ABSTRACT

Today the world has more than 7 billion people. In this post-industrial era, its inhabitants, moving between big cities and within them, are called urban nomads. The importance of luggage design has grown over time, but new challenges arose, such as carrying electronics devices used every day.

The main objective of this research is to develop a new product focused in today travellers’ comfort and convenience. The methodology of this project is mainly empirical (active research), supported by a literature review and online survey. It is intended to create a travel kit that simplifies usability, organization and carry-on luggage transport. The process has involved the development and launch of an online inquiry to air travellers, both in Portuguese and in English (450 respondents). The target groups included: Tourists, Businessmen and Aviation Crews. The survey’s feedback led the project into a turning point, a new concept based on Inclusive Design.

Keywords: Design, Comfort, Travel, Suitcase Organizers.
1. INTRODUCTION

The importance of luggage design grew over time driven by an increasingly demanding air traveller.

The act of "travel" and everything related to it has a significant weight in the world economy. With globalization, the borders have been reduced, almost eliminated in some cases, as in the example of the European Union, where one can change country simply using citizen or ID cards. Travel time decreased, while the use of internet increased communications between people, and access to information.

Traveling involves carrying luggage, i.e. transportation of belongings needed for air traveller’s everyday life.

Main Research Question: “Considering that the selection, organization and portability of objects necessary to satisfy air traveller's needs interferes with the actual travel experience, how can luggage be designed to maximize the comfort of the air traveller?”

TOD project (Travel Organiser Design for Hand Baggage on Plane Trips — Contribution to the Travellers’ Comfort) main goal is to increase the comfort of today's traveller, as well as the convenience and usefulness of hand luggage during flight time.

2. METHODOLOGY

This paper presents part of the results gathered while developing TOD, focused on users traveling by plane, carrying only hand luggage.

We started by identifying travellers current needs (objects and procedures).

Then, through an inquiry based on a questionnaire, the current traveller’s problems were identified, emphasizing the importance of designing a travel kit, containing objects and guidelines to help organizing the act of travel.

During data collection by questionnaire, the analysis was mainly focused on the tendency of answers related to the qualitative questions.
The sample included 450 respondents. Afterwards data processing will be implemented, followed by the analysis and results interpretation.

The project is being developed based on a user-centred design process. So, we used the following design thinking methodology (Figure 2).

![Design Thinking Diagram](image)

**Figure 2: Management Information Institut (2014).**

### 3. URBAN NOMADS

Today capital cities are poles of activity, development and prosperity reached a scale never seen before.

Some of its inhabitants have a real daily migration, taking hours to complete their daily tasks. Many of them leave home with "trolleys". They have a long journey ahead that involves carrying items such as computers and their accessories, books and materials related to their profession. At times they to take extra clothing to adjust for weather variations during the day. This lifestyle created the nomenclature "Urban Nomads".
Some of these people regularly travel by plane. The amount of luggage tends to decrease with the type of travel. For example, the "professional" travellers tend to take carry-on bags only in order to avoid losing time at luggage claim.

3.1. WHAT IS THE IMPORTANCE OF DESIGNING A TRAVEL ORGANIZER (TOD)?

The shape of the suitcase has changed and evolved. Along with that, numerous accessories have emerged to meet the diversity of needs of the traveller. However, new problems have arisen, without achieving a proper solution.

The organization of cabin handbags, despite the solutions that are being developed, is still an area with vast unsolved problems. Currently, the responses of this type of products are focused on particular aspects and it is difficult to find a sufficiently comprehensive answer to the wide range of traveller’s needs.

During collection of main evidence to support the theoretical contextualization, we have found the best carry-on luggage (Alistair, 2014), and different methods of organizing a suitcase, e.g., 2013 Site Video Louis Vuitton (figure 3); as well as laundry folding methods. Multiple sites list various travel items such as suitcases with wheels, flexible bags, organizers and travel accessories. Brands like Eagle Creek and Muji are specialized in travel product design.
A good example of the concern about the user’s well-being is the product developed by Medical Kits brand (2012), known as Adventure Medical Kits Smart Travel First-Aid Kit.

Some of the most important factors of the suitcase, improving the well-being of the trip, are the quality, the relationship between price/quality, look, weight, load capacity and size.

Other needs related to luggage are also being felt today. It’s inevitable to talk about electronic equipment which is constantly used: sometimes there are no electricity plugs nearby for recharging the mobile phone or laptop, not to mention other gadgets that are great battery consumers, such as game consoles, cameras or digital music players (Voltaic, 2009 s.p.3). To respond to these challenges bags with portable chargers for mobile phones and tablets were developed.

However, one of the basic concepts of this investigation is the interest in the personalization of TOD, meaning that we can group these functional objects in a travel kit, according to each user’s needs.
John Urru, speaks of the intricacies and interdependence of increasingly sophisticated mobility systems developed in the late twentieth century (computers, mobile phones, payment cards, etc). The TOD project aims to develop a customized Travel Kit which ensures individual usability of these systems on the road.

But the amount of weight we carry on is one of the problems that generates more discomfort and tiredness during luggage transportation.

After the terrorist attacks of September 11, 2001 in New York, the world has undergone irreversible changes. In the case of air travel, there is an increased vigilance at airports regarding the passenger’s baggage restrictions and transportation, especially at the hand luggage level.

However weight management remains important, with implications on the organization and usability of cabin objects.

As such, the design of a travel kit is justified, consisting on a travel bag organizer, in order to maintain the contents together by groups, optimize the luggage storage, the time spent in the process and the total weight carried.

3.2. INCLUSIVE DESIGN

According to the concepts of Inclusive Design, as Julia Cassim explains (2012), one can conceive a design project starting from the extreme situations and going to the average situations; it is not possible the other way around.

This carry-on organizer can be customized, based on principles of inclusive design.

Filipa Nogueira Pires’ project, “feelipa color code”, is part of her MSc in Product Design. Including this color code in TOD will help identify and locate contents by color and touch, bringing benefits to all users (Figure 4).
The construction of this project is based on user centred design thinking.

TOD Project will be conceived and designed based on the literature review and the results of an inquiry supported by questionnaire. Construction of the final questionnaire was based on Survey Pre-tests. This was done in phases. A 1st phase questionnaire was written in Portuguese and targeted 350 respondents. In a 2nd phase questionnaire was translated to English to reach a wider audience. The target was increased for a total of 450 respondents both in Portuguese and in English. TOD’s prototype is being developed at the same time as data is being analysed.

4. QUESTIONNAIRE DATA COLLECTION AND ANALYSIS OF RESPONSE TENDENCIES

The objective of the questionnaire (Appendix) was to identify travellers problems related to packing hand baggage and during transportation.

We intend to survey the following target groups: Tourists travellers, Business travellers and Crew/Staff travellers.

4.2. RESPONSE TENDENCIES TO QUESTION 32

Question 32: “Identify which of these objects and procedures you would include in your ideal travel kit?”
The following items correspond to the most voted needs identified (400 respondents)

- Bags for dirty clothes 73.9%
- Shoe bags 66.5%
- Universal electrical current adapter 65.0%
- Travel set of daily use articles of personal hygiene care 61.4%
- Padlock 57.1%
- Pharmacy organizer (SOS) and transportation of daily use medicinal products 56.9%
- Extra foldable lightweight bag for a return trip 53.0%
- Set of empty bottles for toiletries, size for cabin luggage 51.0%
- Portable rechargeable battery (to ensure the usability of gadgets) 42.4%
- Vacuum bags with the function to save space in the suitcases 41.6%
- Check list 39.1%
- Purse for documents 33.8%
- Suitcase organizers 30.7%
- Instructions and techniques to avoid forgetfulness 29.4%

Graph 1: Question 32 identifies which of these objects and procedures will be included in this “travel kit” (400 respondents).

4.3. RESPONSE TENDENCIES TO QUESTION 33

Question 33: “Specify which objects and procedures not listed above are important for you, so that your trip becomes comfortable. (optional answer)”
The feedback to open questions (qualitative ones) has led the project into a surprising and innovative new path, a turning point. A new concept emerged, which is now in experimental and developmental stages.

The new conceptual approach is directly related to the cabin suitcase, the ease of organization and access to objects used during flight.

At the present moment we cannot reveal more information about the final product due to the possibility of an eventual patent.

5. CONCLUSION

Traveling involves carrying luggage and modern life everyday objects.

The main goal of this project is to increase the comfort of today’s traveller and increase the convenience and usefulness of hand luggage during flight time.

Our investigation on the main products available on the market related to the organization facilitators of cabin suitcases leads us to conclude there is still a gap on the organization, manageableability, accessibility and transport of objects commonly used in air travel.

So, it makes sense to develop an organizer, in the form of a customizable travel kit, which simultaneously simplifies organization and expands user’s interface and functionality of hand luggage. That is the main purpose of the present project.

The intention is to organize and group all necessary objects on the move, arranging them through a new concept, making it an innovative product that will contribute to the comfort of today’s traveller.

Conceptualized in the area of fashion design, this project can only be brought to life by bringing together knowledge from other areas of study such as anthropology, psychology, sociology, economics, management, law, marketing and advertising.
in the study area of fashion design, this project can only be validated by the crossing of knowledge brought by these areas.

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**ATTACHMENTS**
