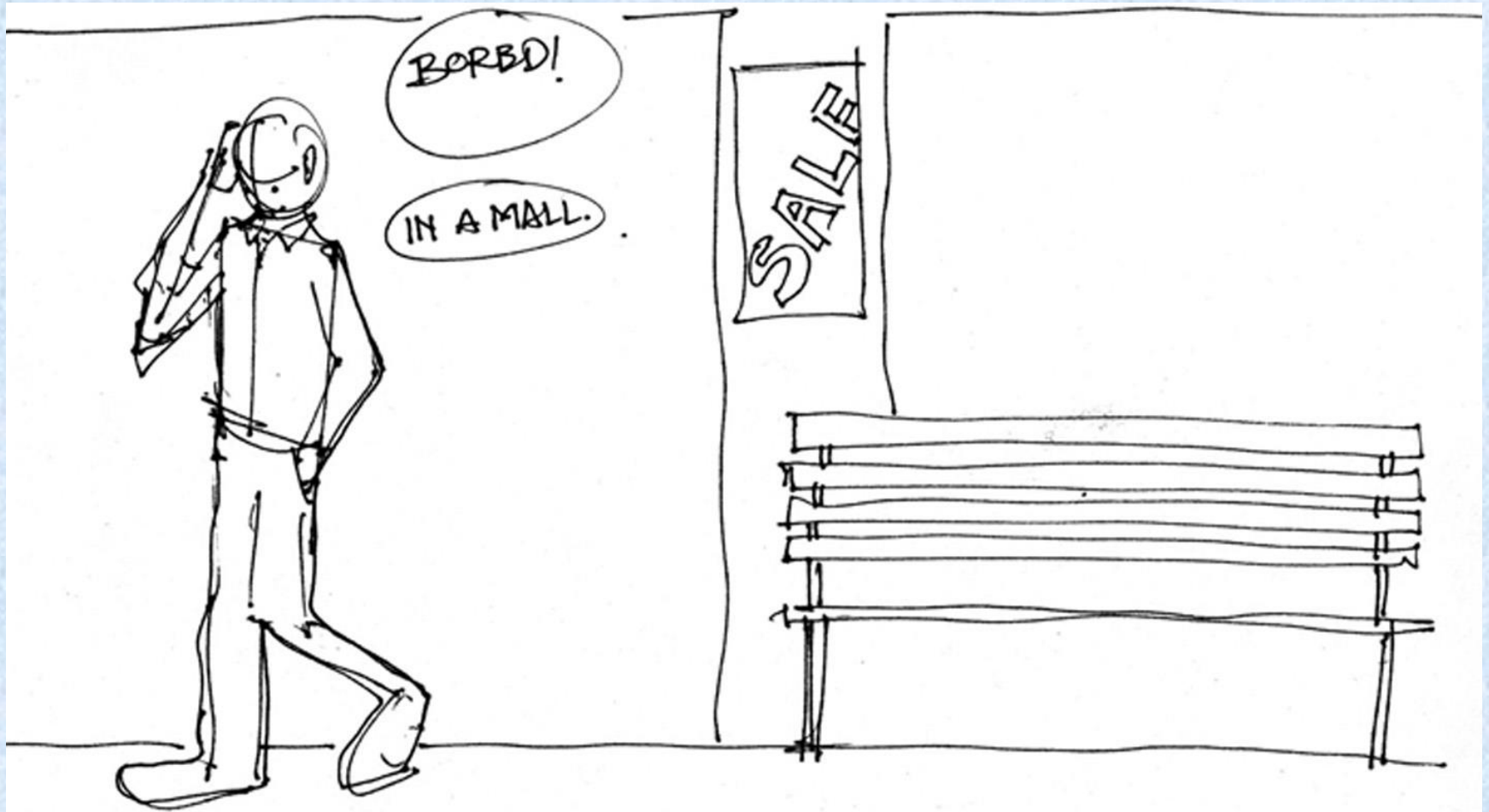# Example: Ecological storyboard sketches

Example: Ecological storyboard sketches

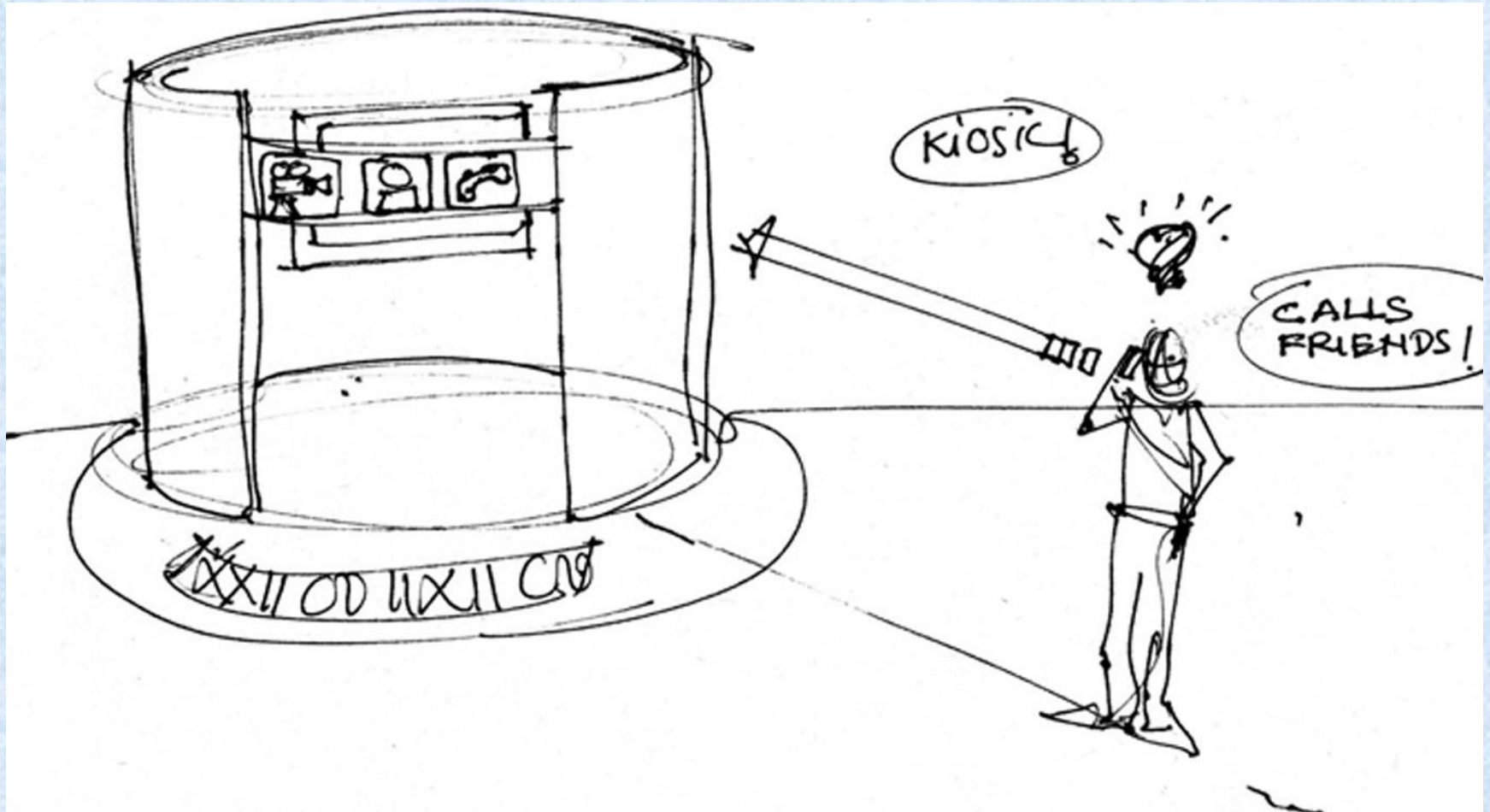# Example: Ecological storyboard sketches
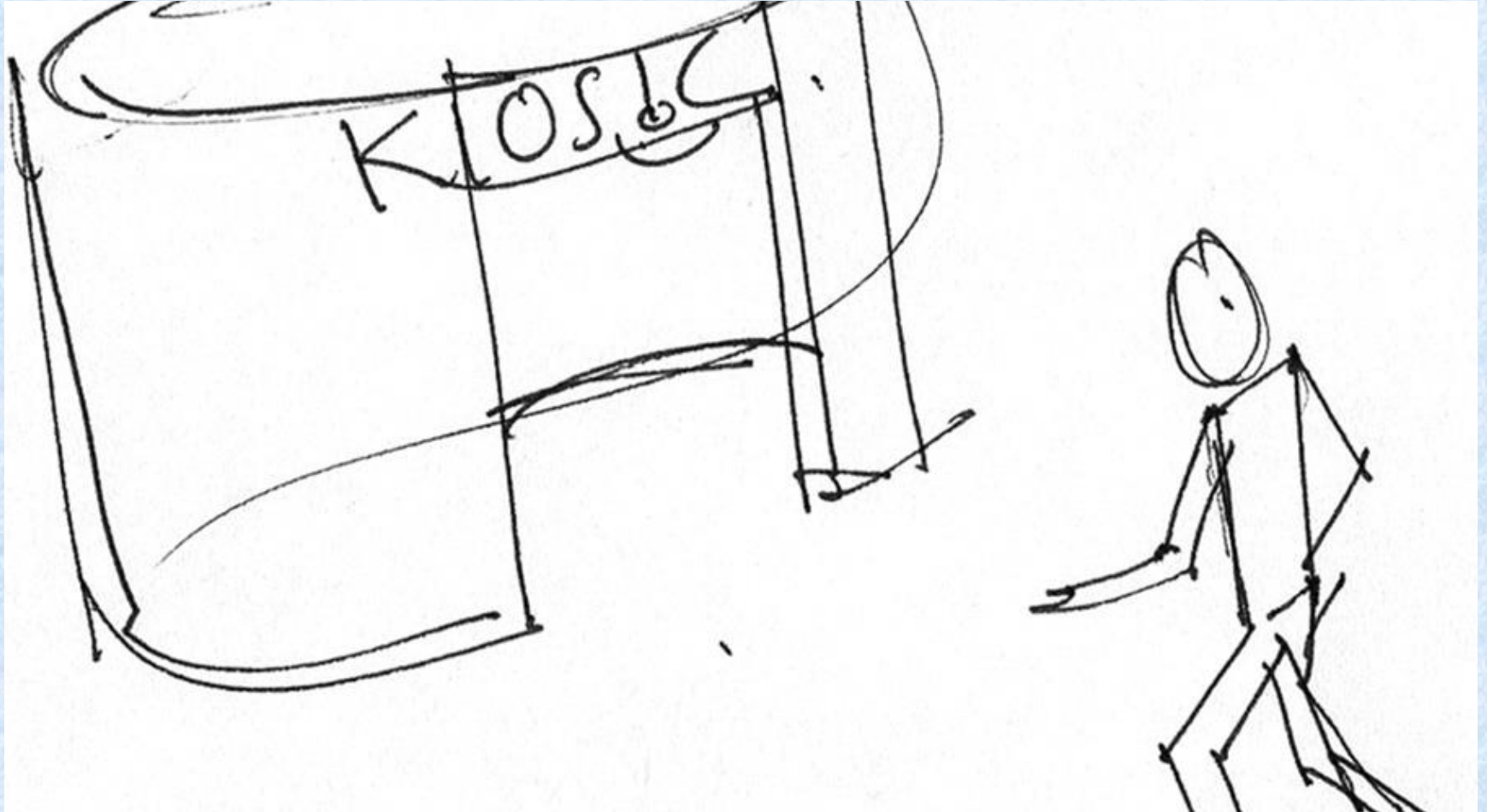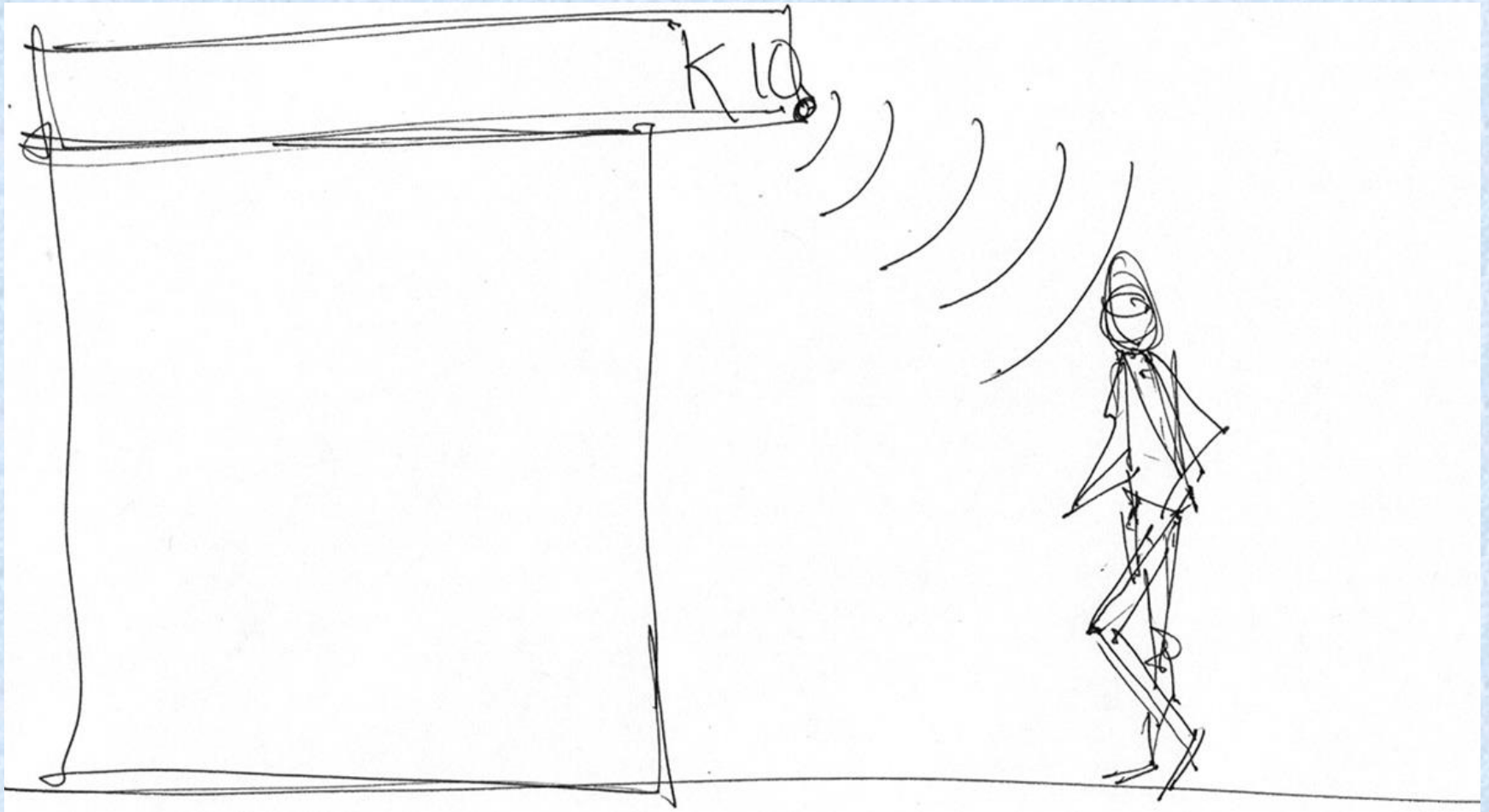
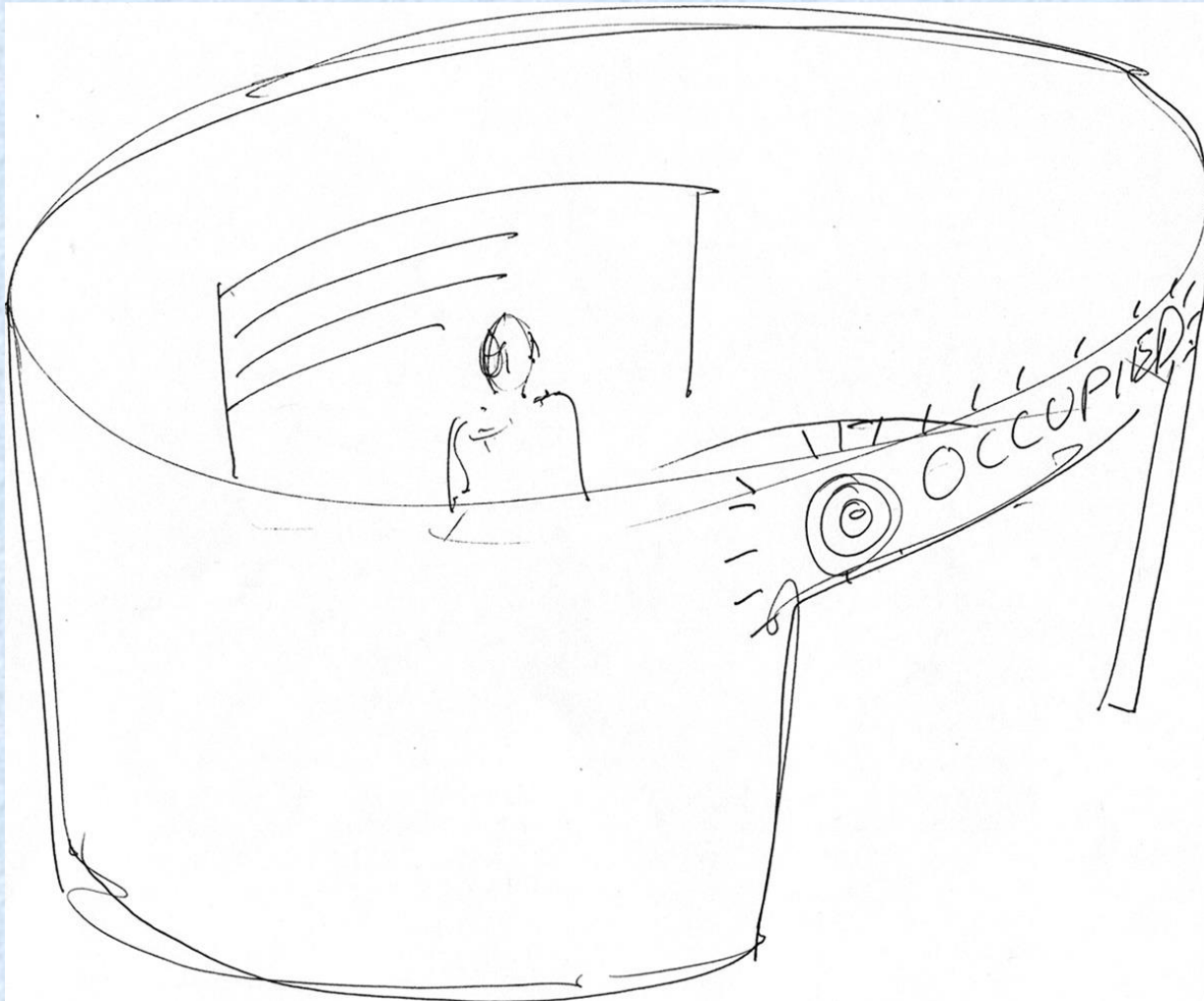# Example: Ecological storyboard sketches

Example: More ecological storyboard sketches

Example: More ecological storyboard sketches

Example: More ecological storyboard sketches

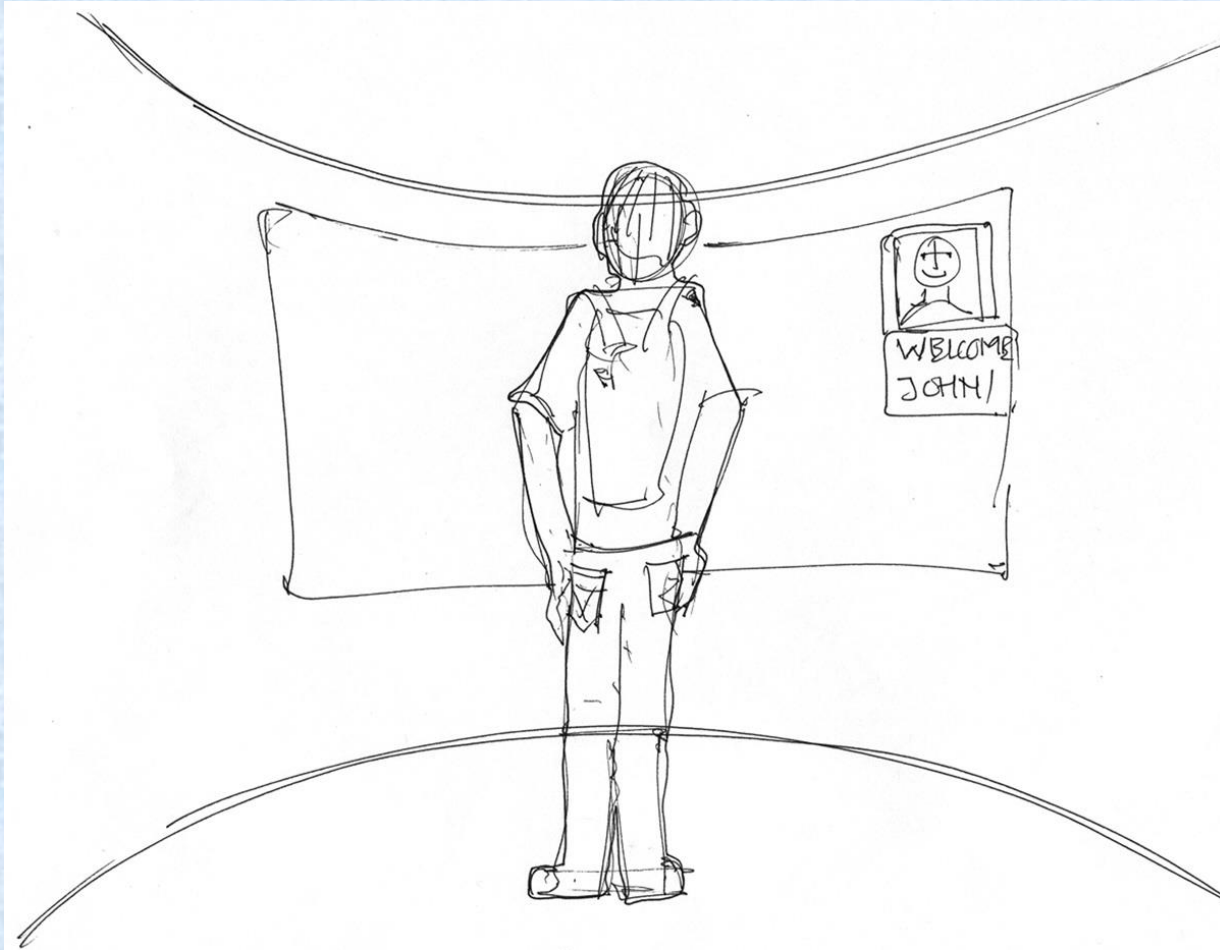# Example: More ecological storyboard sketches

Example: More ecological storyboard sketches

Example: Interaction perspective storyboard sketches

Example: Interaction perspective storyboard sketches

Example: Interaction perspective storyboard sketches
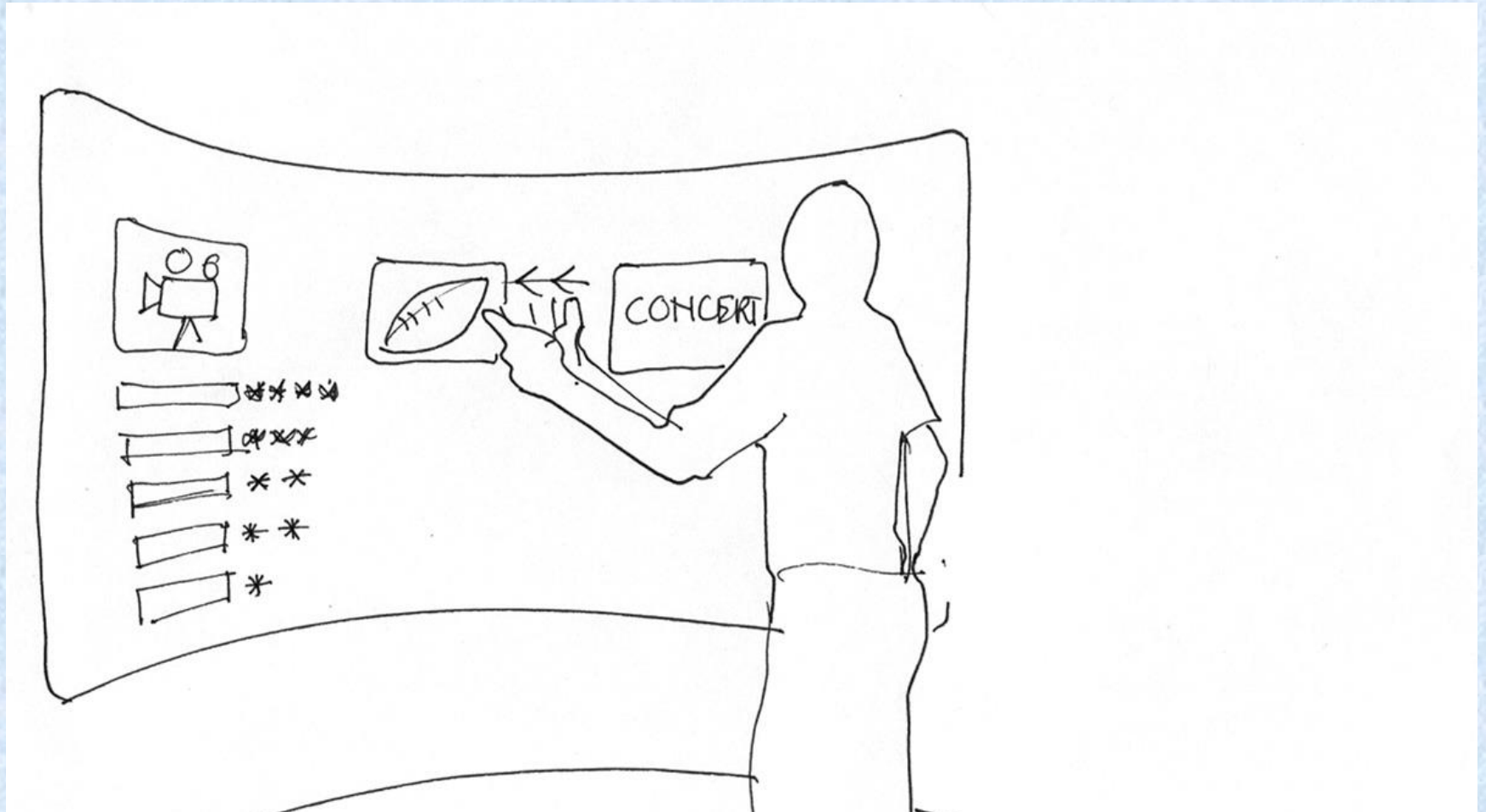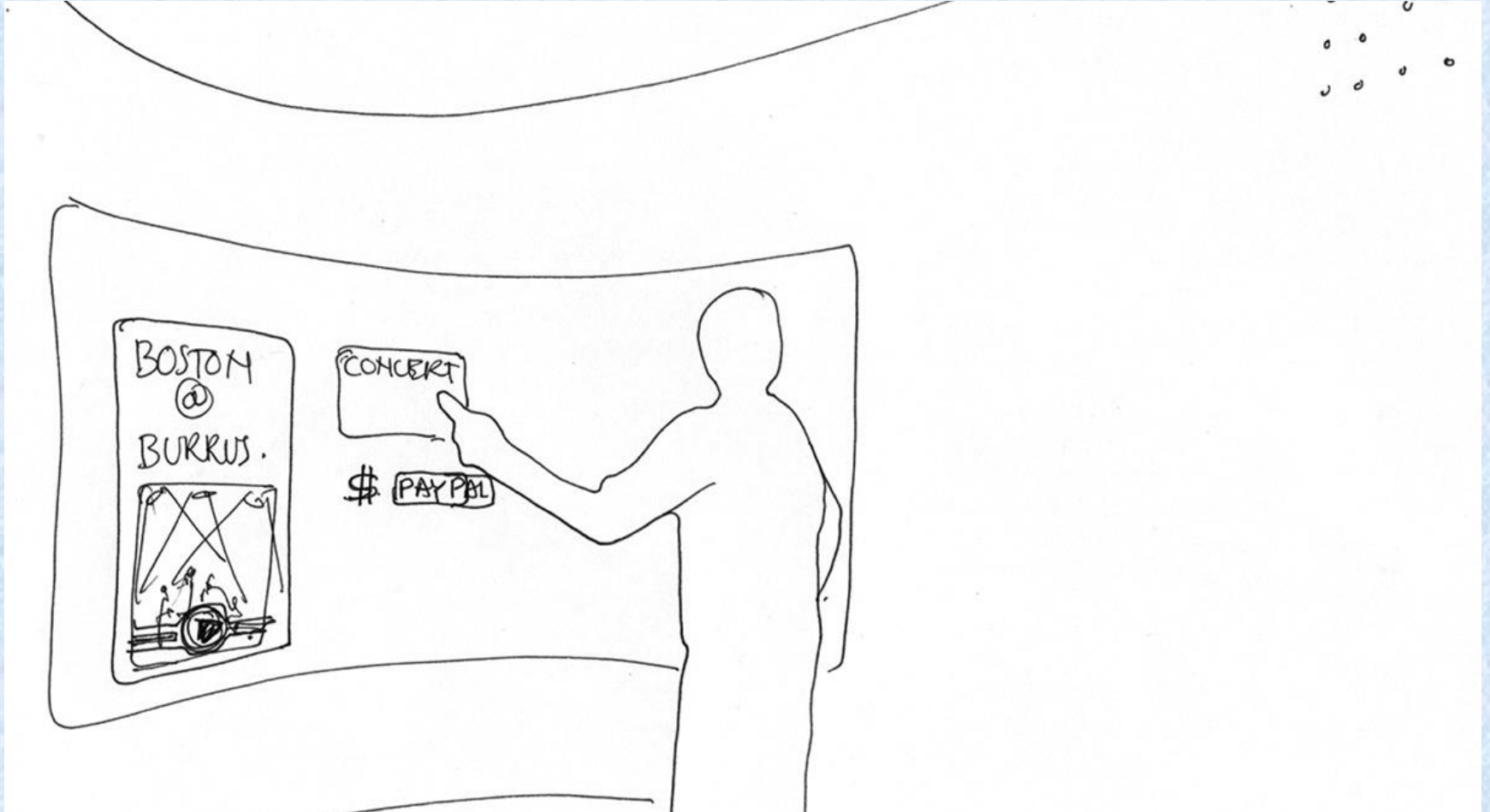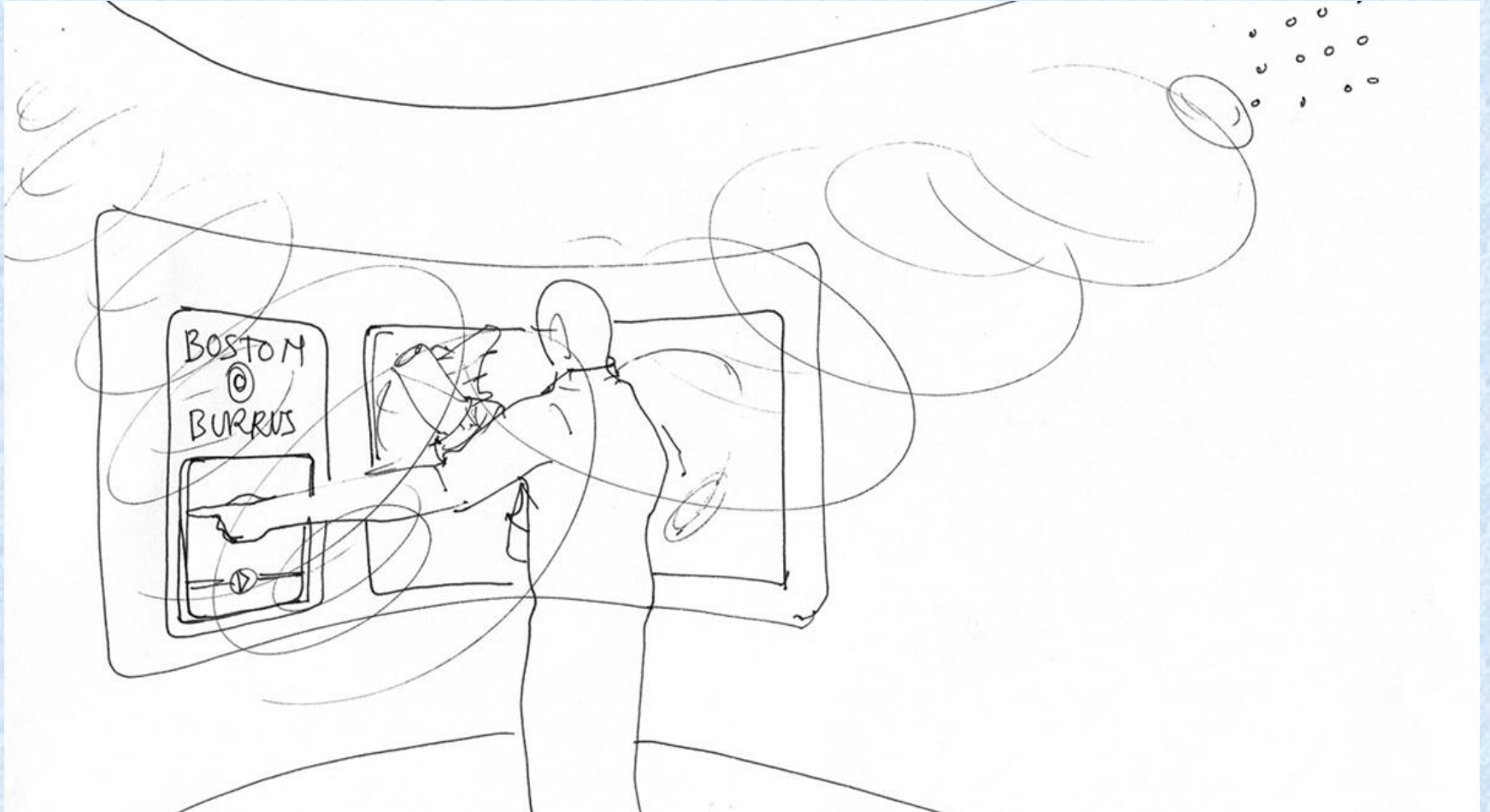
Example: Interaction perspective storyboard sketches

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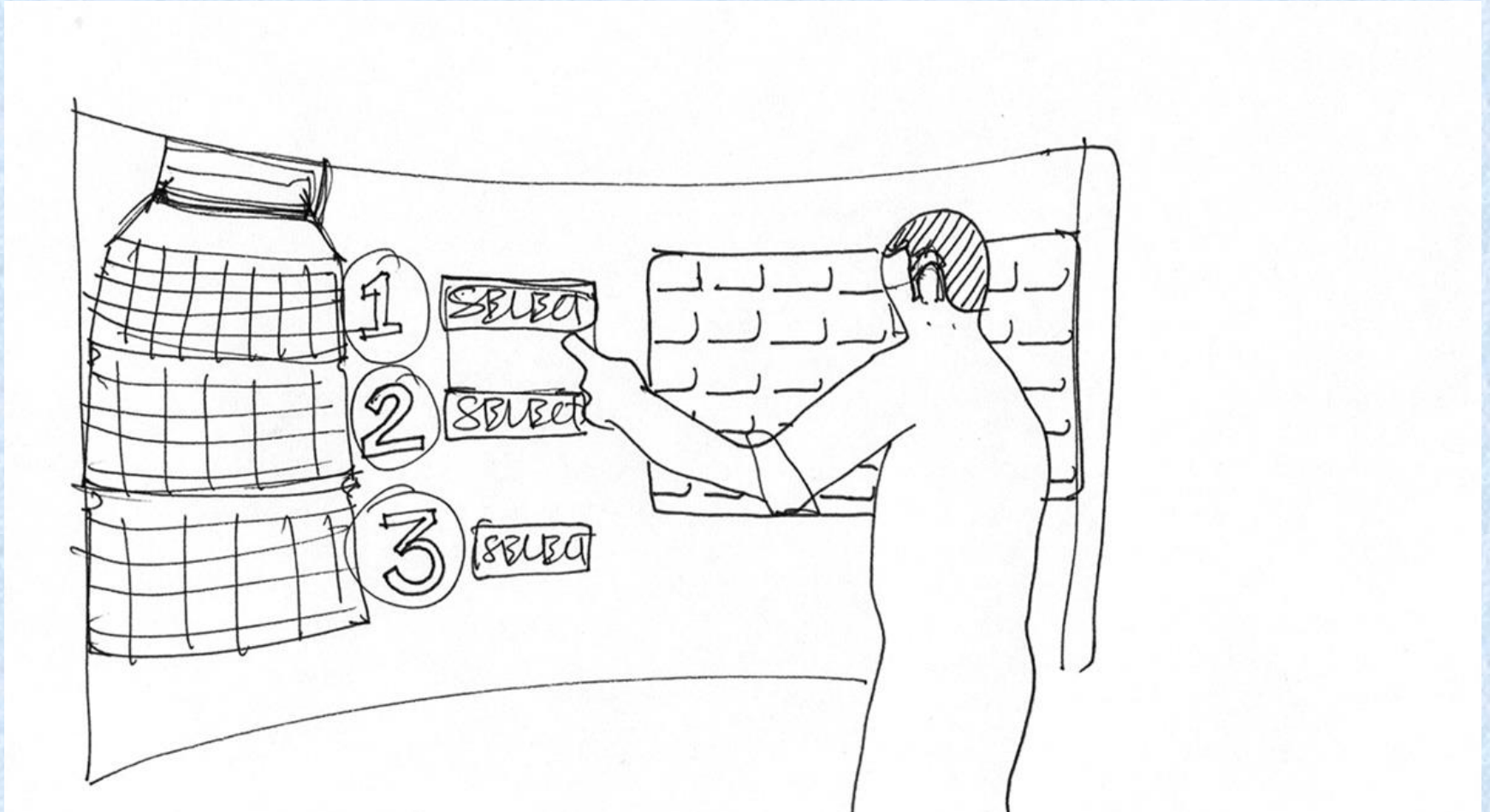
Example: Interaction perspective storyboard sketches

Example: Interaction perspective storyboard sketches

Example: Interaction perspective storyboard sketches

Importance of between-frame transitions

- **Storyboard frames**
  - **Individual states**
  - **Static screenshots**
- **Frame-to-frame progression of interaction over time**

Importance of between-frame transitions

- **The dynamics in transitions between frames is where user experience lives**

- **Transitions are where users think**

- **Cognitive affordances in your design earn their keep**

- **Help users think about what to do next**

- **Where most problems for users, challenges for designers**

Importance of between-frame transitions

- **Make actions between frames part of what is sketched**

- **How?**
  - **Add frames that show circumstances that lead to transitions**
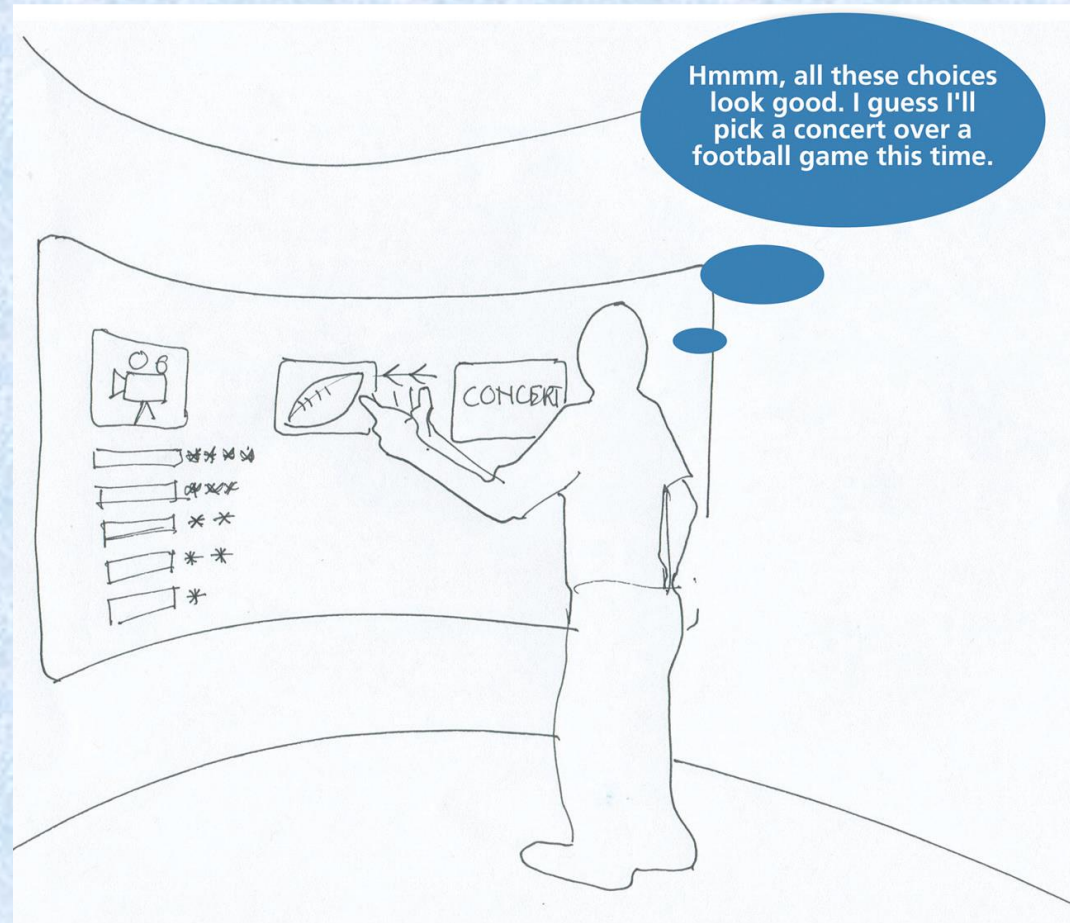 - **User thought bubbles, gestures, reactions**

Example, storyboard transition frame
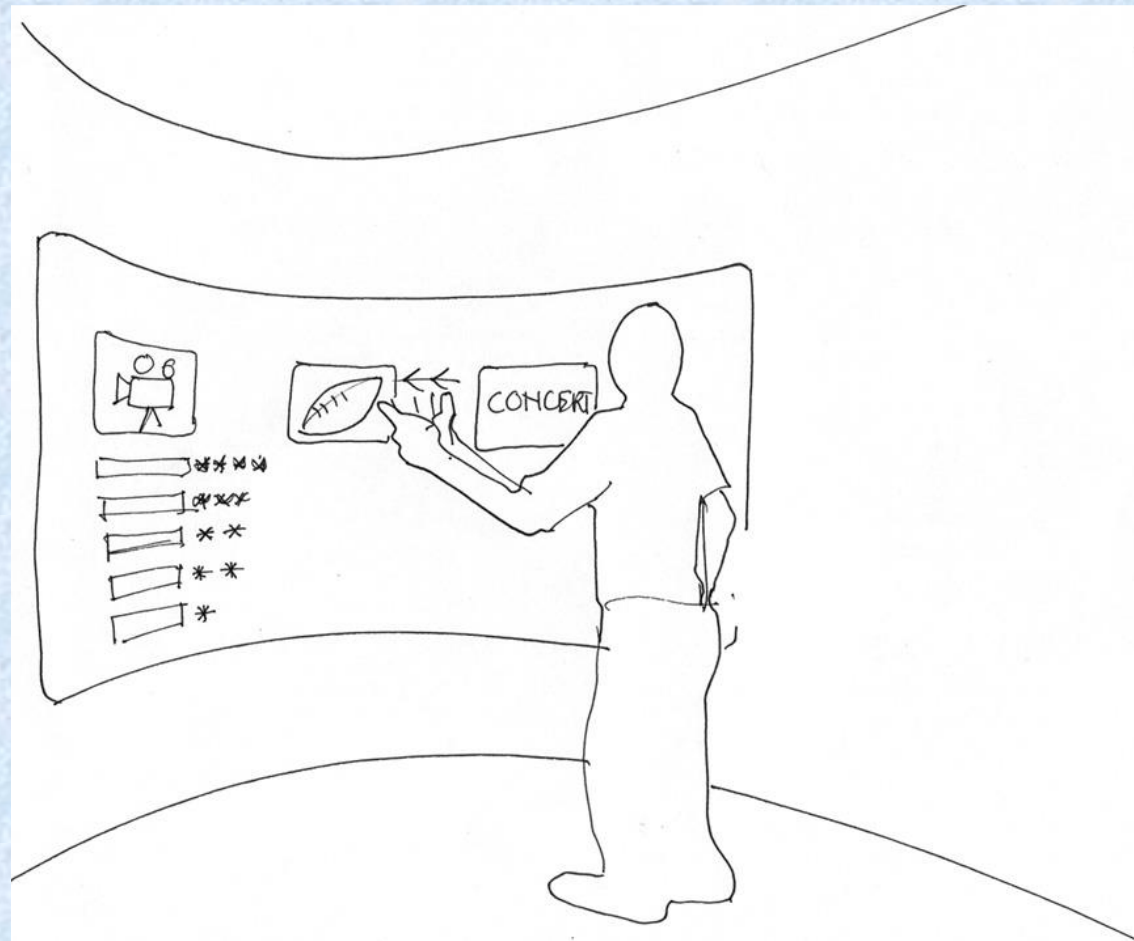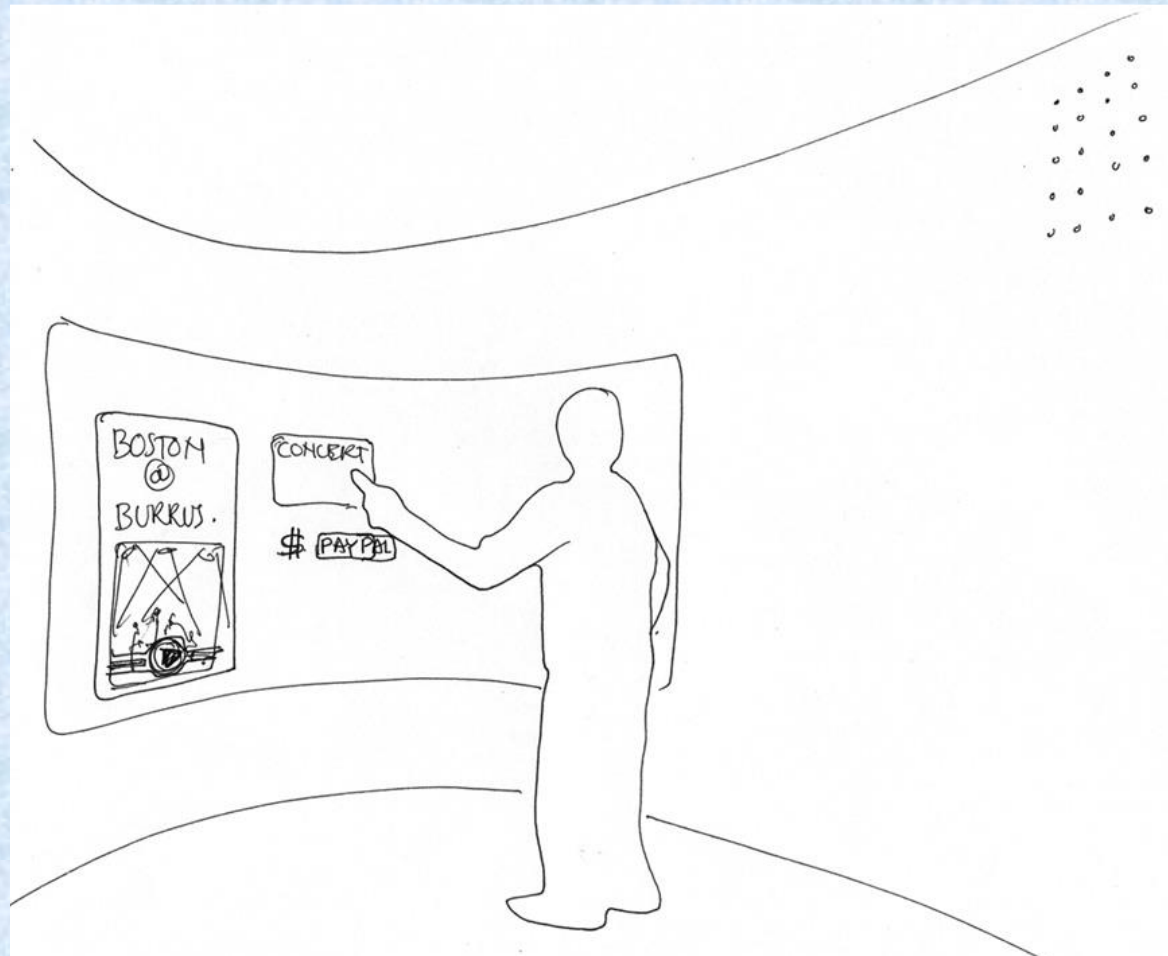
- **Thought bubble explaining state change**

Example, storyboard transition frame

- **Thought bubble explaining state change**

Example, storyboard transition frame

- **Thought bubble explaining state change**

Design for embodied interaction

- **Embodied interaction**

  - **Involves user's physical body in interaction with technology**

  - **In a natural way, such as by gestures**

- **Moving interaction off screen and into action-situated real world**

Design for embodied interaction

- **Embodiment**

  - "**How nature of living entity's cognition shaped by form of its physical manifestation in world.**"

  - **Central to idea of phenomenological interaction**

  - **Dourish: "How we understand the world, ourselves, and interaction comes from our location in a physical and social world of embodied factors."**

Example, Scrabble Flash