

Tools for co-design

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INTRODUCTION

The need of co-design

Both user pull and technology push are inherently wrong

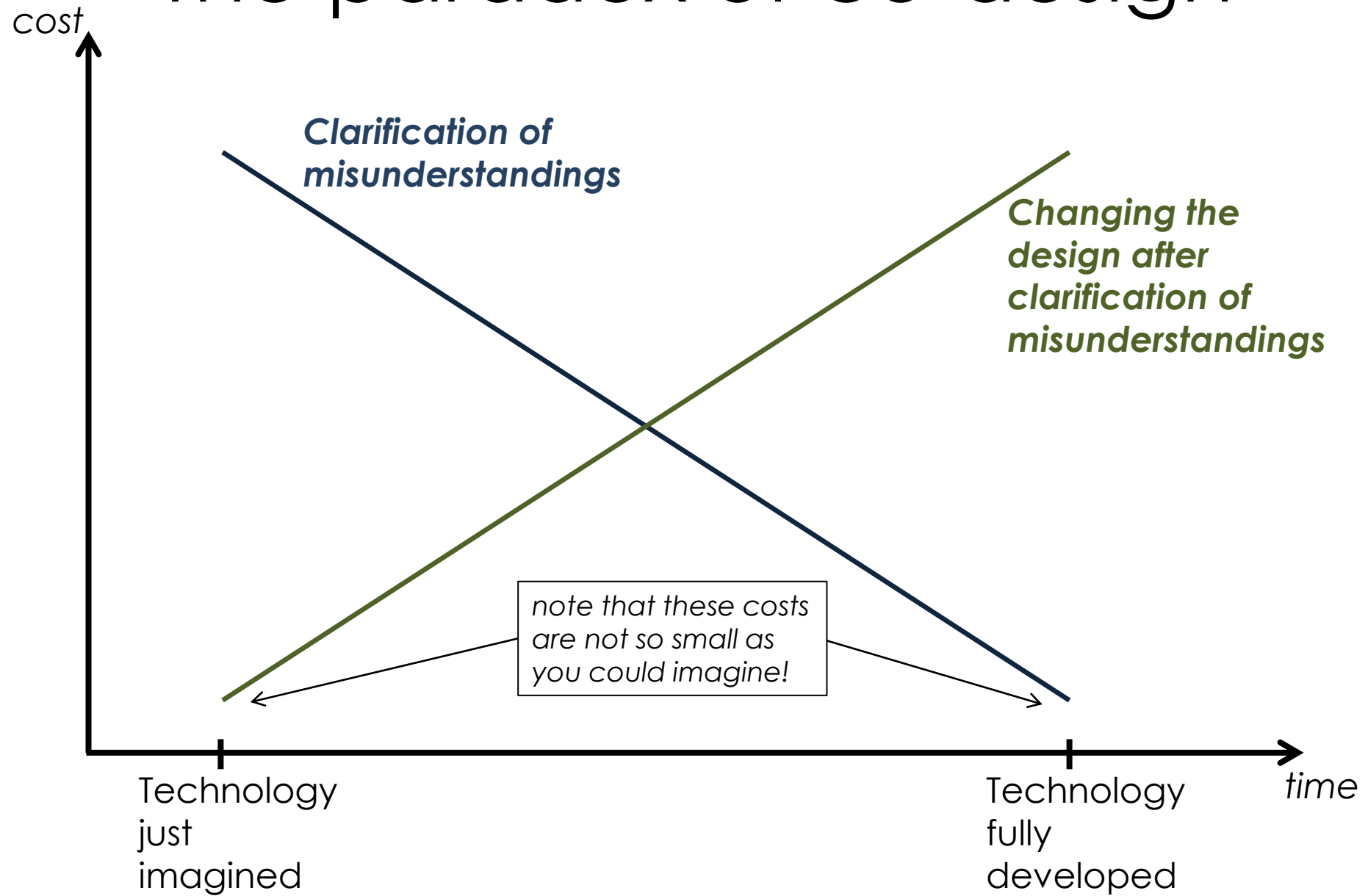
The risks of co-design

Difficulty of communication ideas and cost of misunderstanding

The two poles of the problem:

use requirements/needs vs. technology constraints/opportunities

The paradox of co-design



The (co-)design team

Users vs. technologists

A useful simplification (but still a simplification)

Technologists vs. designers

Designers have specific skills, not just technological (graphical design, interaction modalities, ...)

Technologists do not need necessarily to be involved in the co-design process (e.g. outsourcing)

Stakeholders

Primary vs. secondary vs. tertiary users

Expert in the fields (but might be not “real” users)

Tools for co-design

Design Concepts

Scenarios

- for users to understand the opportunities of the technology

- for technologist to understand the context of use

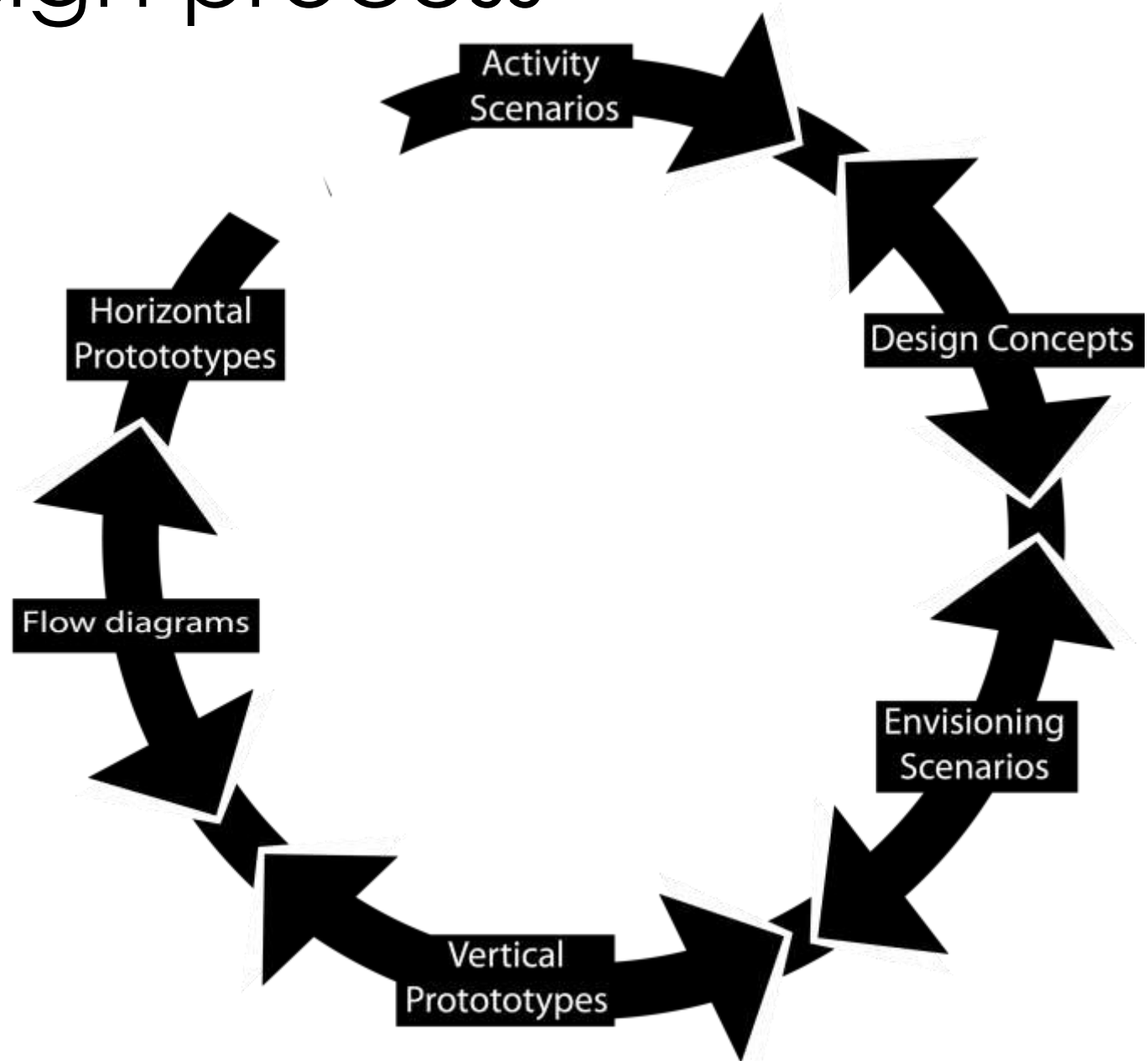
Flow diagrams and wireframes

- for communicating interaction

Prototypes

- for experiencing the ideas

The design process



Design Concept

Design Concept

- An initial idea for the design of an interface
- It may be
 - an abstract representation
 - a sketch of the main parts of the interface
- It may be difficult to share with the stakeholders because
 - Too abstract
 - Too limited

The design concept for Join-In

ACTIVITY ASPECTS

COLLABORATION ACTIVITIES



CBT TECHNIQUES / LEARNING

CONCEPT CLARIFICATION

SOCIAL PROBLEM SOLVING

CBT TECHNIQUES / BEHAVIOURAL

BEHAVIOURAL REINFORCEMENT

FEEDBACK

DESIGN ASPECTS

NARRATIVE CONTEXT

RESOLVE A STORY

CONSTRAINTS ON COLLABORATION



CONSTRAINTS ON OBJECTS



CONSTRAINTS ON OWNERSHIP



CONSTRAINTS ON ROLES



CONSTRAINTS ON CONTEXT

Scenarios

Two types of scenarios

Activity scenarios: stories that describe activities in the context

- Represent the data collected during the field work

- Do not envision technical solutions

- Aimed at assessing a common understanding in the design team

Envisioning Scenarios: stories that represent how the envisioned technology may help the users in the context

- Explore the use of all the macro-functionalities hypothesized for the system, putting them into simple stories

- Different levels of details

- aimed at assessing design choices

Expected outcomes

for the designer's team

the emergence of design criticalities, the resolution of open problems and the coming out of new propositions and ideas, in order to collect additional elements to elaborate an organic description of the concept

for the stakeholders

the explanation of the concepts, the projection of their own experience into the stories

communication outcomes

the creation of a shared vision and the establishment of a common language between designers, implementers and stakeholders.

How to write a storyboard

Similar to Hollywood's storyboard but different purpose

it's the tool, not the story that is the most important part (but creating tension may help)

Telling a story by key frames

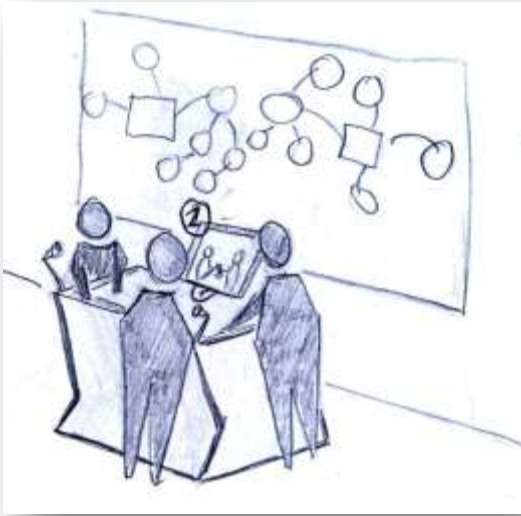
particularly relevant moment in the story

Focus on physical details

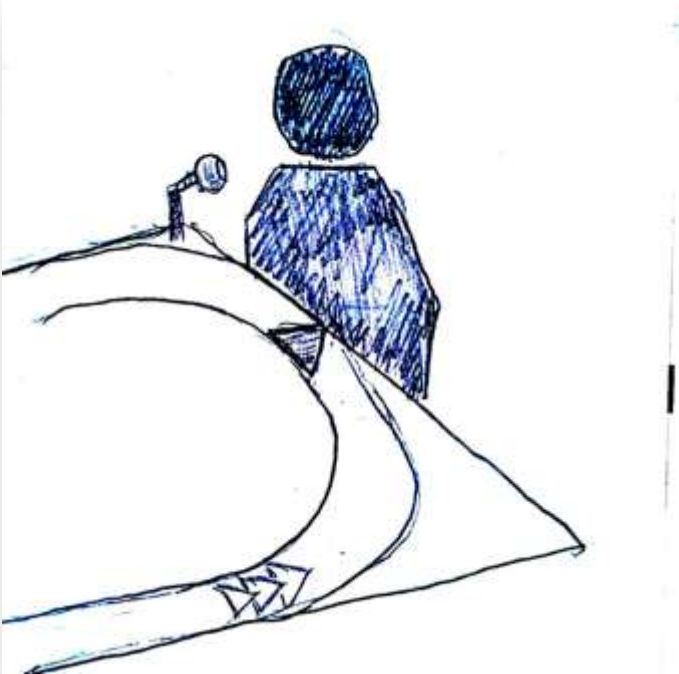
What people do (for both activity and envisioning scenarios)

How the technology is used/revealed (for envisioning scenarios)

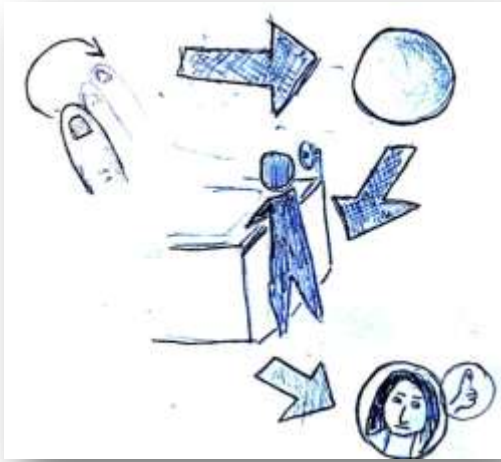
Example of envisioning scenarios



Maria, Luca and Martina meet around the table. As they approach it, the system starts playing a video, on the external monitor (1 in figure). The video shows a disputed scene.



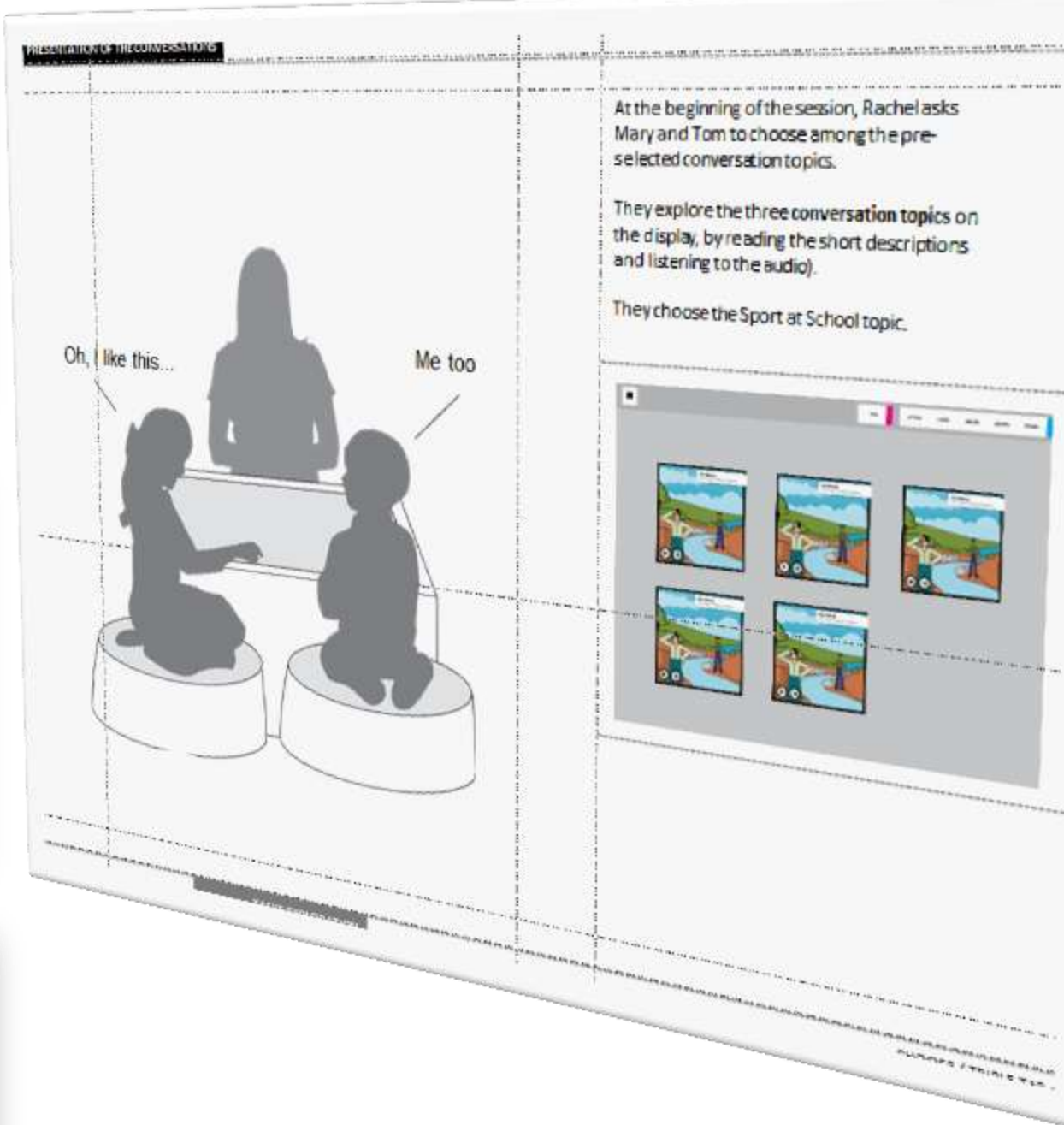
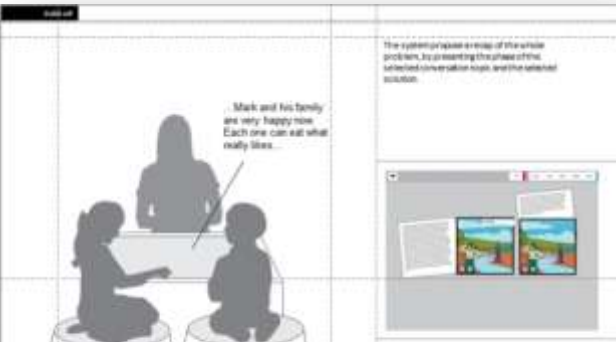
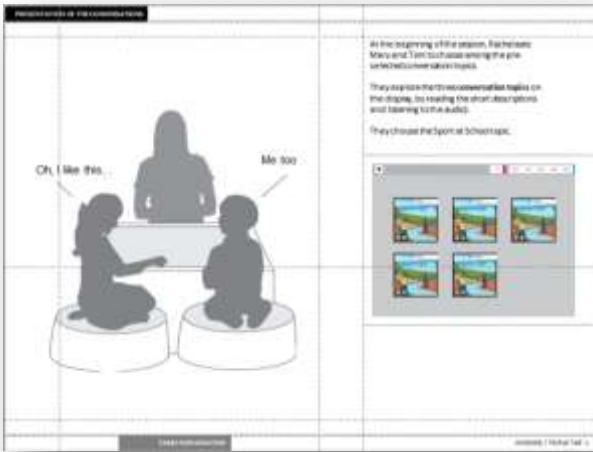
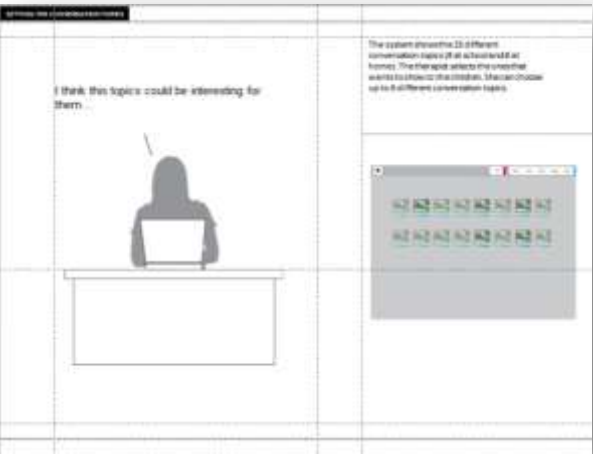
Upon the end of the video, the track displayed on the table starts frizzling and a train of arrows rotate around until suddenly stops in front of Martina becoming a big yellow arrow pointing at her: it's Martina's turn and the timer starts counting down! 1 minute to go!



Martina draws a circular gesture on the table and a ball appears while the webcam turns on. Martina records a 20 secs video expressing her support for the coolness of the girl in the video. She place a "thum up" icon to make it apparent. The track frizzles and the arrow train speeds up until it stops in front of Luca.



Maria's turn arrives but she's not feeling ready yet to express an opinion. She tap on Martina's video and expresses her support on Martina's argument (she also have the possibility of scratching Luca's opinion to express her opposition). Martina's opion is marked with a star and she gets 1 more point. Maria gets no point.



LO SPECCHIO ANALIZZA IL VOLTO DI MARIA E CAPISCE CHE LA SUA ESPRESSIONE È TRISTE



LO SPECCHIO CONFRONTA I DATI DELL'UMORE DI MARIA CON QUELLI DEI GIORNI PRECEDENTI: MARIA È TRISTE DA PARECCHI GIORNI, QUINDI MANDA UN MASSAGGIO A LUISA AL TELESOCOCCORSO



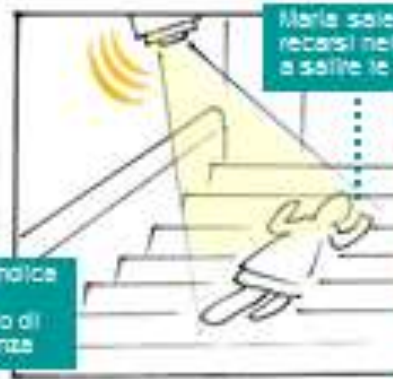
LUISA DECIDE QUINDI DI CHIAMARE SUBITO MARIA PER ACCERTARSI DELLA SUA SITUAZIONE E CAPIRE COME INTERVENIRE

Monitoraggio e prevenzione delle emergenze- caduta/2

DESCRIZIONE

Il sensore posizionato sulla porta manda un segnale a Sabrina e il suo palmare emette una vibrazione.

Sala Ristorante RSA. Ore 13:50. Maria si alza dalla poltrona... Gli operatori non se ne accorgono



La telecamera rileva la caduta e trasmette un segnale ai palmari degli infermieri e degli operatori.

Sul display compare una scritta che indica che una persona non meglio identificata è caduta sulle scale tra il secondo e il terzo piano.

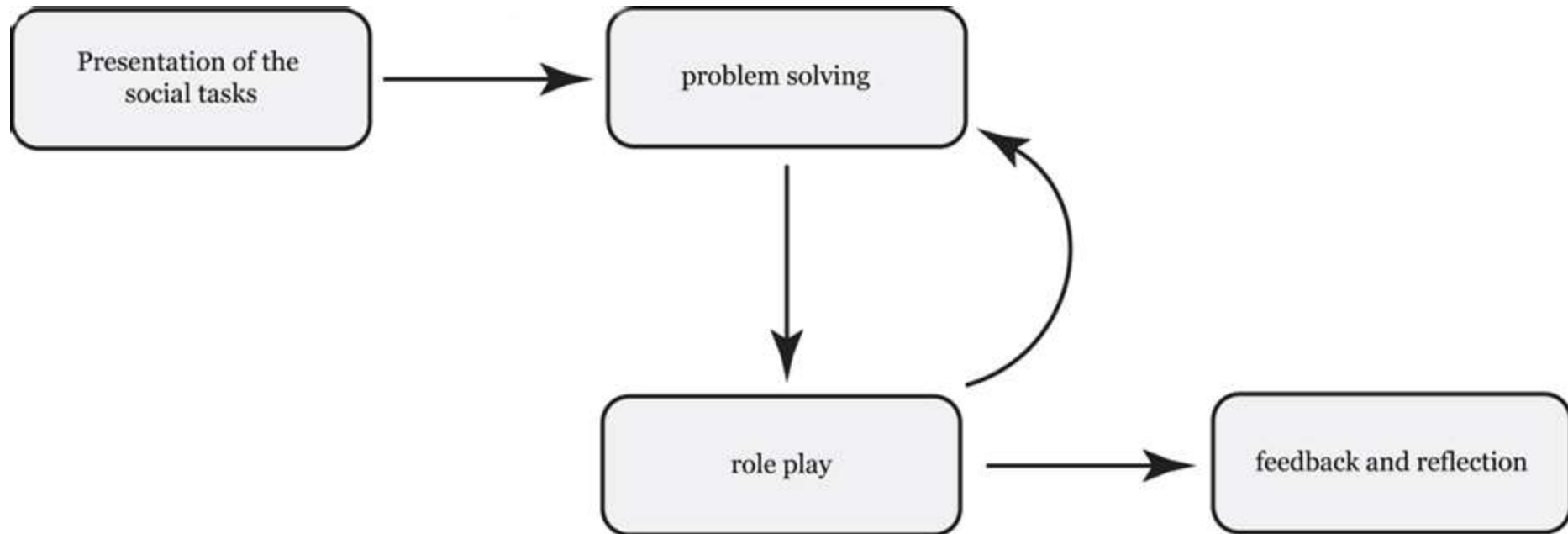


Le telecamere, il sensore e il palmare infatti mandano automaticamente i dati su un computer che poi li raccoglie all'interno della consegna giornaliera.

Activity Flows

- Represents the major tasks in the interface
 - Inspired by Unified Modeling Language (UML) activity diagrams and Business Process Model diagrams
- It is often accompanied by a wireframe representation of the interface
 - (a structural representation that encodes the interaction but not yet the final graphical assests)
- At a later stage, the wireframe is used by the developers to code the program

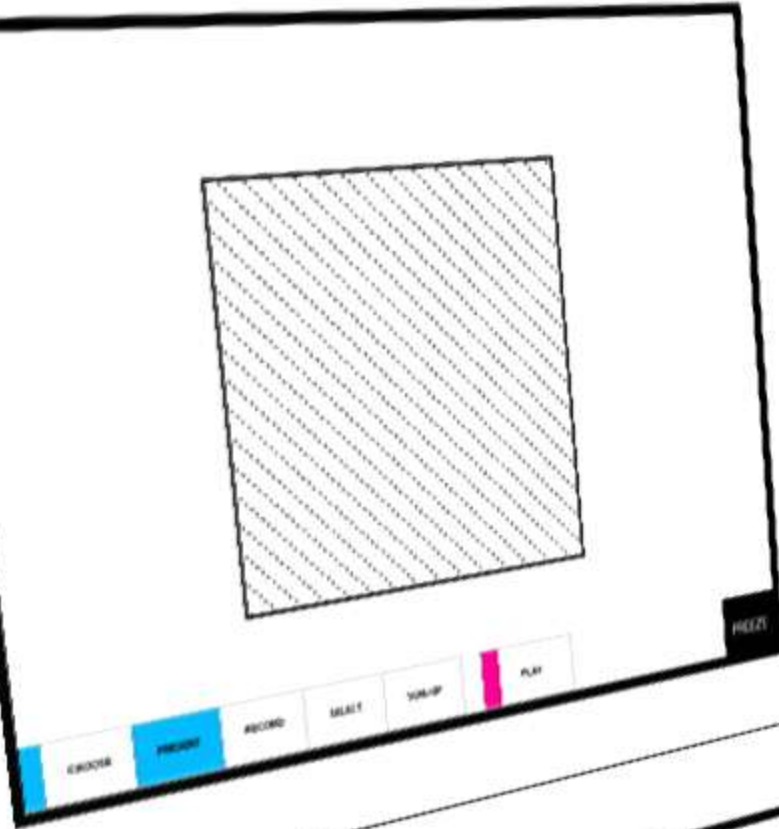
Initial Activity Flow for COSPATIAL *No-Problem*



Phase 02 PRESENT (problem)

Players listen to the story and watch a short movie. A textual description can also be displayed as well.

The teacher/therapist can stay in this phase and discuss with the children about the problem as long as s/he wants.

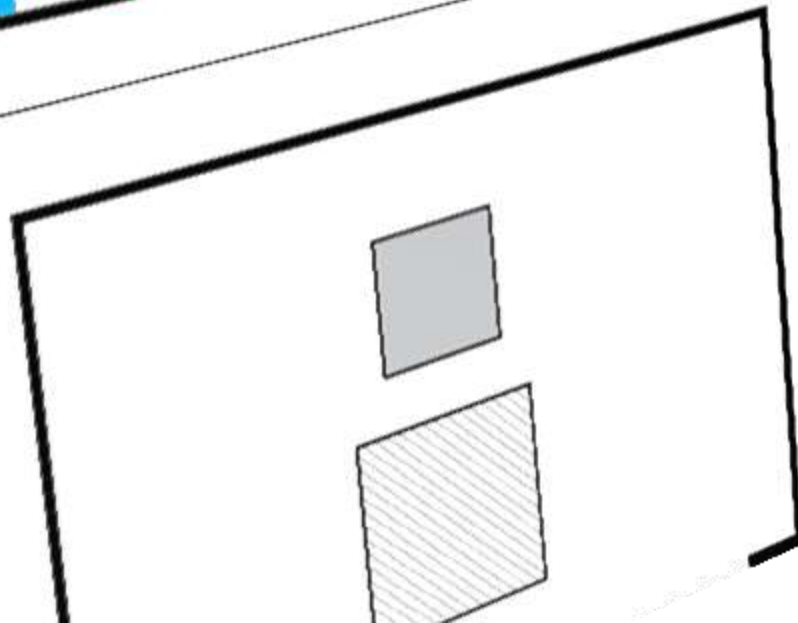


Phase 03 RECORD (optional)

Players record their own solutions.

This phase is optional and the teacher/therapist can directly go from 02 to 04.

If the card is recorded, it will be displayed in phase 04.
The teacher/therapist is in charge of activating the REC button.



since we all understand... is 'normal' we are not talking about a video, but about an animated cartoon like presentation.

For example: The bridge collapses. People are both sides are waiting.

M2: A person for as it whatever thing is a video format. I agree that the [I] cannot as most idiomatic but from a programming point of view it does not make any difference.

As you don't add to the experience phase in this file, I'd like to remind that the idea was to have a final cartoon as well that will present the achievements (e.g. half-bridge, happy dancing people).

M2: Yes, yes. This document is only about the learning phase because we needed to clarify some points here.

NOTE: we need to remember that the presentation of the problem should be as clear as it can be. So if there will be a scene they should see a single and clear. So if they understand correctly we have some options, a short visual presentation of the problem as movie and a textual description of the problem, if so, it is good.

Comment (E2): This is an important addition! NOTE: this means that the teacher and children will be able to discuss the problem and come with their own solution before one solution is presented to them. Do you think they should come with one solution, or should we give them the option to come with a few solutions?

M2: I propose to stay with one for now. Otherwise the system will become a card and over-complicated. Let's see how it works with this possibility before anything is complicated.

NOTE: OK, even if of course between anything more will be good, if you like it as a good and easy-to-use system for teachers.

Activity flow with wireframe

Prototypes

*«any representation of ideas,
irrespective of the medium
used.»*

What *is* a *prototype*?

a series of screen sketches

a storyboard, i.e. a cartoon-like series of scenes

a Powerpoint slide show

a video simulating the use of a system

a lump of wood (e.g. PalmPilot)

a cardboard mock-up

a piece of software with limited functionality

Why prototyping?

Prototypes answer questions, and support designers in choosing between alternatives

- encourage reflection

- allow team members to communicate effectively

Stakeholders can see, hold and interact

- evaluation and feedback are central to interaction design

Compromises in prototyping

Horizontal

wide range of functions, but with little detail

Vertical

provide a lot of detail for only a few functions

Compromises in prototypes should not be underestimated

Product needs engineering

Low-fidelity Prototyping

Use a medium which is unlike the final medium, e.g.
paper, cardboard

Quick, cheap and easily changed

Too some extent, less error-prone than hi-fi prototypes

Examples:

- sketches of screens, task sequences, etc.

- 'Post-it' notes

Example of Low vs. Hi prototype



What can we learn from LF prototypes?

there are limitations

- Graphic design issues that depend on a high-fidelity look

- Interaction issues that depend on a high-fidelity feel W(e.g. response time)

- whether subtle feedback will even be noticed

But many usability problems can be detected

- Virzi, Sokolov, & Karis, “Usability problem identification using both low-and hi-fidelity prototypes”, CHI '96

- Catani & Biers, “Usability evaluation and prototype fidelity”, Human Factors & Ergonomics 1998

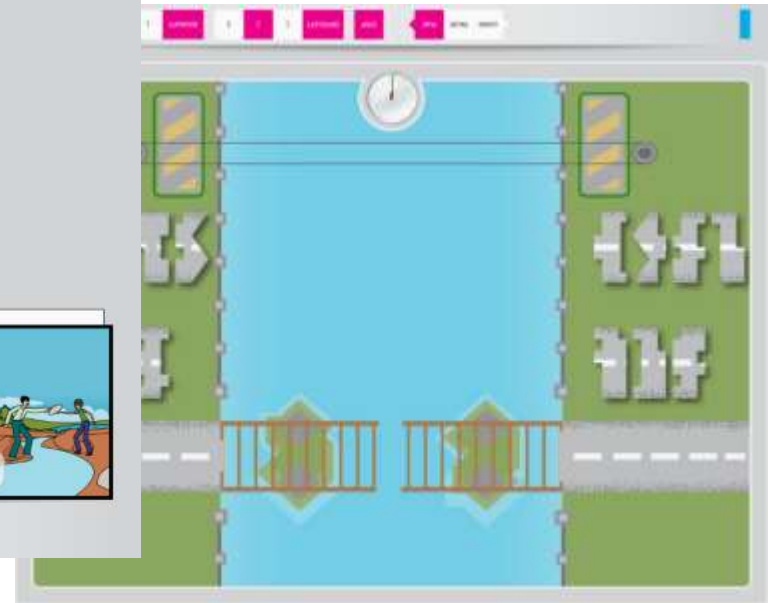
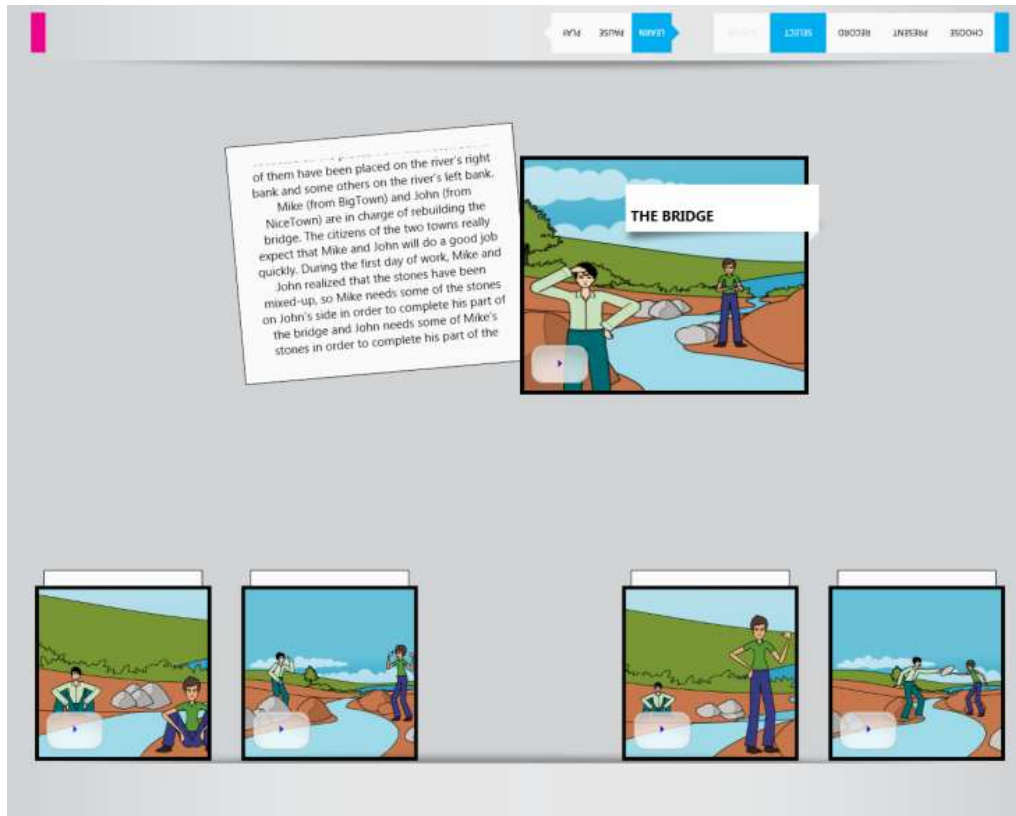
Two stages of hi-fi prototyping in COSPATIAL

From Join-In to Join-In Suite

Join-In



Join-In Suite



Take-away lesson

Both user pull and technology push are inherently wrong

We need to co-design: take advantage of the knowledge of domain and the opportunity offered by the technology

Difficulty of communication ideas vs. cost of misunderstanding

The risks of co-design

Several tools

To be used in iterative cycles