Hands on Design
Task Clarification
LUT Summer School
July 25-29, 2016
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Open Innovation Platform
University - Enterprise
Collaboration
Introduction

The main stages of the Products/Services Design:

- Design Task Clarification
- Problem Framing and Idea Generation
- Concept Formulation and Assessment
Introduction

As humans

We solve problems to change an existing negative state into a desired one\(^1\)

\(^1\)Adapted from Herbert Simon (1969), "The Sciences of the Artificial". Cambridge: MIT Press
Introduction

As designers

We find solutions to problems to create new opportunities for change

Technical
Social
Business
Safety
Communication

.......
Introduction

To solve a problem it is first necessary to gain a better understanding of the DESIGN TASK we have to carry out ..... BEFORE THE DESIGN PHASE BEGINS!

“My team has created a very innovative solution, but we’re still looking for a problem to go with it.”
A sport apparels manufacturer, “FIT-ME”, is looking for proposal of product/service solutions to radically enhance the running/walking experience of people of any age in order to spread healthier behaviours.
The GOALS that the product/service should address are the following:

- Stimulate people to reach their fitness goals and desired performances anytime and anywhere;
- Inform people about their performance and fitness progress;
- Transform the physical activity into an enjoyable and social experience in order to stimulate behaviour change towards more healthy lifestyles;
- Possibility to provide custom-fitted solutions.

The GENERAL CONSTRAINTS that the product/service should address are the following:

- The product should be light and wearable;
- The information provided to users about their performance must be reliable;
- Users’ privacy must be guaranteed for what concern information sharing;
- It must be not intrusive (avoid information overload).
Introduction

STATEMENT

STAKEHOLDERS

NEEDS & REQUIREMENTS
That is the opportunity

What is going on?

Who is your client? What is the “problem” to be addressed? What is the (time/space) context of the problem?

That is the final goal of your design activity

What is the target to reach?

What are you requested to design to overcome the “problem”? Are you requested to design a product, a service or a combination of them?
What is going on?

Who is your client? What is the “problem” to be addressed? What is the (time/space) context of the problem?

Our client is **FIT-ME a sport goods manufacturers**. The problem is the lack of solutions able to transform the outdoor running/fitness activity into an enjoyable and social moment of the daily life and to help people keep themselves fit.

What is the target to reach?

What are you requested to design to overcome the “problem”? Are you requested to design a product, a service or a combination of them?

**FIT-ME needs a custom-fitted, connected and wearable device** for tracking people behaviour with respect to fitness (running/walking) activities.
Stakeholders

Problem: Stakeholders

- Provide & Set Inputs
- Check the Outputs
- Be Affected by the Solution
You have to be smart enough so as to anticipate the expectations of our stakeholders.
The identification of the stakeholders could be an “energy-intensive” task!

Select the ones directly in “contact” with the product/service you are designing (they have for sure something to deal with the solution you have to design)
Second, identify who/which has an interest or concern in your problem/solution.
**STAKEHOLDERS**

**ID CARD:** S1  
**Name:** FIT-ME

**Characteristics:** Italian sport apparels manufacturer

**Role played:** Design call promoter. It will check/approve the solution (Investor).

**Expectations:** The company wants to increase its product/service offer and, if profitable, create new business partnerships with other companies.
Characteristics: F/M, age 25-40, strongly motivated. They usually run alone or in small groups, for 1.5 h and at least 3 times per week. They usually wear professional equipment.

Role played: Buyers/Users

Expectations: To get a continuous monitoring of their fitness progress avoiding injuries and competing with their friends. They also want to be stylish.
Characteristics: F/M, age 18-60, lazy, they usually run alone, but not regularly, maximum once a week.

Role played: Buyers/users

Expectations: They need stimuli able to push them run/walk more regularly and frequently but they do not want to be stressed by them. They also want something that is really easy to use and comfortable to wear.
enjoyRUN example

enjoyRUN STAKEHOLDERS

1- FIT-ME (investors)
2/3- RUNNERS: RUN LOVERS & AMATEURS (buyers/users)
4- RUNNERS FRIENDS & FAMILY (outsiders)
5- TECH COMPANIES (business partners)
6- HEALTHCARE PROFESSIONALS/PROVIDERS (business partners/outsiders)
7- POLICY MAKERS (controllers)
8- ....
Needs & Requirements

What we have to satisfy!

**NEED** ➔ **REQUIREMENT(S)**

How we will demonstrate/measure the fulfilment of the need!

**Tip!**

- Needs are usually expressed in a **narrative way**: we have thus to translate them into **something measurable** (i.e. a **requirement**) so as we can clearly demonstrate whether the solution we have designed is able to satisfy them.
- Requirements are the design specifications through which you can measure the fulfilment of the need(s).
## Needs & Requirements

### Needs (& Requirements)

<table>
<thead>
<tr>
<th>Human-Based</th>
<th>Technical</th>
<th>Business</th>
<th>Regulatory</th>
</tr>
</thead>
<tbody>
<tr>
<td>End-user</td>
<td>Functional</td>
<td>Corporate</td>
<td>Policy</td>
</tr>
<tr>
<td>-HE-</td>
<td>-TF-</td>
<td>-BC-</td>
<td>-RP-</td>
</tr>
</tbody>
</table>

They set how the product/service should “positively” influence humans’ quality of life i.e. their activities and mental status.

They set the “must-have” **performance** and the overall quality/efficiency of the product/service you will design.

They set the cost/financial/market-based characteristics of the solution whose fulfilment is fundamental to make profit and to be compliant with the investors’ business mission.

They set the aspects of the product/service that have to be validated with respect to rules and standards.

Adapted from “Gershenson, J.K. and Stauffer, L.A. A Taxonomy for Design Requirements from Corporate Customers, Research in Engineering Design”
Needs & Requirements

NEEDS
STAKEHOLDERS

PEOPLE
ORGANISATIONS
INSTITUTIONS
GOVERNMENTS
COMPANIES

LUT Summer School, July 25-29, 2016
Needs & Requirements

- Human-Based/End-user
- Technical/Functional
- Business/Corporate
- Regulatory/Policy

STAKEHOLDERS

PEOPLE
ORGANISATIONS
INSTITUTIONS
GOVERNMENTS
COMPANIES
Third, define what are the aspects your solution must fulfil.

The enjoyRUN design call

NEEDS & REQUIREMENTS

+ STAKEHOLDERS
<table>
<thead>
<tr>
<th>NEED (HE)</th>
<th>STAKEHOLDER(s)</th>
<th>REQUIREMENT(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To not obstacle “my” fitness activity</td>
<td>-RUNNER (S2)</td>
<td>The user does not have to handle it neither fill they are wearing something while running (field test analyses)</td>
</tr>
<tr>
<td></td>
<td>-RUNNER (S3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To allow “me” be social</td>
<td>-RUNNER (S2-S3)</td>
<td>Users are always connected with social platforms</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To allow “me” be stylish</td>
<td>-RUNNER (S3)</td>
<td>Uniqueness design, no similar shapes are available on the market</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| To have high customization possibilities| -RUNNER (S2-S3)| User’s can customize the product features/functionalities according to their running level  
The product shape reflects users’ anthropometric data |
|                                        |                |                                                                                                                                                  |
| Easy to use                            | -RUNNER (S3)   | GUI design guidelines for small screen devices (tests with 4 categories of users)  
The user can set-up the product without the need of consulting a manual |
<p>| | | |
|                                        |                |                                                                                                                                                  |</p>
<table>
<thead>
<tr>
<th>NEED (TF)</th>
<th>STAKEHOLDER(s)</th>
<th>REQUIREMENT(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wearable</td>
<td>-FIT-ME -RUNNERS</td>
<td>Lightweight: &lt; 30g&lt;br&gt;Easy to wear (max. 2 actions required)</td>
</tr>
<tr>
<td>Water-resistant</td>
<td>-FIT-ME</td>
<td>Water droplets, moisture, and sweat&lt;br&gt;experimental tests</td>
</tr>
<tr>
<td>Be always connected</td>
<td>-FIT-ME</td>
<td>Bluetooth connections with smartphone</td>
</tr>
<tr>
<td>Wide platform&lt;br&gt;Compatibility</td>
<td>-FIT-ME -TECH&lt;br&gt;PARTENRS</td>
<td>Test compatibility with: iOS, Android, Windows Phone</td>
</tr>
<tr>
<td>Long battery life</td>
<td>-RUNNERS -FIT-ME</td>
<td>Max. 1 recharge/week with all tracking features in active mode</td>
</tr>
<tr>
<td>Data accuracy</td>
<td>-FIT-ME -RUNNERS</td>
<td>Max 190 m of error on a 10km run&lt;br&gt;Achievement of fitness goals (field tests)</td>
</tr>
<tr>
<td>High tracking capabilities</td>
<td>-RUNNERS -FIT-ME</td>
<td>Number and type of tracking features available among: GPS, accelerometers, gyroscope, compass, heart-rate sensors...</td>
</tr>
<tr>
<td>NEED (TF)</td>
<td>STAKEHOLDER(s)</td>
<td>REQUIREMENT(S)</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>----------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>To provide customization</td>
<td>FIT-ME</td>
<td>6 colours - men/woman version – 3 versions each (entry level – mid-range – high-end version)</td>
</tr>
<tr>
<td>possibilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To strengthen brand loyalty/image</td>
<td>FIT-ME</td>
<td>To develop a dedicated marketing campaign focused on building a community around the new product/brand</td>
</tr>
<tr>
<td>Profitable market Range</td>
<td>FIT-ME</td>
<td>&lt;50€entry level, &lt;100€&lt;mid-range, &lt; 250€ high-end version</td>
</tr>
</tbody>
</table>
### Regulatory / Policy (RP)

<table>
<thead>
<tr>
<th>NEED (TF)</th>
<th>STAKEHOLDER</th>
<th>REQUIREMENT(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data security</td>
<td>POLICY MAKERS</td>
<td>Data access through password and user’s authentication; Data must be encrypted.</td>
</tr>
<tr>
<td>Chemicals protection referred to humans’ skin</td>
<td>POLICY MAKERS</td>
<td>Compliant to RoHS/REACH Directive</td>
</tr>
</tbody>
</table>
Try, as much as you can, to define **measurable requirements**: you will use them to explain how you will measure the fulfilment of the need.

<table>
<thead>
<tr>
<th>Easy to use</th>
<th>-RUNNER (S3)</th>
<th>Implementation and fulfilment of GUI design guidelines for small screen devices (tests with 4 categories of users)</th>
</tr>
</thead>
</table>
Needs&Requirements

For the same need you may identify more than one requirement

The need for product customization

The user can select the product features according to his/her running level

*Human-Based / End-user (HE)*

6 colours - men/woman version – 3 versions each

*Business / Market (BM)*

The product architecture should be as much modular as possible

*Technical / Functional (TF)*
Needs & Requirements

One need can belong to different clusters → the related requirement (and probably also the stakeholder) will be different!

Different stakeholders may share the same need.

By definition a stakeholder must have at least one need. Check how you have filled in the “expectations” field of the identikit.

It may happen that during this step new stakeholders “appear”.

Tip!
The definition of NEEDS & REQUIREMENTS is the result of an exploration activity! The final aim is to define a “detailed” list of specifications: all the aspects that are relevant for your design activity have to be deepened and formalized!
State of the Art Analysis

Who and how someone else in the world has already tried to solve this problem?
State of the Art Analysis

Image source: www.sporttechie.com
Design Task

NOW IT’S YOUR TURN: clarify your design task!

0. Introduce yourself to your team *(what background and competences you have)*

1. Choose your favourite design challenge (*)

2. Define the **statement of your design task**

3. Identify your **stakeholders**

4. Define the list of specifications (needs + **requirements** + stakeholders)

*DESIGN CHALLENGES*

- Design a bicycle for special contexts (e.g. a bike for extremely cold places; an amphibious bike etc.)
- Improve the passengers’ experience in airport (e.g. turn boring tasks into enjoyable moments)
- Design a sharing system for gardening tools (e.g. for sharing mowers, equipments etc.)
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