BlueTotem

Communicating the sustainability in the city

Firstly, I would like to express my sincere gratitude to my advisor, for the continuous support of my thesis, for his patience, motivation, understanding and immense knowledge. Besides my advisor, I would like to thank all the professors who taught me in these years at Politecnico di Torino.
Last but not the least, I would like to thank my family and friends for supporting me spiritually throughout writing this thesis and my life in general.

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BlueTotem

Communicating the sustainability in the city

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Abstract

This thesis is talking about how to communicate to citizens all the things which are related and is about the topic of sustainability.

The interaction design approach is to find a solution to raise the awareness of the people through this communication.

So that, every citizen would be a part of a change for the society. Using gamification is one of the methods to realize it and spread the communication.

The goals set for the project of Bluetotem are two principally.

The collection of PET which sensitizes people by providing them with awareness and also the collection of data for the creation of the big data.

Bluetotem was realised and installed in Cittadella politecnica del design, Torino during the design week 2016 by a team from Innovation Design Lab of Politecnico di Torino and it is still there.

The project was designed to encourage citizens to undertake some actions leads to improve the quality of the city, the bottom-up approach, which is crowdmapping and its first phase that is throwing the PETs into the Bluetotem by citizens to be compacted and be prepared to recycle.

In this study, I am trying to check other possible solutions of communicating between this machine and human. Therefore, first I am going to review other possible scenarios and experiment solutions to have more engagement and interaction between citizens and Bluetotem and second, specifically, I figure out the proper way of communicating.

In the end, I review the effect of gamification for attracting the user and apply it to the project, considering the human-centered and systemic approach to characterize interaction design for the aim of the project which is sustainability.

Introduction

The most important goal in this study is to experiment how we can put in practice different theories of the design to find solutions for better interaction between human and the machine considering the main principles such as sustainability and technology.
As we know there are many different machines which are designed for crowdmapping and, in this case, to collect plastic bottles. By adding gamification to the process, I am trying to use Interaction design as a mediator in between. Thanks to new technologies in the field of ICT and smart city in one hand and on the other hand increasing the awareness of the society about the concept of sustainability, it is very promising to expect the citizens to participate and share every positive effort towards a healthy society and a sustainable city. This is going to help the whole city to become more dynamic and interactive. Having more relationship in the city secure better results for the society.

Today, digital technologies are becoming fundamental in the whole world. Therefore, this substrate can support ideas and projects which are related to sustainable innovation.

Awareness of collecting waste which is already existed in this society, plus the importance of living healthily that is very bolded in the current society make it easier for a designer to take the next step. The best scenario is when citizens achieved the complete awareness about the environmental sustainability, so that this concept would not be just well accepted among professionals, but also completely understandable by public. This will result in having a better performance of the social life and subsequently personal satisfaction which take us to real meaning of well-being. Also, the social aspect of well-being will be reflected, it means when someone respect themselves, they also respect the others and consequently, they respect the environment due to having more social responsibility.
This responsible citizen would not be passive, instead they want to take part to grow their city. They are active, and they want to play a role for their environment. That is why gamification is a solution that designer brings on the table. In addition, gamification would cover the bottom-up approach, in order that the user is not a consumer to use the innovation, but they are active and aware of their actions and have a clear role on the process of changing. Thy citizens can take part in the process of creating for themselves towards growing. Since all this process should have done in a big scale it is fundamental to present it in a proper way to make the information and data accessible and tangible for everyone. Here the designer's role is very important to create a relation among

technology, graphic, psychology and other fields to realize the concept.

Putting the human at the center of project is very valuable because it brings up some questions to help designers, for example, who is the target? which one is the context? How to satisfy all the users with different mentality? What is the user's experience regarding to the project?

What the user feels is very important and that is why we need to analyze and experiment it to achieve a systematic interaction design. People, today, is integrating more and more with technology and tend to make possible everything with it. As an example, the increasing use of smart home or smart households which is a motivation to put the technology in a right way to achieve sustainable goals.

So, if citizen could communicate through the technology for instance their smart phone with let's say BlueTotem or even other devices to exercise sustainability, it is not only providing a smart platform for them but also make it possible to cover the sustainable thoughts and acts.

It is very essential to know and understand the target well for being succeed to design in a comprehensible way. Gamification is a solution to apply the disciplines in an understandable and gamy way to non-game contexts such as our case.

The BlueTotem compacts the plastic bottles. The user needs to go to BlueTotem open the bottle's cap and throw it in a smaller hole and then throw the plastic bottle in the bigger hole. So, the fact is, how the human and the machine interact and communicate together is essential. User must go to the BlueTotem not only with responsibility but also with the inner will. A good design could be very helping to make it happen.

Smart phone as a mediator between the machine and the human could be very helpful. According to statista.com, number of smartphone users is 2.53 billion and number of mobile app downloads worldwide in 2016 was 149.3 bn. So, use of smarts phone is widely spread in the world and it is very easy and fast to communicate through it. It is said on statista website that gaming-application for smart devices are increasing dramatically and because of that it is a great opportunity to conduct it with sustainable ideals.

CONTENTS

Chapter 1
Scenario

1.1 Presentation of the BlueTotem

The Bluetotem project aims to study and implement a new service capable of processing complexity and restoring simplicity and facility to the end user. It is going to be an information and communication device which is now concentrated on waste management and starting with compacting PET bottle.

Today we know that the health of nature and living organisms are interdependent. Therefore nowadays not only it is crucial to resolving the problems and deficiencies that have been created in the past by human but also there is an urgent need to prevent new contaminants. This will not possible except through the interaction and cooperation of humans. To achieve this it is essential that the participants are aware of the ways to participate and of the positive outcome of the interaction in the provided platform.

The purpose of the Bluetotem's design was to create an opportunity for citizens to make informed contributions towards a better future for the neighborhood and in the larger scale for the city and country and also, to take a step towards a better world. It is worth noting that in this system, citizens and their participation are the only integral part of this change (bottom-up approach).

Bluetotem is basically a compactor of plastic bottles which can reduce the volume of bottles up to 90%, whose advantages is its ability to connect to the Internet, communicating with the audiences and raising their awareness.

This project in addition to creating a valuable network within its field has other socio-economic and environmental benefits. For example, it encourages people not only to collect more bottles for recycling but also gives them the opportunity to donate their shares of this partnership in three cases:

1) In the city
To finance the crowdmapping
2) In hospitals
To fund medical research
3) In universities

For sustainable practices
Various factors contribute to this project in advancing the objectives. Some of them have direct participation in the project, others are involved in financing the project.

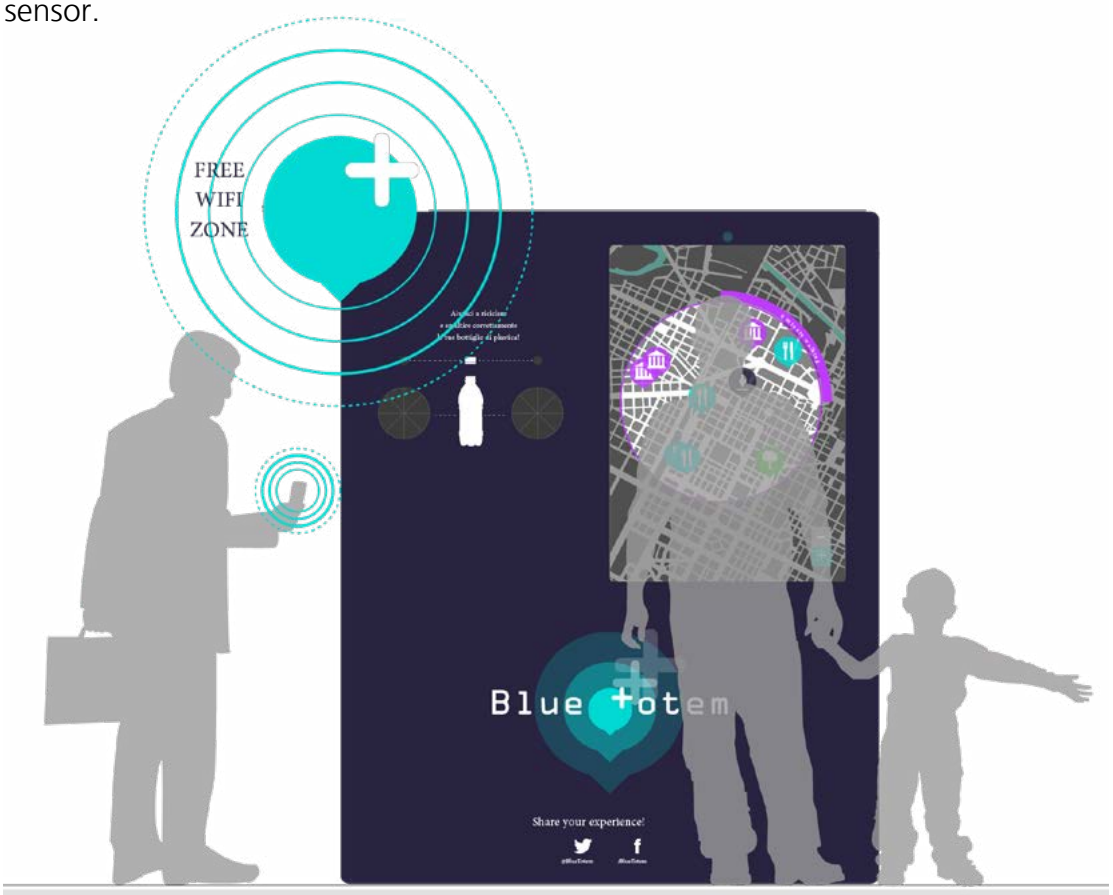
1.2 Analysis

This device is designed in two sizes and can be installed in public places. The dimension of the larger one is 200x160x70 cm with the capacity of 500 bottles that can reduce the volume of bottles up to 90% and by doing so, it reduces costs and work, and emits fewer emissions.

The device is equipped with photovoltaic panels to supply its requied energy. It has four trapdoors to enter plastic caps and bottles and it is equipped with two displays and video playback capability.

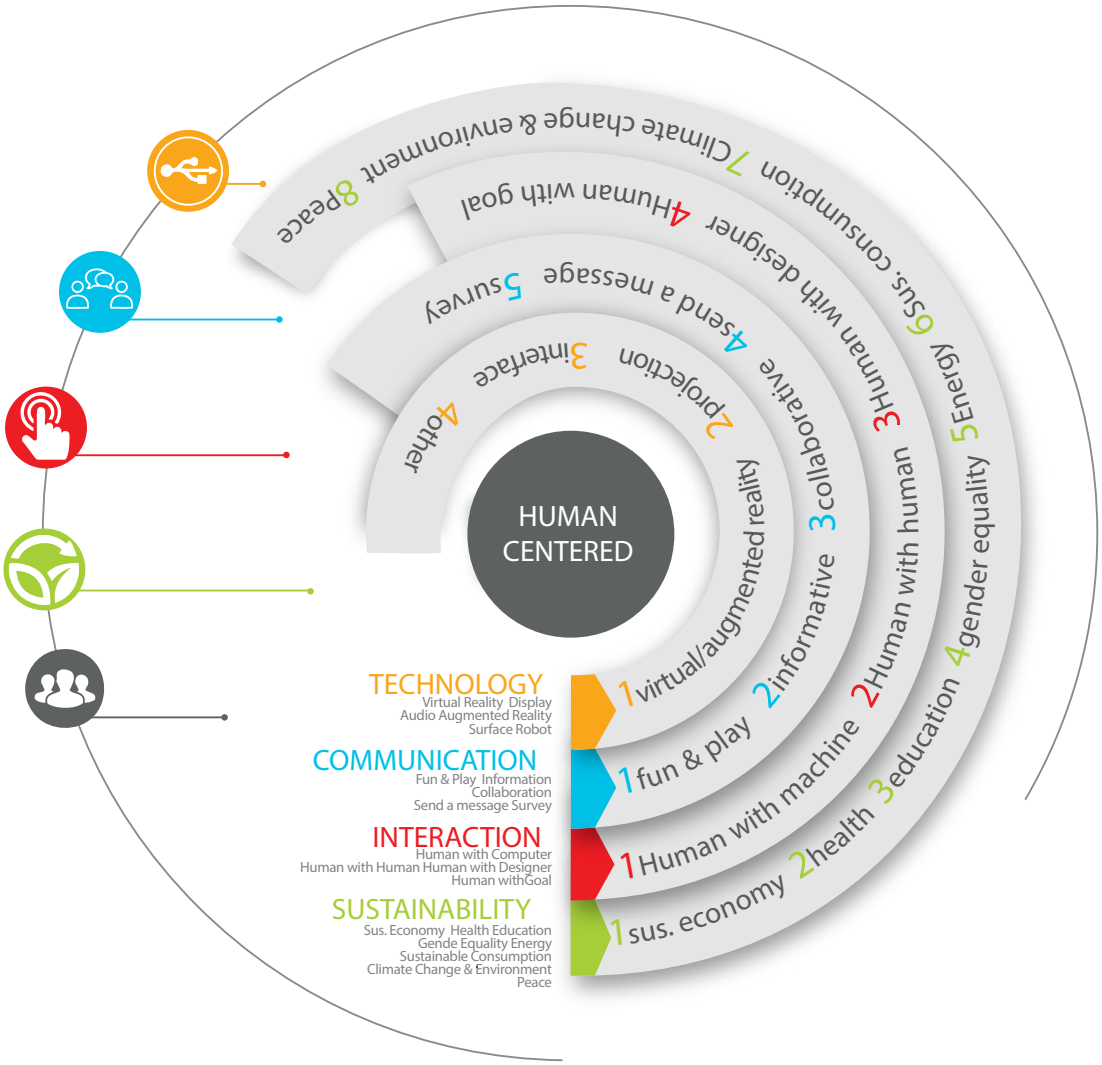
It has a Wi-Fi free zone and two I 80-degree security cameras. In addition, there are two proximity sensors and a filling sensor that indicates tank filling. This accessories of the smaller Bluetotemare limited. Its capacity is 200 bottles and there are two trapdoors to enter the plastic caps and bottles.

It is equipped with Wi-Fi but it does not have video playback. There is no proximity sensor and security camera but it has a photovoltaic panel and filling sensor.



1.3 Case Studies

Here are some design cases that are studied for this thesis. The main goal of studying so many cases was to understand which are the concentration point of the successful designs and also to find out which points are neglected in the recent designs.



So, here I will mention some of the most related case studies to the project which are directly or indirectly have similarities to improve this study. Different aspects to choose them, consist of 5 main points of view: Technology, Communication, Interaction, Sustainability, and Human-centered.

White Tent City

Sustainability (Economy - Peace)
Interaction (Human with machin - Human with goal)
Communication (Sending a message)
Technology (Video mapping)
Human Centered

After a social movement failiure in 2011 because of the rain, a group of designers -Lila Chitayat, Alon Chitayat, Roee Kremer- made this installation as a symbol of the movement to protest and take part in social justice, so everyone could participate in this movement by sending a message via SMS and the messaged appeared on the tents thanks to video mapping technology. the installation was located in Museum piazza in Tel Aviv.

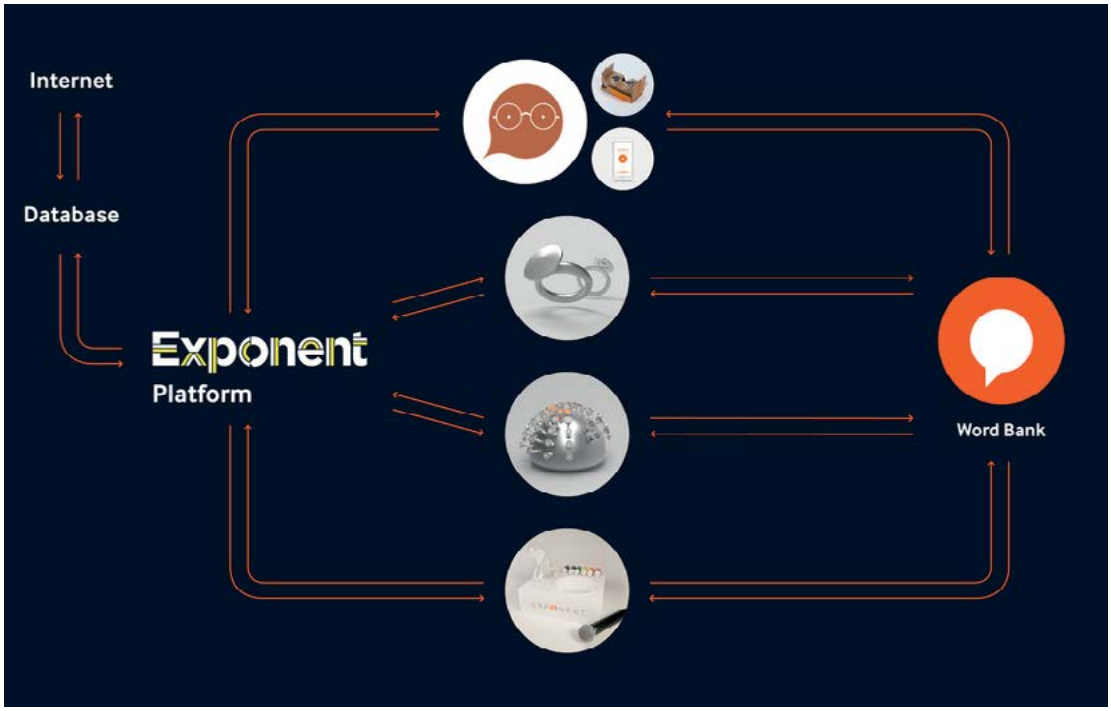
Le Petit Chef

Interaction (Human with designer)
Communication (Fun and play)
Technology (Projection)

Skullmapping design group from Belgium project this installation in 2015. The aim of this installation was entertaining people while waiting in the restaurant by a miniature chef that is projected onto dinner table and cooks a meal.
The guest can go on a cooking journey with a little chef while waiting for their meal to prepare. The show tells the story of how that food is prepared. It is a 2-hour show and it is a very entertaining experience for the guests.

Exponent products

Sustainability (Education - Gender Equality)
Interaction (Human with machin - Human with human)
Communication (Informative - Sending a message)
Technology (Virtual/Augmented reality)
Human Centered



Roya Ramezani did this project for her thesis at the university in San Francisco in 2016. Her main goal was enriching women's word bank and she did it by designing a series of products which were: Exponent Keyboard, Exponent Ring, Presentation Buddy and Exponent Voices.

While the designer was participating in different event and conferences, she noticed that even when the number of men and women was equal, women did not participate in the discussion equaly. women were silence and also she found out according to researches partcipation of women to men was like 12 to 85 percent. So she focused to enrich the women's word bank by designing a package of products, app, and VR technology.

Reveal-it!

Sustainability (Education - Consumption)
Interaction (Human with machin - Human with goal)
Communication (Informative - Srvey)
Technology (Projection - Interface)
Human Centered

Nina Valkanova with a group of designers did the project in Argentina in 2011 for energy consumption awareness by interactively discovering and visualizing data via public projection on urban surfaces.
It was a research with the goal of gathering data about energy consumption to understand how people respond to this installation, how this data affect the undestanding of individual and sociaty and visualization on data to increase the awarness of society.

Smart citizen sentiment dashboard

Interaction (Human with machin - Human with goal)
Communication (Fun and play - Srvey)
Technology (Projection - Interface)
Human Centered

Moritz Behrens and Nina Valkanova designed this installation for citizen feedback. It was installed in 2013 in São Paulo. The project translates feedback into a visual language, which is displayed on the media facade of the Galeria de Arte Digital.
It is an interactive installation to let citizens express their opinions and sentiments about their city and share it on the facade of a building. Citizens can transfer their feelings in a tangible way through a dashboard which is physically installed in front of the building. This was a case study for a research.

Social Swipe

Sustainability (Economy - Education)
Interaction (Human with designer)
Communication (Informative - Send a message)
Technology (Interface)
Human Centered

Kolle Rebbe designed Social Swipe to remind people that even a small donation can have a big impact. It was installed in Germany in 2014. When a credit card is swiped you can see the impact on screen.
This project helps increasing the will of people to help financially with the goal of fighting against of poverty, with this device people can have a better understanding of their donation. It is easy to use because just by passing a credit card, you can donate 2 euros and this help goes to Filipino child tor a family in Peru, and the user will see a poster of it.

Time Posture Scanner

Sustainability (Health - Education)
Interaction (Human with machine - Human with goal)
Communication (Informative - Send a message)
Technology (Virtual/Augmented reality)
Human Centered

Microsoft designed Time Posture Scanner because 25% of population experience back/neck problems. It was installed in 2016 in Stockholm. Today's lifestyle creates some problems. For example, carrying a laptop all the time or working on computers or cellphone cause neck and back problems. So by placing a professional naprapath and a real time-posture scanner in a busy place of Stockholm to help people understand that they need to change their daily basis of carrying heavy things and be aware of how to carry them.

Your Text Here

Interaction (Human with machine - Human with human - Human with designer - Human with goal)
Communication (Fun and play - Survey)
Technology (Projection)

Designer Marcos Zotes, installed Your Text Here project in 2012 in Detroit city to give the opportunity to citizens to become the authors of information by send a SMS through your phone, and it is projected onto the façade of a building. The aim of this project is to help citizens to share their thoughts and opinions about the city on the facade of a building. They can send an anonymous message via SMS and it appears on the building and it stays about 10 to 20 second to let the other citizens also share their messages. It is an opportunity for the freedom of speach for all the citizens.

Pulse of the city

Interaction (Human with machine)
Communication (Fun and Play - Collaborative)
Technology

George Zisiadis a designer based in San Francisco designed Pulse of the city in 2012 to reconnect pedestrians with the rhythm of their bodies turning pedestrians' heartbeats into music.
This installation converts the heartbeat of the pedestrians to a custom music and it brings happiness and celebration to the city. This project was installed for the first time in San Fransisco in 2012 and the next year in Boston. With this installation, the citizens can feel the connection between them and their cities.

Hiut Denim Co shop window

Interaction (Human with machine - Human with goal)
Communication (Fun and Play - Send a message)
Technology

An interactive window display that works with conductive ink technology to give information about the brand -Hiut Denim Co.- to the passerby who touches it so that they can find out about the history of the product. The installation was installed in 2014 in London City and designed by Knit to communicate the story using Conductive Ink technology to tell the story of the brand.

CampusEye

Interaction (Human with machine)
Communication (Fun and play - Informative)
Technology (Interface)

CampusEye let the students of the campus to browse the contents and save them in their phone on an app. It is an interactive installation between computer and human to help them to access information easier thanks to modern technology such as kinect sensor and other interaction methods. The group of designers are Brittany Hamtil, Christian Strommen, Jenny He, Kaushal Agrawal and Sarah Deng. CampusEye was projected in 2013 in Pennsylvania to allow a campus community save and post content through an app using a large scale wall projection and a Kinect depth sensor.

Transportation Hallway

Interaction (Human with machine - Human with human - Human with designer - Human with goal)
Communication (Fun and play - Informative)
Technology (Virtual/Augmented reality - Projection)
Human Centered

In transportation hallway you can choose bicycle or bus or car to transport you. The road is full of messages and infografics to increase the awarness. It is very attracting to all the ages and very engaging. All the benefits or consequences of using different vehicles pop up in front of the people to inform the citizens about environment and sustainability. The project was done by Potion in 2009 in Washington, DC and by touching a large icon, it represents a layer of human impact. The aim of the project is to show human impact on issues of global sustainability.

Dancing traffic lights

Interaction (Human with machine)
Communication (Fun and play)
Technology

This traffic light designed by Smart company help people to entertain themselves while they are waiting for traffic red light. So instead of being bored waiting, you can have fun and dance inside of the special room and make the traffic light dance to entertain yourself and other pedestrians. The project was accomplished in 2014 in the Lisbon city. By making the traffic lights “dance” using motion capture technology to encourage pedestrians to wait until it’s safe to cross the road.

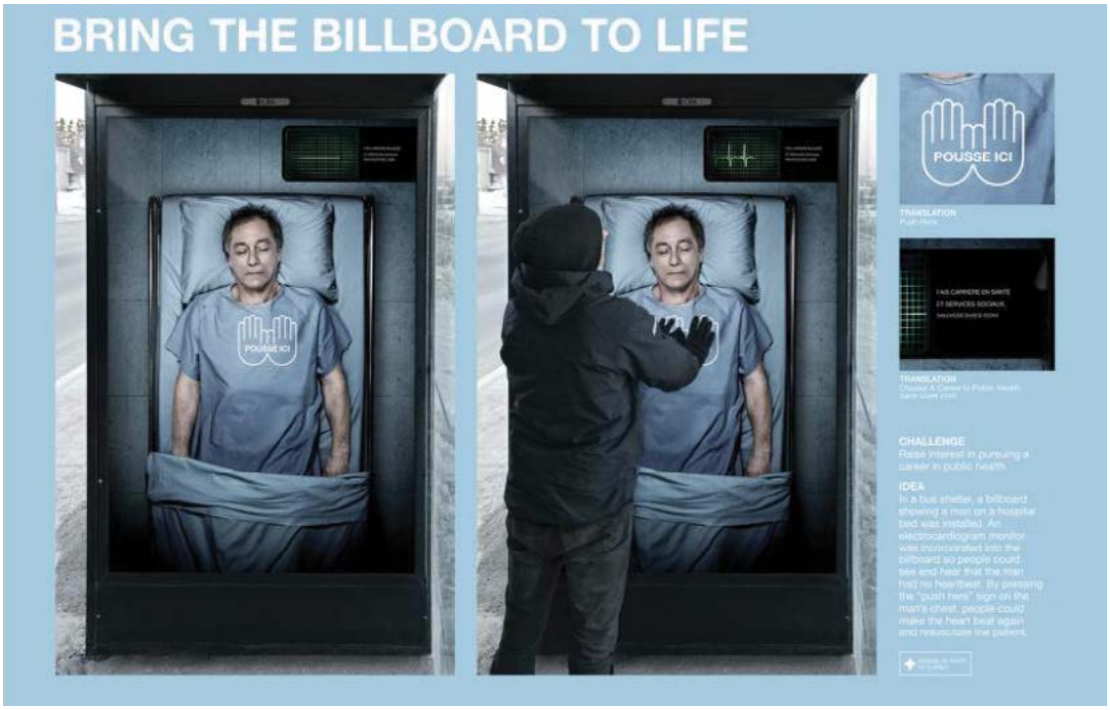
Cuenesics

Interaction (Human with machine - Human with goal)
Communication (Fun and play - Survey)
Technology (Projection - Interface)
Human Centered

The research group -Robert Walter, Gilles Bailly, Nina Valkanova, Jörg Müller- says, "Interactive public displays would benefit from immediately usable mid-air techniques for choosing options, expressing opinions or more generally selecting one among several items." They propose a design space for hand-gesture based mid-air selection techniques on interactive public displays, along with specific techniques that they evaluated. The research was exprimented in 2014 at a coffeeshop in Berlin.

Press here Ad.

Sustainability (Education)
Interaction (Human with goal)
Communication (Send a message)
Technology (Interface)
Human Centered



An outdoor advertising to raise interest in pursuing a career in public health. People can can place their own hands on the patient's chest on the billboard to bring them to the life. By writing the "press here" slogan they encourage citizens to participate and have part in this interactive advertising and give people the feeling that they can save lives. This ad. was installed in 2011 in Quebec to encourage people to cardiac message, the electrocardiogram simulate a successful resuscitation.

Bird

Interaction (Human with machine - Human with goal)
Technology (Visual/Augmented reality - Projection - Interface)
Human Centered

Bird is a wearable interface with the aim of connecting technology to the user. It is a Bluetooth device attached to the index finger and it can communicate with different sources such as Windows, Android, iOS, etc. Bird can convert any space into an interactive space and you can tap, hold, drag, move and literally do anything you can do with a computer in that space. Bird is designed by MUV in 2016, the company based in Israel. The main aim of Bird is to make any space interactive. A bluetooth device that allows you to control visual content using the entire spectrum of interactive methods.

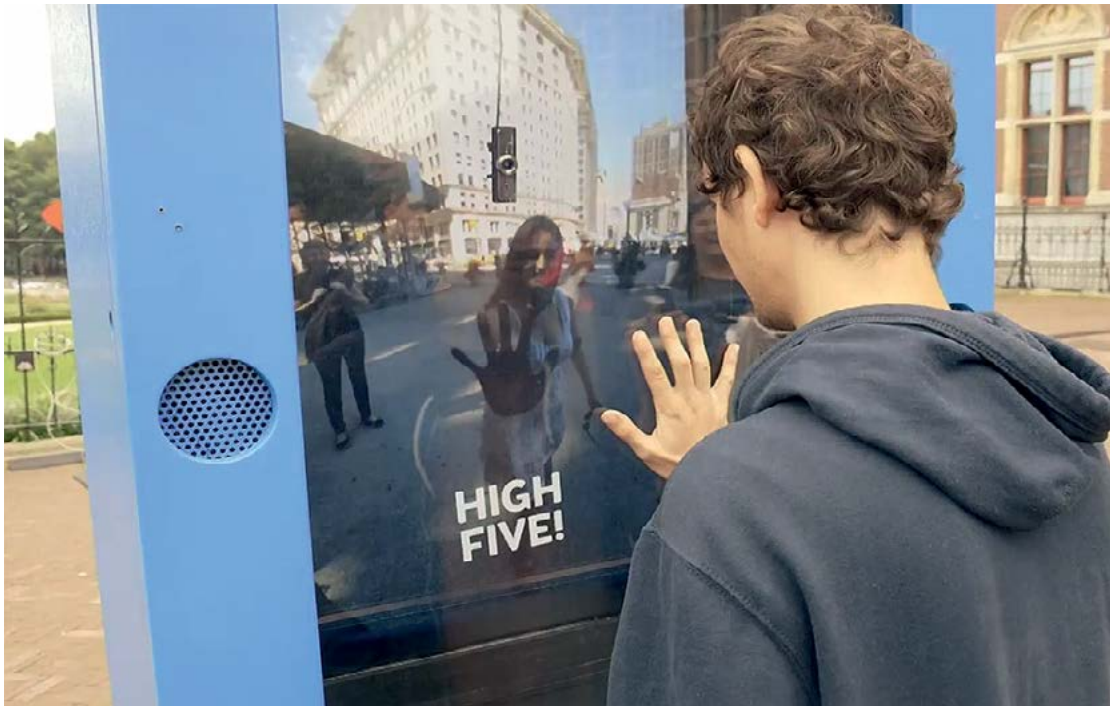
Yobosayo

Interaction (Human with machine - Human with human)
Communication (Fun and play - Send a message)
Human Centered

With the aim of paying attention to people's voice, this installation was installed to respond the need of hearing the opinion of citizens. They call it also the big ear. People just can talk inside of the big ear and the messages will share in the citizens' hall in Seoul. The big ear in outside of the building while the people inside of the building can hear what they shared.
Lifethings firm has designed this installation. It is located in Seoul and the project was installed in 2013 to 'paying attention' to people's voices and records voice messages of ideas,and proposals from the citizens and shares them with others.

Live High Five

Interaction (Human with machine - Human with human - Human with designer - Human with goal)
Communication (Fun and play - Collaborative - Send a message)
Technology (Interface)
Human Centered



Live High-Five was installed in Amsterdam & New York as an interactive advertisment. The Perfect High-Five gave people an opportunity to win a ticket with KLM airline from New York to Amsterdam or vice versa through a live video connection between these two cities, any two persons who give the perfect hight five can win the ticket. The ad. was installed in those two city in 2014.

Biolamp

Sustainable (Energy - Consumption - Climate change and environment)
Interaction (Human with machine)
Technology
Human Centered

Biolamp transforms pollution into fuel to light up the street by algae. It was designed by Hungarian designer Peter Horvath in 2010. There is a fan that is sucking the smog inside the flows into the algae liquid, then the algae absorbs the CO2 and the photosynthesis can happen. The created oxygen in the photo-synthesis process is let out into the city air. Biomass is the end product that will be processed into biofuel. The Biolamp would need to be filled up with liquid algae to keep the process going.

Interactive wall

Interaction (Human with machine)
Communication (Fun and play - Informative)
Technology (Projection)

Interactive wall was designed by Klein Dytham in 2002 and it was installed in Tokyo (Bloomberg ICE's headquarters). Designer tries to transform financial information into a tangible and even playful experience. When there is no user, the interactive wall shows stock tickers in a very understandable and fun way, but as soon as a user get close to the wall wich is made by glass, the infrared sensors recognise their presence even from 500mm and then they can interact with the data without touching the glass. You can get info and news, and when it's not being touched it's scrolling text in multiple languages.

Interactive floor

Interaction (Human with machine)
Communication (Fun and play)
Technology (Projection)

This Interactive floor designed by GestureTek was designed to grab shoppers' attention in the departures area at Bahrain Airport in 2010. This system entertains passengers and shoppers by using technology in International Airport's duty-free. It has been designed to attract their attention by displaying colorful and interesting advertisements. The project uses Gesture Tek's GroundFX system which can project dynamic multi-media images, special effects, games, advertisements, and logos onto floors. These gesture-controlled displays, signs, and surfaces make for show-stopping advertising and entertainment. The GFX system reacts to each step a player makes.

Nike +Nine

Interaction (Human with goal)
Communication (Informative)
Technology (Projection , Interface)

Nike +Nine project was done in 2012 by Melbourne-based brand communications agency, Local Peoples, found by Giuseppe Demaio in Sydny. Nike+Nine won the 2013 Victorian Premier's Design Award in Sydney, Australia. According to Dexigner, "it is a pop-up store that ran on London time and featured a pinnacle retail fit-out, seamlessly combining physical and digital innovation with cutting-edge interactive technology. It was a solution for Olympic Media Blackout. Store ran on London time combining physical and digital innovation interactive technology.

Screens in the Wild

Interaction (Human with machine - Human with designer)
Communication (Fun and play - Survey)
Technology (Interface)
Human Centered

Screens in the Wild was done by The Bartlett in 2014 in the streets of United Kingdom. The project was the result of a collaboration between researchers from the Space Group at University College London and the Mixed Reality Lab at University of Nottingham that studies how urban media screens can be designed to benefit public life rather than merely transmit commercial content. The aim of the project was to define how interactive screens in urban space can be designed to benefit public life by implementing screen.

Smart highway road

Sustainable (Energy - Climate change and environment)
Interaction (Human with machine)
Communication (Informative)
Technology (Projection)
Human Centered

The Smart Highway adabts itself to the traffic, environment and people.
By using photo-luminescent paint to mark out traffic lanes, there would be glow-in-the-dark road because the paint absorbs energy from sunlight during the day and release it after sunset so it can light the road during the night for up to 10 hours.
For roadside lighting, they have been designed interactive street lamps with pin-wheels which work by the air from passing vehicles. The designer, Daan Roose-gaarde, has designed it 10 2013. The project was presented in Cape Town and tested in Brabant, Netherland.

The Scoreboard

Sustainable (Education - Consumption)
Interaction (Human with designer - Human with goal)
Communication (Fun and play - Informative - Collaborative - Send a message - Survey)
Human Centered

The Scoreboard was a project of Sydney Design Lab in Sydney. They were writing the consumption of each house on a blackboard. The Neighbourhood Scoreboards project studies the effect of public exposure of domestic energy usage on house facades. The research project started in 2009 and was carried out at the Design Lab, University of Sydney.

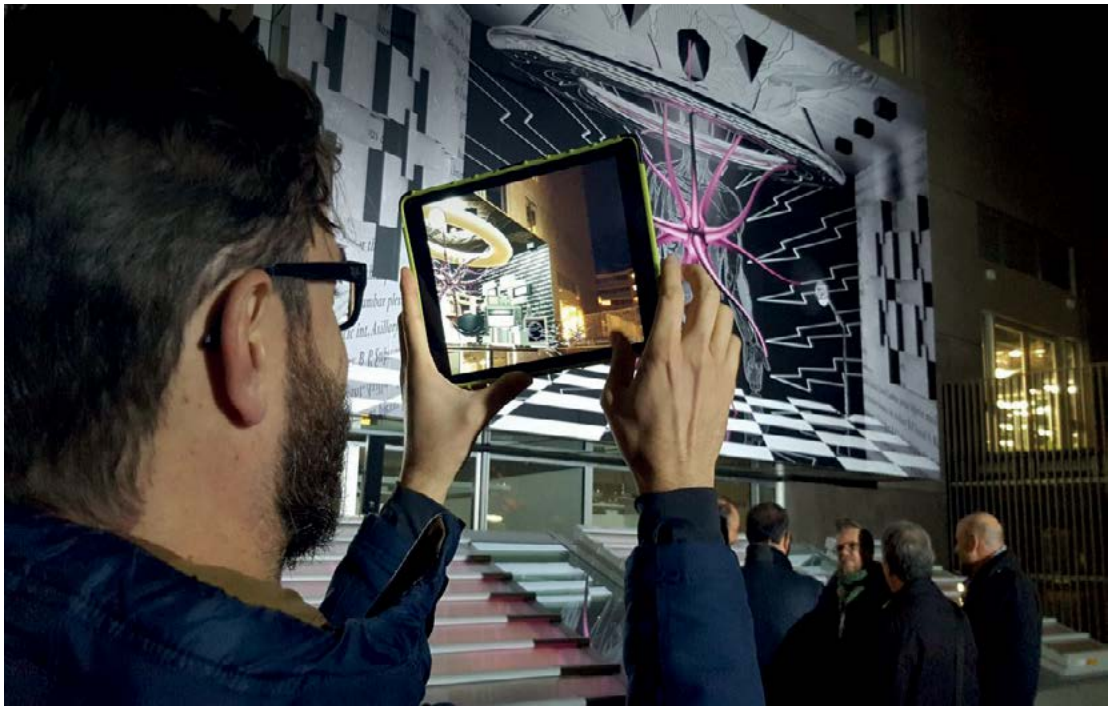
Press Play

Interaction (Human with machine - Human with human)
Communication (Fun and play - Collaborative)
Technology

Press Play works was designed by Natasha Chubbuck, Thaís Vidal, Filipe Calegario, Laura Kriefman at Recife in 2014. It works by installing simple, touch sensitive panels in any public space. Each sensor is programmed with a channel of a musical track, which will play when touched. Multiple sensors can be touched to play more layers of sound, but if someone wants to remix music and mix more sounds they need other people to participate so the main aim is to create connections between people and music.

Digital neuron

Sustainable (Health)
Interaction (Human with machine - Human with goal)
Communication (Fun and play - Send a message)
Technology (Augmented reality - Projection)
Human Centered



A monumental work of augmented reality that highlights the central importance of the neurone in the human intellect and more particularly as a driving force for research. Electrically excitable cells that treat and transmit information, neurones are the essential components of the brain, bone marrow, and central nervous system. The project was done by Happy City Lab in 2016 in Switzerland.

I am

Interaction (Human with machine - Human with goal)
Communication (Fun and play - Informative - Survey)
Technology (Projection)

I am project was designed by Guto Requena in 2015. It was installed in Sao Paulo to reflect on the emotional landscapes.
The project is a mixture of street furniture and a data visualization, the installation invites citizens to sit on a bench, take a picture of themselves and choose between six emotions they might be feeling: love, joy, surprise, anger, fear or sadness, according to Dr. Phillip Shaver's definition of the six basic human emotions. Each motion is represented by a color, through which the image is filtered at the moment it appears on the Digital Art Gallery. The project is showing the photo of participants on the building with the color depends on emotion they select.

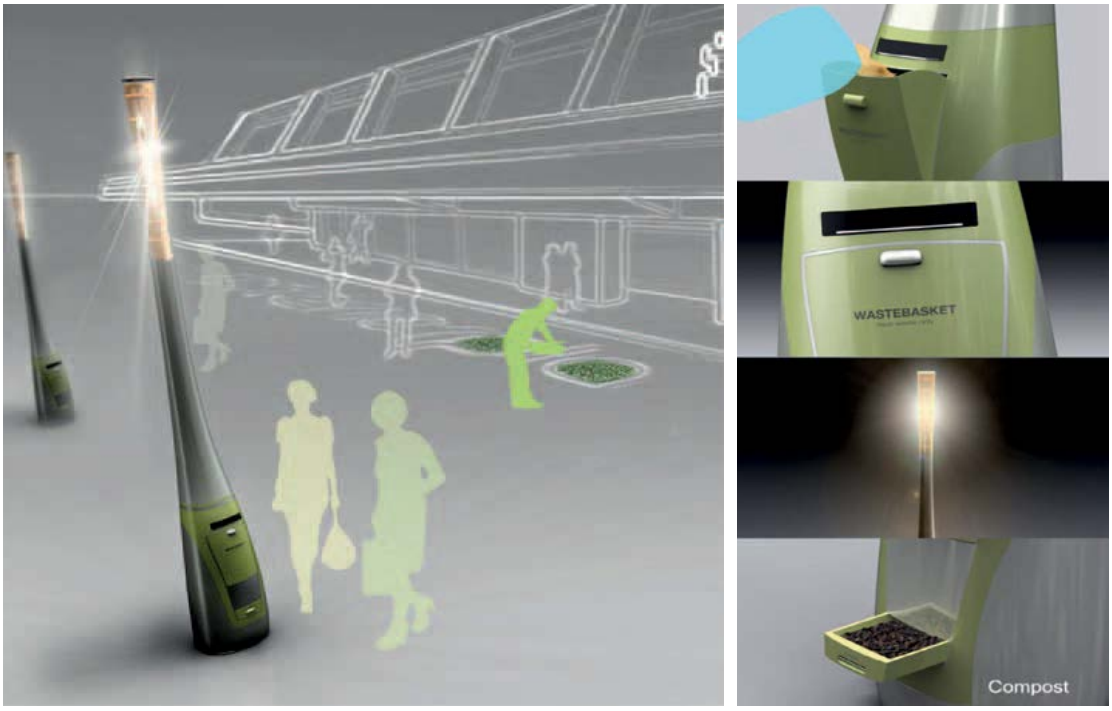
Give Me Five

Sustainable (Energy)
Interaction (Human with machine)
Technology
Human Centered

Give Me Five Streetlight is a smart and green design. It's a concept lamp post that uses that kinetic energy to power itself. People are welcome to "high five" those hands during the day, since any electricity generated is kept in the battery to be used at night. The level of charge is indicated at the bottom of the post, giving passers-by clues which lamp post that needs their helps. It was designed by Yuanxuan Huang, Song Qiao, Hao Yu and and Wei Liu at Dalian University in 2016.

Gaon Street Light/Wastebasket

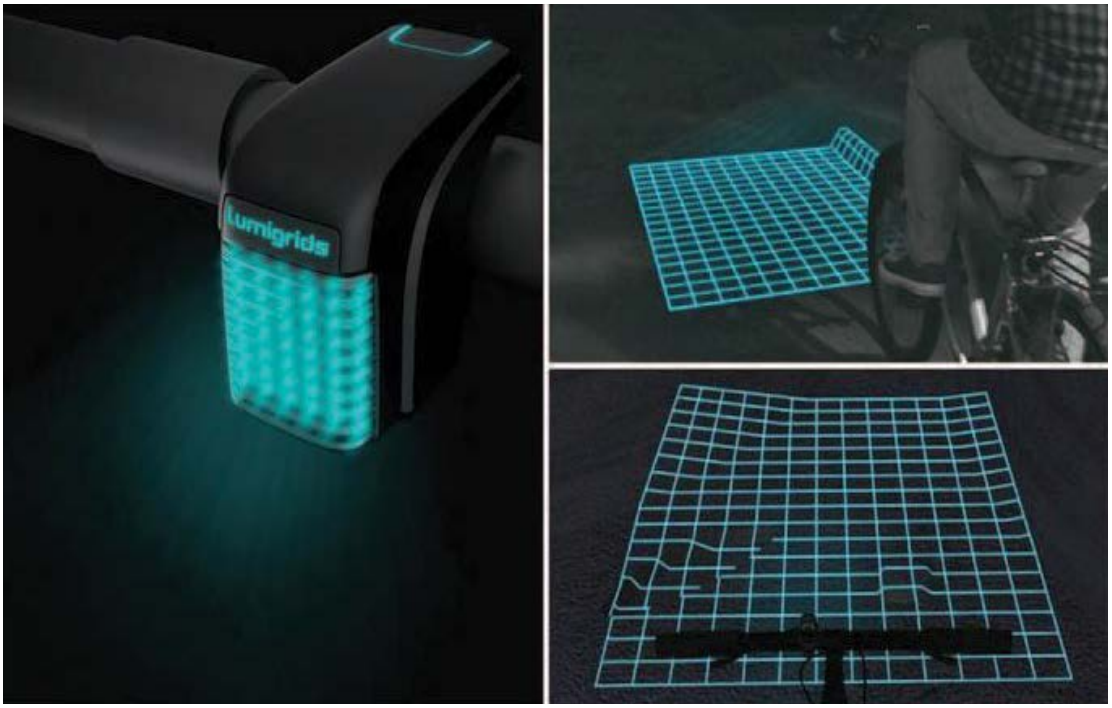
Sustainable (Health - Energy)
Interaction (Human with machine)
Technology
Human Centered



Gaon Street Light/Wastebasket was designed by Haneum Lee in 2009 to turn trash into the light. It composts biodegradable waste and uses the methane by-product to power its light.
A lamppost that eliminate waste while illuminating the streets. Methane from the compost is used to power the lamp and the compost also can be regained to re-green our cities.

Lumigrids

Communication (Informative)
Technology (Projection)
Human Centered



Lumigrids remoes shadows cast from ordinary bike lights when they encounter a deformation in the road. Lumigrids projects an LED grid ahead of the rider that on a flat road will have perfect squares. When the rider encounters terrain that differs in height from the road, like a pothole or curbing, the grid deforms, clearly showing the rider the obstacle. It was designed by ichuan University's Department of Industrial Design in 2013 in China to improve safety during night riding.

Vote As You Go

Interaction (Human with machine)
Communication (Fun and play - Collaborative - Survey)
Technology (Interface)
Human Centered

A Vote As You Go was a projevt done by Sydney Design Lab to allow citizens to vote on civic issues within the urban context by a series of design interventions. The interventions were deployed between 2014 and 2015 on the University of Sydney campus and at the Concourse in Chatswood (Australia). Citizens can vote by gestures and reacting to interactive billboards.

Amphibious Architecture

Interaction (Human with machine)
Communication (Fun and play - Collaborative - Survey)
Technology (Interface)
Human Centered

Amphibious Architecture is a floating installation that provides an interface between water and the ecosystem below. The project was done by Health Clinic at New York University and the Living Architecture Lab at Columbia University and installed in Pike street of New York in 2009. There are two networks for floating interactive tubes contain underwater sensors and display lights above water. Sensors collect data, display them and communicate them by a text-massaging interface to monitor water quality, presence of fish and river ecosystem.

Hello lamp post

Interaction (Human with machine)
Communication (Send a message - Survey)
Technology (Interface)

This project was the winner of the inaugural 2013 Playable City Award. Hello lamp post is an experimental playful SMS platform, inviting citizens and tourists to start conversations or share memories of the city with a familiar street object through their mobile phones by sending text masseges.
It is an interactive system that encourages people to talk with each other and share their thoughts and stories in the city. It was designed by Pan Studio to communicate with urban objects like lampposts.

1.3.1 Thematic Analysis

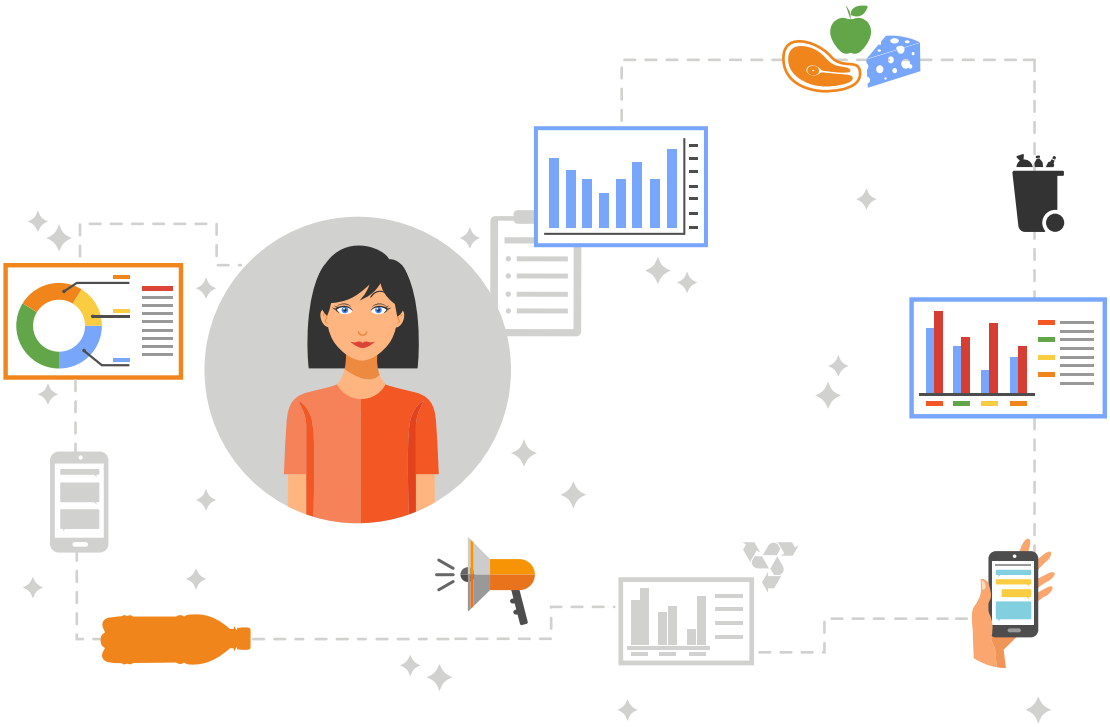
After gaining adequate knowledge of the project, 78 successful design cases were studied which about half of them are mentioned in the thesis. Then the case studies were categorized into five different categories with different subsets to make their common context more understandable.

The design cases were studied in the following categories: Sustainability, Interaction, communication, Technology and if they were designed according to the Human-centered point of view or not.

By studying these cases and considering assumptive potential audiences (Personas), the initial objectives and guidelines of the project were identified. The major goal of this thesis is dealing with the existing situation and suggesting guidelines for a new concept of communication and interaction.

We first analyze some possible scenarios and experimental for having more engagement and interaction between citizens BlueTotem, then we discuss the proper way of communicating. In the end, the effect of gamification in attracting the user is studied and also applied, considering the human-centered and systemic approach to characterize interaction design for the aim of the project, which is sustainability.

Chapter 2
Understanding the target



2.1 Identify the goal

Today this service is seen as a simple bottle compactor, however the future perspective is more of a service like Hub which is a multisensory and engaging system. System able to connect, inform and communicate, sensitizing and actively involving the population.

New life style of citizens today requires the city that always finds new ways of interacting, ways which are more dynamic and lively. So designer needs to know them deeply and in a more realistic way. So that we can trigger new collaborations between the different actors involved in the whole system.

For this reason, we need to divide the target into specific categories to study them academically and understand what are their needs. As the original study of Bluetotem divides the citizens into 4 different groups, I am going to first, review those categories and then conclude the result into the current study.

- Digizen: "Digitized young people", theyput themselves in the city and share with others the place they are, emotion they feels, and information they get in realtime.

- Those who live in the city: Subject who needs to be an integral part of a network of relationships in the urban web.

- Those who live the city: Citizen who uses city services more; searches for a more dynamic and accommodating context, and helps the daily routine of the city.

- Tourists: Subjects who live in the city for a short period, they need to interface with services and local reality independently.

If we consider these categories as actors, territory is seen as a large playground where different actors relate to each other. So, citizens as active and aware subjects, are an integral part of the change process.

With this background, in the following part, it is going to be studied specifically the target with the Persona method.

2.2 Persona

To specify and define which type of users we may have, and considering the fact that the number of individuals who could participate is very large, in this study I use the Personas technique, to create imaginary users that can represent the wide range of real users.

The concept of "persona based design" brings the designer closer to the user, these archetypes of users are created to increase the understanding of the target.

The Persona user is a representation of the objectives and behaviors of a hypothesized user group. The profiles are described in factsheets including behavior, social context, habits, lifestyle, and some imaginary personal data to make the character a realistic character.

Since the current phase of the Bluetotem project and the interest area of this study is concentrated on PET's collection and compacting them, so we focused on the parts of the life of user which are related to the topic.

For the project it was necessary to imagine more than one user profile, based on ethnographic context, and not exclusively on the creator's imagination. The use of real data, avoids the generation of stereotyped users who may not have any relationship with the reality of the real user. Hence, I tried to collect information, talking to locals and citizens and ask about their habits of waste collection and how they confront it in the real life.

Unlike the "Target" which is a classic marketing tool and is based largely on quantitative data -that leads to the definition of a public-, the definition of Personas prefers data bases collected and lead to results that identify more user-type profiles. So, we need to make qualitative distinctions, for the delineation of such figures, it is necessary to list a number of objective parameters to make Personas. Therefore, we tried to list some related parameters such as age, gender, career, cultural level, lifestyle, amount of produced waste, waste sorting, attitude to technology and etc.

After determining what parameters will affect the features of the Personas profiles, I have placed possible types of users on a hypothetical timeline, ranging from 10 to 80 years old. This operation allows to place stereotyped profiles homogeneously in order to embrace all possible utilities that have to do with plastic bottles.

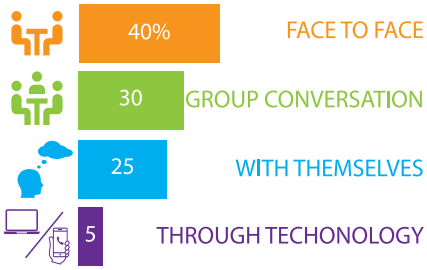
So here are the Personas profiles which are created to help us know the target. There are identified six Personas in order of age, from the youngest to the oldest: a school student, a university student, a personal trainer, a house wife, a doctor and a retired.

LILIANA
12 YEARS OLD
SCHOOL STUDENT

Autobiography

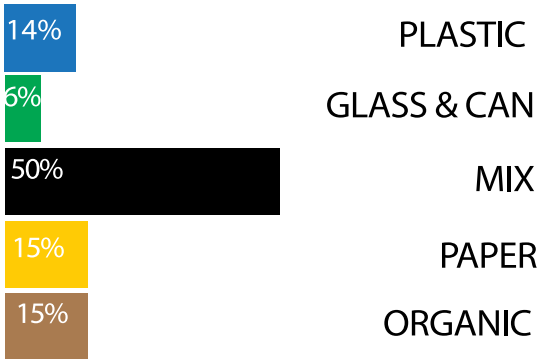
I'm the youngest member of my family and i have two older brothers. i'm an excellent student at school and i play piano after school. I love to spend my time with my grandma and make chocolate cake with her.

SOCIAL RELATIONS



DIET

WASTE PRODUCTION



Waste production in my daily routine

Breakfast.....

Shower.....

1st activity.....

Lunch.....

2nd activity.....

Dinner.....

Free time.....

Sleep.....

Waste treatment

there have been installed different trash bins at school and the teacher says recycling is an important part of any waste management strategy.
I have learned how to collect wastes and also at home I ask everyone to do that correctly.

Desires and Wishes

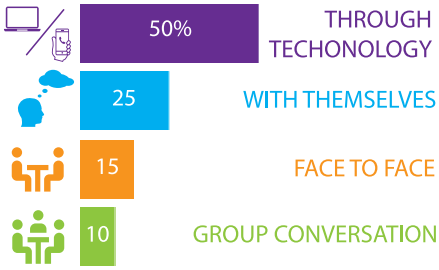
I would like to have an ipad to instal a new version of a piano application, given that piano is not a portable instrument but I love playing piano every day especially when I am spending time with my friends out of home.

EMANUELE
23 YEARS OLD
UNIVERSITY
STUDENT

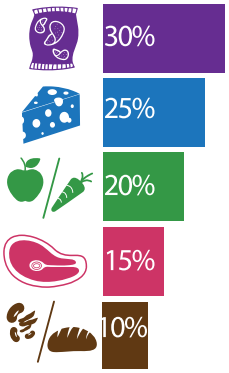
Autobiography

I'm a 3rd year of economy. I study in another city and I don't have many friends here, I just have some close friends in my hometown. I love video games and that's why I always have the last version of the games.

SOCIAL RELATIONS



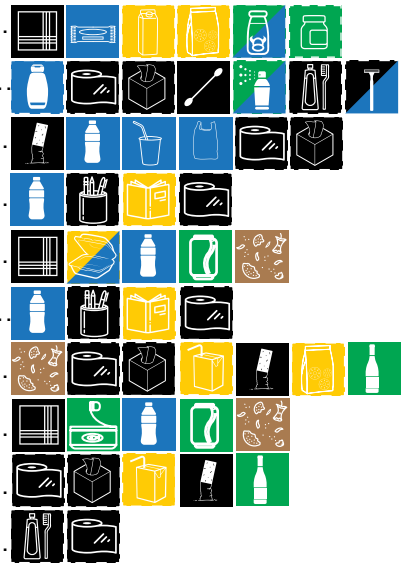
DIET



WASTE PRODUCTION

Waste production in my daily routine

Breakfast.....
Shower.....
Free time.....
1st activity.....
Lunch.....
2nd activity.....
Free time.....
Dinner.....
Free time.....
Sleep.....



Waste treatment

I have a little time to go shopping and cook so i buy prepared food which are in can, glass and plastic packages. however i try to respect waste collection but i produce a lot.

Desires and Wishes

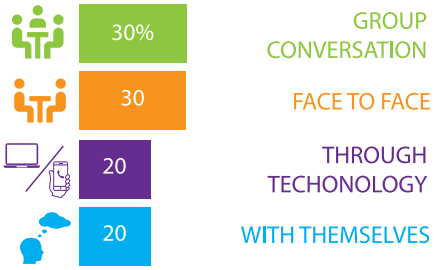
I would like to be a socialized person and attend in social events to have more contacts with people, It will make me feel happy and also will help me in my future job.

ALEX
30 YEARS OLD PERSONAL TRAINER

Autobiography

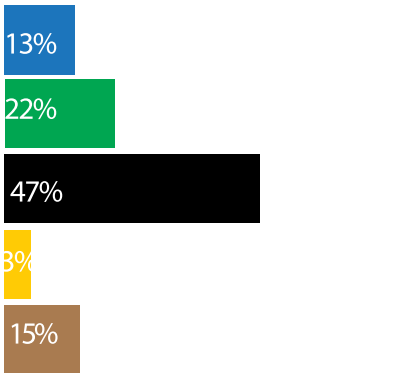
I'm a 3rd year of economy. I study in another city and I don't have many friends here, I just have some close friends in my hometown. I love video games and that's why I always have the last version of the games.

SOCIAL RELATIONS



DIET

WASTE PRODUCTION



Waste production in my daily routine

Breakfast.....

Shower.....

1st activity.....

Lunch.....

2nd activity.....

Shower.....

Dinner.....

Free time.....

Sleep.....

Waste treatment

I am not good at waste collection, I normally divide them to wet and dry but not more!

Desires and Wishes

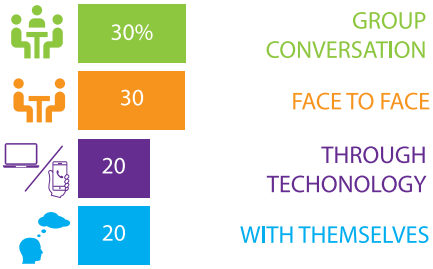
I need to have new relationships and also spend more time with people especially with my family, At Least while i'm far from them I would like keep in touch in any way.

SARA
42 YEARS OLD
HOUSE-WIFE

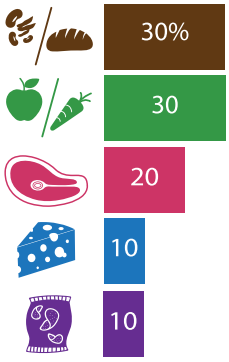
Autobiography

I am a mother of three naughty kids. I always like my home tidy and clean. I'm going to Sewing training class and in my very little free time, I crochet and sell them for more allowance.

SOCIAL RELATIONS



DIET



WASTE PRODUCTION

Waste production in my daily routine

Shower.....
1st activity.....
Breakfast.....
2nd activity.....
Lunch.....
3rd activity.....
Dinner.....
Free time.....
Sleep.....

Waste treatment

Collecting wastes is a serious issue in our home and the kids are involved in because I am so strict in their education and I want them to learn positive habits practically.

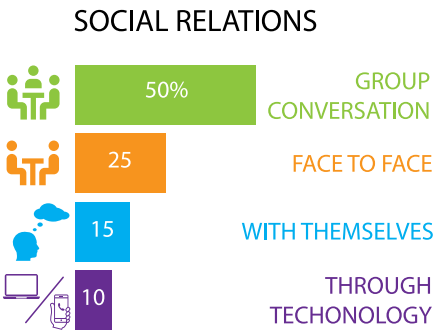
Desires and Wishes

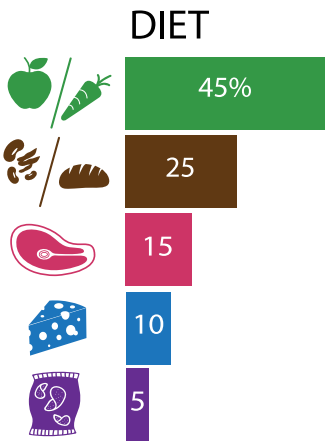
I really need a little free time to dedicate myself, sometimes walk around or read a book or spend more time with some friends.

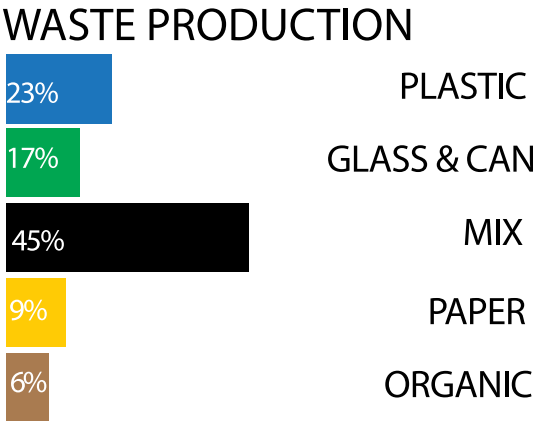
ANNA
63 YEARS OLD
DOCTOR

Autobiography

I am a doctor specialized in dermatology. I have a son who lives with my ex husband and I spend the weekends with him. I'm a very busy woman but I try to find some time for yoga and keep myself young and fresh.







Waste production in my daily routine

shower.....
Breakfast.....
1st activity.....
Lunch.....
2nd activity.....
Shower.....
Dinner.....
Free time.....
Sleep.....

Waste treatment

About collection wastes at home, I should say I'm not involved in any house-Chores
Cleaning lady does it every day and I am not sure she collects wastes or not but in clinic I normally don't because I am so busy.

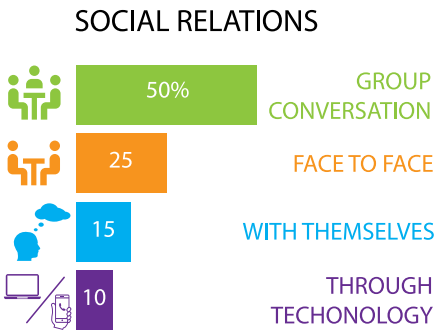
Desires and Wishes

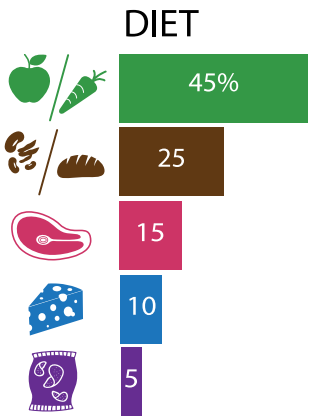
I think all my problem in clinic will be solved if I had robot secretary instead of human one!

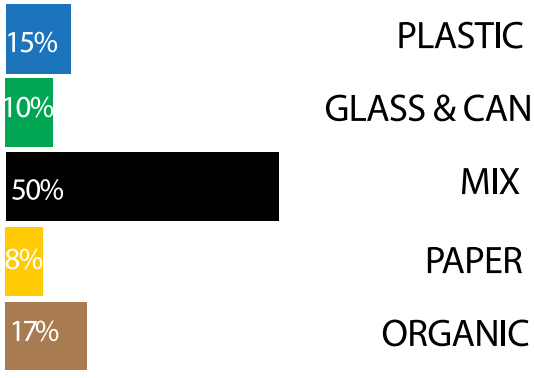
ALFREDO
81 YEARS OLD
RETIRED

Autobiography

It is more than 50 years that I am living with my beautiful wife. I have 3 children and 5 lovely grandchildren. i'm a retired postman. Now I spend my time for gardening and my grandchildren and often Temporize with them whole evenings.







Waste production in my daily routine

Shower.....
Breakfast.....
Free time.....
Lunch.....
Nap.....
Activity.....
Free time.....
Dinner.....
Free time.....
Sleep.....

Waste treatment

My wife and I collect wastes carefully but our grandchildren don't when they are with us, I also try to use organic wastes as a compost for garden.

Desires and Wishes

However we use organic waste as compost, we still need more, I would like to receive compost in exchange of giving our other wastes.

Chapter 3
Metadesign/Concept

3.1 Project guidelines

Nowadays well-being is one of the main topics in society. It means not only being healthy but also more satisfaction in social life, relationship and at work. One of the best ways to increase well-being in society is citizens participation. Fortunately, the global union toward a world free of plastic pollution is growing. The individuals and organizations are struggling with plastic's toxic effects on humans, animals, oceans, and the environment.
Bluetotem is an innovative project which is created to help waste management through apprising people and encouraging them to participate and approach the goal.
In fact, Bluetotem is a plastic collector which tries to act differently regarding other kinds.
Many plastic collector machines reward people in exchange for receiving their used plastic bottles. For instance, IKEA machine gives vouchers, or another similar machine in China offers subway tickets. In the same way, there is a device in Istanbul which rewards pet food since there are many stray dogs there.

It is believed that the first step toward change is awareness and the second step is acceptance. Therefore, Blutotem firstly needs to communicate with people. So, it should attract the public. Secondly, for being accepted it is necessary to gain people's trust. Thus, from an aesthetic point of view, it should be pleasant and at the same time, it must have the capacity to encourage and invite passerby from distance by creating curiosity in them. It is required to be understandable for the various age groups of its audiences because it is supposed to communicate and interact with people.

In order to get the highest efficiency and approach the target as much as possible, BlueTotem not only needs to communicate with new people but also requires continuous interaction with them. So first, it is better to be fun and entertaining and then further to keep track of the story, and through this way, the audiences will accompany for a longer time. As a result of storytelling and entertainment, it is likely to attract more followers and in this system having more followers means collecting more bottles by the citizens. It can be BlueTotem's first successful step. At the same time with storytelling, it is possible for the audiences to receive new and valuable information, on the other hand, for more motivation after entertain, it can be long-term and short-term goals because people like to receive feedbacks and consequences and also be appreciated.

3.2 Concept

In today's world more than every time we need to remind people how to live together with compassion. We need to remember how every step that is taken by an individual could help the whole people to achieve a better world. It could be a great exercise to practice it in a game. So every person in a society has a duty which is not supposedly has a direct benefit for them but it has an effect on a larger scale for their society and obviously, a better society is good for every and all individual who lives it. This kind of approach leads us to a win-win situation that everybody will benefit the result and of course, the whole process creates a sustainable relationship. It this kind of society everybody collaborates and shares what they are able to, regardless of personal interests, to achieve a larger goal. It may seem a little idealistic and utopic but to have a better world in which everybody benefits, this may be an only way.

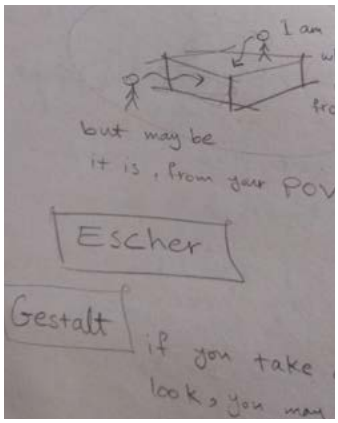
Sometimes sharing experiences and offering solutions to solve the problems of other citizens could solve a problem of the city that we live in and subsequently solve the problems of a city could effect on bigger geographical areas and it continues to become worldwide. Taking part is the key to feel good individually and together. It may not be tangible at first that we are doing something good even for ourselves but if we try to have a holistic view we could understand and see the result.

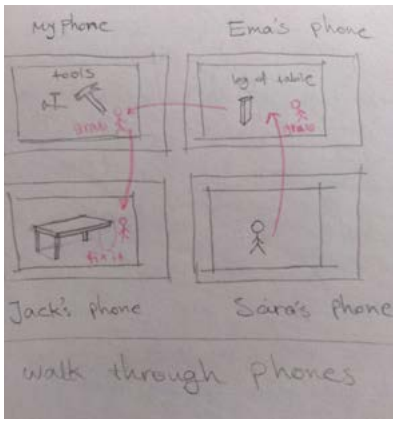
As it is mentioned before, well being does not only mean being good individually anymore, but it also means feeling satisfied in the groups. So, If people feel good at their workplace and among their friends and other citizens they feel much more satisfied.

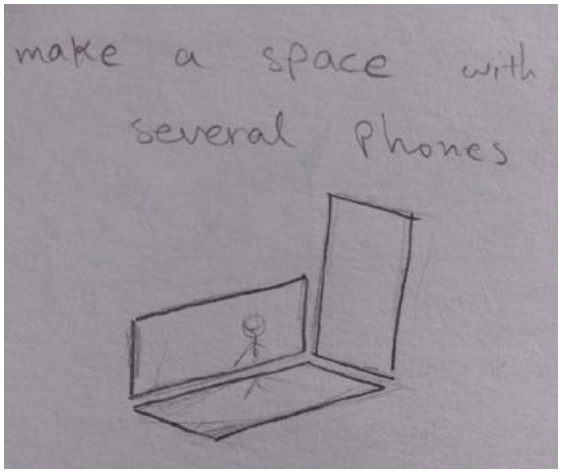
Hence, if I feel good about myself, that is fine, but if you feel good too, I probably feel better and we can engage in healthy behavior and have a society with fewer problem and conflict. All these concepts take us to the point of a win-win strategy. If you win, I win. If you feel good, I feel good.
It is only possible by trying to have a vaster point of view and see all aspects of action we do.

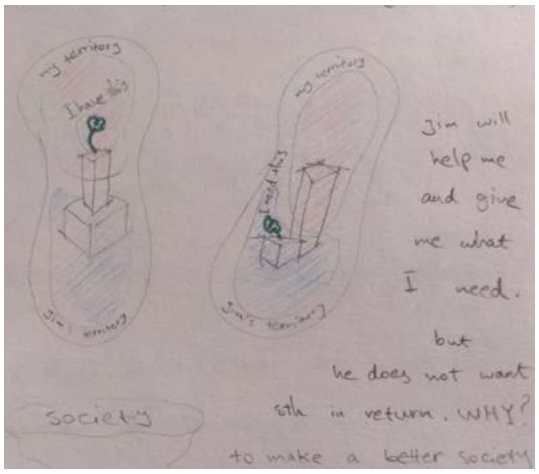
According to Merriam-Webster a win-win situation is providing a good result for everyone involved and advantageous or satisfactory to all parties involved.

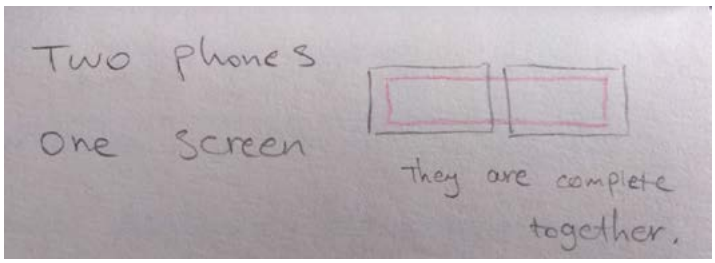

Mess
Not
Active camera

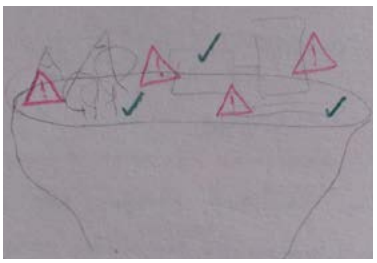

I am
but may be
it is, from your POV
Escher
Gestalt
if you take
look, you may

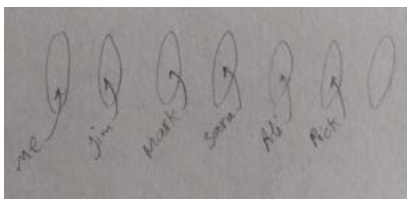

My Phone
Ema's phone
tools
Jack's phone
Sara's phone
walk through phones

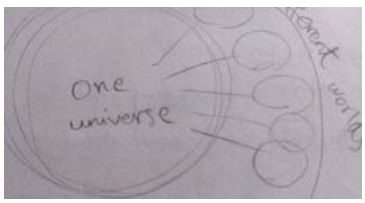

make a space with
several phones

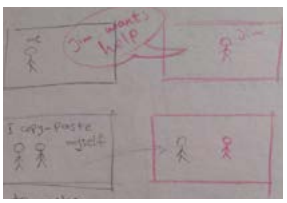

my territory
I have this
Jim's territory
Jim will
help me
and give
me what
I need.
but
he does not want
sth in return. WHY?
to make a better society
society


Two phones
One screen
They are complete
together.




me
jim
Mark
Sara
Ali
Rick


One
universe


wants
help
I copy-Paste
myself

3.3 Gamification

First, to clarify the meaning of Gamification, it has been quoted from authentic persons and sources for defining it briefly.

According to Merriam-Webster; gamification means "the process of adding games or gamelike elements to something (such as a task) so as to encourage participation. Easy-to-use, Web-based, and Mobile-based learning platforms take the boredom out of long training sessions by gamifying the entire process. A training manual is replaced by an interactive game that allows participants to win awards and be acknowledged. - J.J.Rosen"

Based on the Oxford dictionary, "The application of typical elements of game playing (e.g. point scoring, competition with others, rules of play) to other areas of activity, typically as an online marketing technique to encourage engagement with a product or service."

Garter Inc. -an American research and advisory firm- is redefining Gamification as "the use of game mechanics and experience design to digitally engage and motivate people to achieve their goals."
As Sebastian Deterding -assistant professor in the Game Design Program- said the Gamification term is not a new word. It was first used in 2008 but the usage was extended in 2010.

Simply put, Gamification means utilizing the elements of a game design in non-game content in order to attract people and involve users and at the same time solve difficulties. The research on this issue reveals that it has positive impacts on individuals and it can also improve their ability to experience and understand the digital content. It is clear in this process participants interact with computers, smartphones or other digital devices rather than personal interaction, so it means they interact digitally instead of personal engagement. Gamification is one of the most grown areas in the digital world. Many impressive subjects such as design, creativity, animation, music, interaction, communication, images, storytelling, virtual reality, artificial intelligence and etc. are prepared to make an entertaining activity for participants in order to the intended purpose.

On the other hand, gamification can be used to create learning attraction.
It can make repetitive or unattractive processes more delightful. All these advantages plus engagement that is made by game show that this concept can be considered as a part of every learning tools.
The Gamification's main target is to encourage and motivate the users to improve their abilities, change behaviors and develop their creativity. It tries to persuade players to reach their goals. In this situation, if the company or the organization align their aims with the players', they would reach their targets while the users are achieving.

3.3.1 Economic impact of the Video Game industry statistics

The video game business is a billion dollar trade and in the past decades, its value has been growing.
It is anticipated that by the end of 2020 the value of this business will be more than 90 billion US Dollars.
Based on new research, there are about 2.2 billion gamers in the world and around half of them spend while they are playing and it is predicted they generate approximately $110 billion in a year.
59% of these video gamers are men and 41% are women. This is while 60% of the video game buyers are male and 40% of them are female. Generally, the gamers' average age is 38 years old and it shows the game players are not just children anymore. It is also interesting to note, 48% of all gamers play social games.

3.4 Communication

In a simple way, we can say transferring for exchanging the information from a person to another calls communication. In other words, during the process of communicating a message or information is transmitted from a source to the receiver(s) through a channel or a media.

This information which is sent can be any facts, concepts or ideas, thoughts, views, opinion and beliefs, attitudes, education and even emotions and feeling through speech, signals, writing, or behavior and etc.

Different ways of communicating are as followings:

1) Verbal communications: In this kind, the message is transmitted verbally and it happens by spoken language or a piece of writing. As stated above, it must be understandable for both receiver and sender. It is divided into:

a) Oral Communication: For instance, talking face-to-face or on the phone, listening to a radio or television program or a lecture in the class. Actually, while we are listening we are engaging in a verbal communication process. Oral communication brings quick feedback.

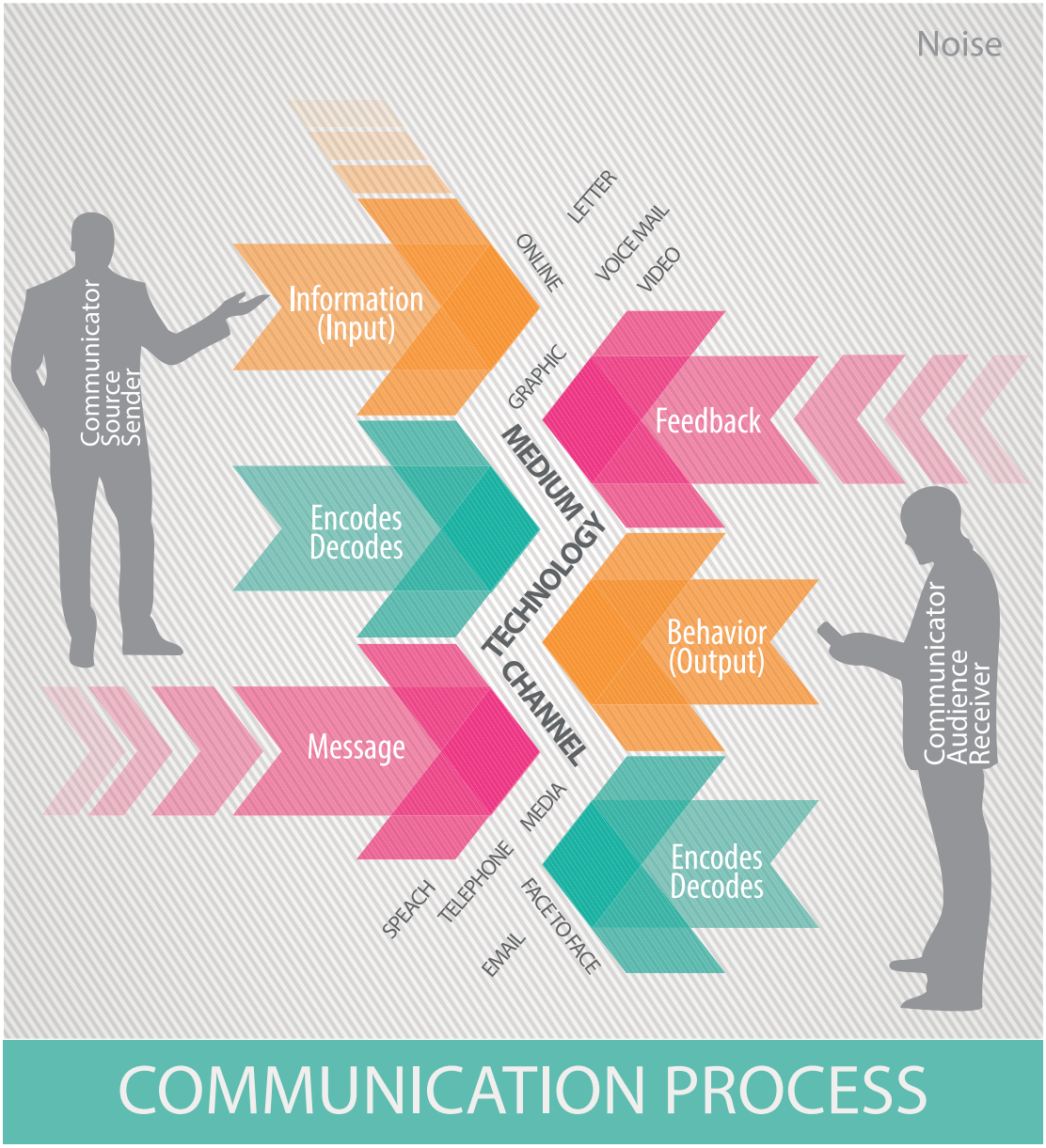
b) Written Communication: When we are reading books, magazines, newsletters, letters, articles or an E-mail, we are simply engaged in the written communication process. It lets the receiver to understand it but it does not bring instant feedback and takes more time to receive feedback.

c) Visualization: They included signs, logos, maps, charts, tables and graphs and other visualizations which make the communication possible.

2) Non-Verbal Communication: Gestures, body language, appearance, the tone of voice and even facial expressions are examples of non-verbal communication. Normally we can recognize some feeling like the angriness or happiness simply by looking at someone's facial expression.

In all cases listed, the communication is transmitted through a channel or media. To have an effective communication it is necessary to choose an appropriate channel. On one hand, the messages need to be encoded to a proper form that can be sent by the channel and on the other hand, the audience(s) must decode the received messages.

Encoding means modifying an opinion to a communicable message by using words, images symbol, sound and etc. It must be sent to the receiver(s) via channel same as television, radio, internet and so on. When the audiences see or hear the message they start to decode it. It means understanding and comprehending what the source is communicating. It happens when a consumer watches an advertisement.
At the same time, there are some elements that might disrupt the process of communication. Anything that restricts the audience from getting the message calls noise.



3.5 Interaction

During the communication between two or more person or things, if they react to each other or have a mutual action, their act and its influence on another is interaction and it means they have interaction with together. Thus the interaction process occurs when the action of a participant influences another's action.

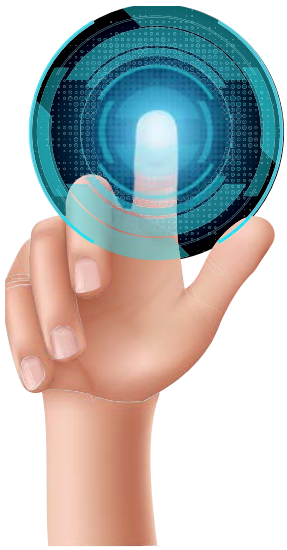
Interaction, as well as communicating, does not necessarily have to be between humans but also it can be between machines or even chemicals.

Communication can be considered as a form of interaction that engaging in exchanging information.

3.5.1 Interaction Design

Interaction Design is a human-centered field of design that concentrates on the significant interaction between people and technology and mostly when we talk about interaction design, it means software products such as apps and websites.

The main goal of interaction design is not only to reduce the negative points but also make more positive aspects same as engagement and enjoyment, and also making a pleasurable experience for users from their view while they are engaging with the product. In fact, the users' experience is the main concern in interaction design. To make a better experience for the users, the process is important to be easy learning, enjoyable and also effective. There are many products that users need to interact with them like smartphones. Therefore, to create useful users, experience, designers, must know about users -their interest, and needs, even their reaction in a different situation- technology, and interaction between them.



According to the book Interaction Design by Yvonne Rogers, Helen Sharp, Jenny Preece;

"The process of interaction design involves four basic activities:

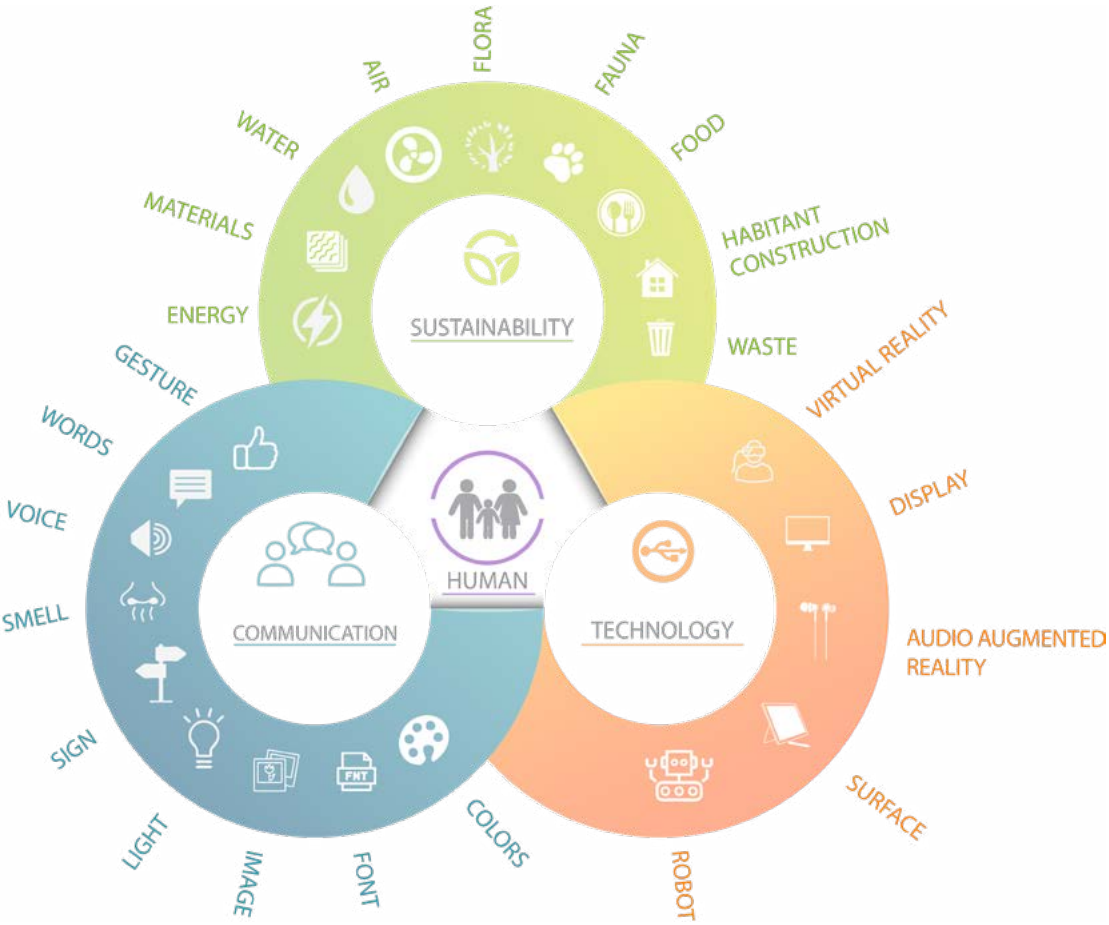
1) Establishing requirements
2) Designing alternatives
3) Prototyping
4) Evaluating"

For establishing requirement first identify the needs is inevitable for designers and in the next step to develop the alternative design, designers must consider those needs. The third step is to create an interactive version of the design that must be communicative. In the last step which is the main one, it is important to evaluate what is being created during this process. In the evaluating phase, -since the audiences are located in the center- can be successfully achieved in a variety of ways. For instance by talking to them or interviewing people, asking them to fill out a questionnaire and also by watching and modeling their act. Generally, it is important to encourage people to engage with the project when an interactive design is evaluating. It helps designers to understand what people do in the similar situation.

BlueTotem has already designed to interact with the human, mainly with the big display on the front. It is also possible to interact with the compactor through the mobile application. However, following the gamification topic, one of the main tools of interacting could be converting interaction to something more attractive and interesting like a game. Another suggestion for making the interaction between the device and the user more amusing is telling a story. This is how all the factors together make a chain to help the interaction aspect of the design become realizable. Thanks to a lot of case studies that we had studied in chapter 2, it was obvious that interaction design plays a very important role to encourage people for more engagement to the product or service. Nowadays many applications and games can communicate with people thanks to interacting more, whether with the user directly or through the hardware and the utilities of devices. For the game which is connection BlueTotem to the citizens, it is going to be interesting to create the opportunity to not only interact between human with their smartphone or other devices but also interact with other people and society and big data. In this way, we can take another step toward the main goal of BlueTotem which is raising the awareness of the society to have a sustainable environment.

3.6 Human - Centered Design

Before starting the practical project -which is a video game design, in order to advance the goal of BlueTotem- we will look at the following chart:



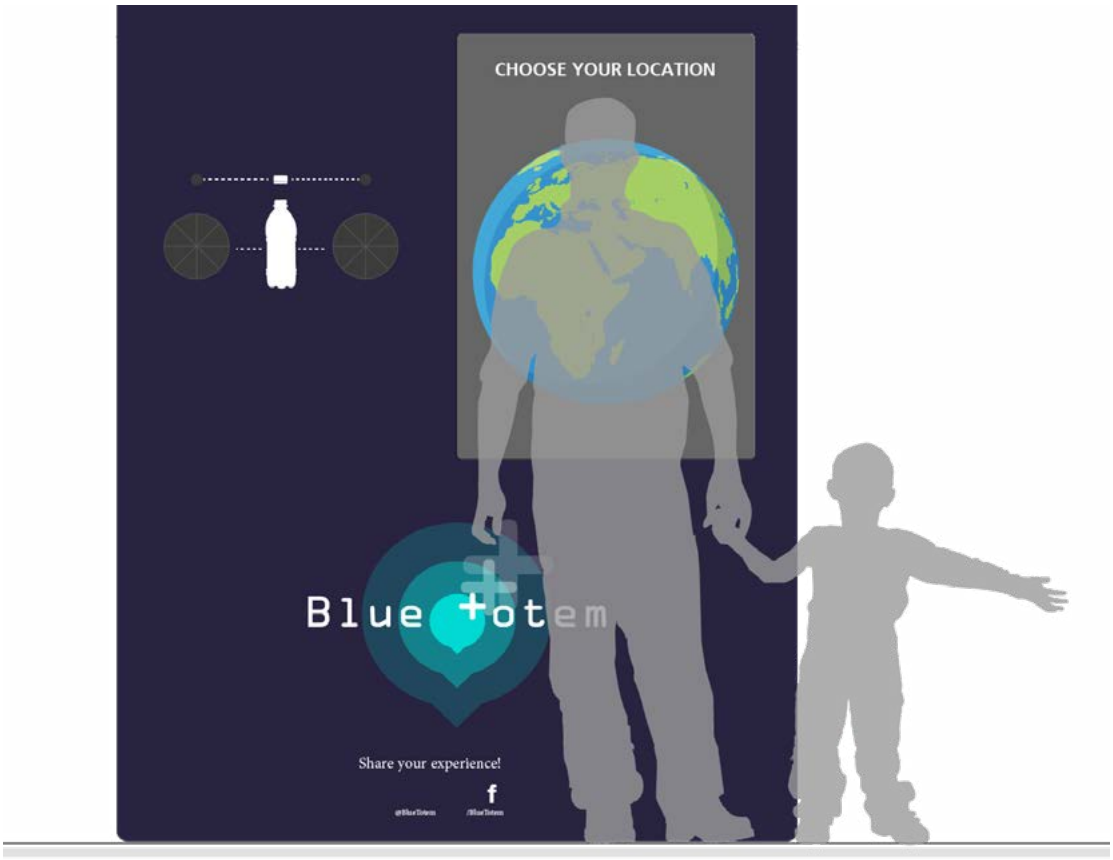
As is clear, humans, their needs, and interests are the heart of this process as a backbone of the project. That means human-centered design can develop problem-solving goal by involving the human in all steps of the process and it requires some tool that can be seen on three sides of the chart: sustainability, technology, and communication.

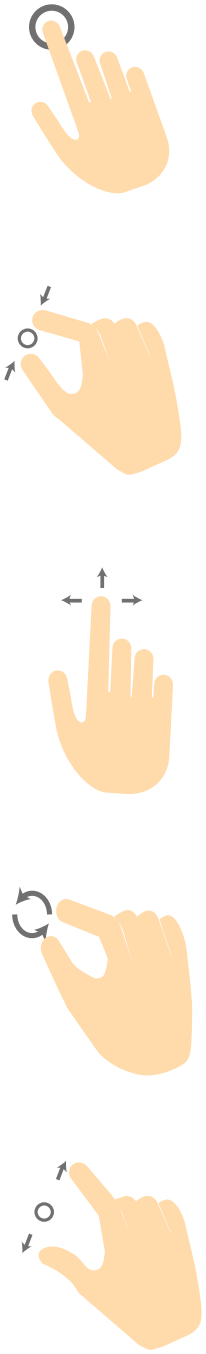
Chapter 4
Project

4.1 Video Game

Previously, we talked about gamification and its roles in today's world. In this section, will be explained more details about the video game.
BlueTotem not only makes passersby curious when they face it for the first time in streets or any public places but also it is capable to introduce itself by signs and QR codes on the device and anything showing on displays.

On the bigger display is seen our planet earth with a message that says: "choose your location". You can find and select your location, touching the screen and zoom out, zoom in and rotate the globe by gestures.
after choosing the location you tap on it and you enter to the imaginary world based on the truth. there are different platforms representing lands like villages and cities, which are linked together directly or not directly.
To start the game you will be asked to download it on your smartphone or other devices like the tablet.
You can download it by scanning the QR code which will be appeared on the screen.





After installing the game on your device you can choose again your location end enter to the platform that you prefer to play there.
This game is a problem-solving game and after finishing any platform you can choose another one, but some of them are locked and to open them the user should go to the BlueTotem and throw plastic bottles inside it to unlock the other platforms.

The game is called PARALLEL, The reason that I called it Parallel is that It is composed of two different worlds which the users can access them by rotating their smartphone. In one world you see the reality with all the hypothetical problems, and when you rotate the phone you can see the same world with hints and guides in different ways to solve the problems. In some cases, you can just see how could it be at the end and the method you take to arrive there is up to you.

Every platform has its own micro-games but every player in every microgame has the same goal which is having a settled society. You can understand that the platform you selected is setteled when all the red exclamation mark signs turn into green checkmark signs.

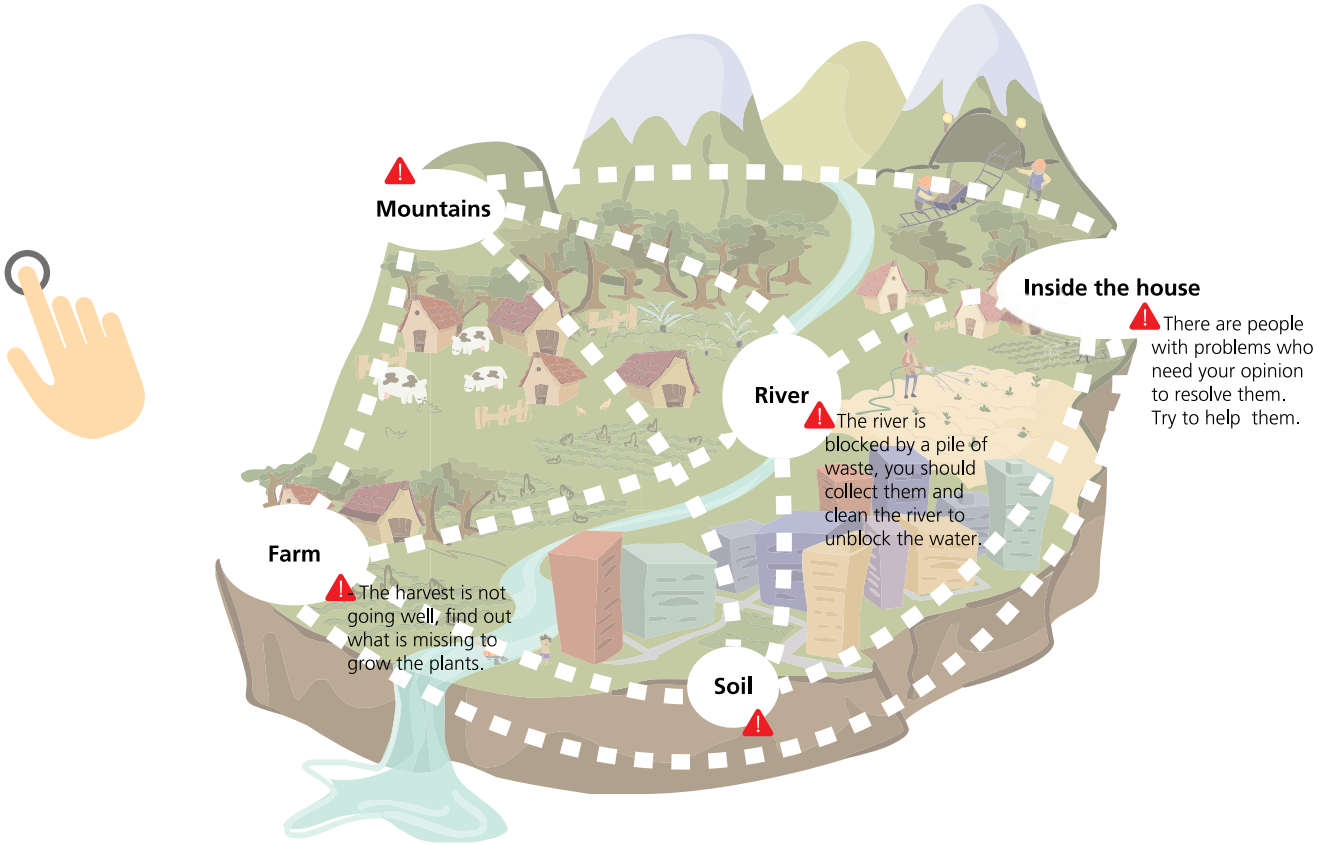
To explain deeper, it is better to say that this game is a complex game which includes several micro-games to go forward in the main game. The main game that we call it "the base" is a country / world that contains different areas such as city, village, forest, mountains, river, and farm.

You find out, there is a quiz to solve every time you see a red exclamation mark sign above the area. When the sign is a green checkmark, it means everything is fine. Then When you see that everything is settled in this society, you can go forward and select another platform, but if you see a LOCK on it, it means that to unblock the game you need to go to BlueTotem that you can find on the map that is accessible on the game and throw plastic bottles.

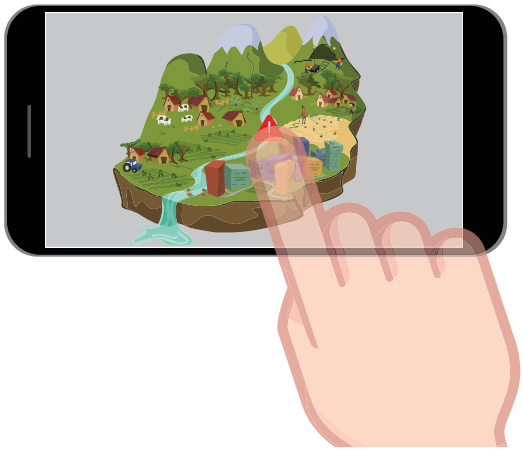
The game is floated between parallel worlds. By rotating your phone, you can change the world. In some of the micro-games you need the collaboration of other participants and in some of them, you need the collaboration of other people even if they are not playing. There are also micro-games that you will play alone, interacting with your phone.

4.2 Example of the game

The user has selected a hypothetical territory to play there.



The user starts the game by resolving the problem of the River, tap on the River.



4.2.1 Micro - game Model 1

the basis of this model is **collaboration of the other participants**.

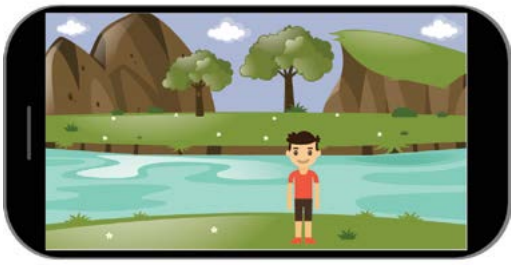
Example: obstructed river
Your mission is to clean the river.

1 - You see that the river is blocked by a pile of waste

communication between smartphones via

for short distances

2 - A participant has the character



or

for longer distances

3 - Another participant has a bin to collect the wastes

4 - There is a net in another participant's phone

So the character needs to walk through phones to accomplish the mission.

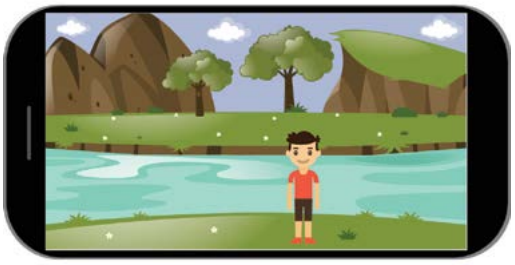
At first, you may not know how to solve the problem without a character and tools. So you rotate your phone and in the other world you contact to the participants who are in the same quiz and they have other factors to accomplish the mission.

If your phone is close to other phones you can communicate through Bluetooth and walk the characters through phones and finish the level.

Otherwise, you can telecommunicate through the internet and any of you just can watch what is happening while their phone is rotated and they are in the parallel world.

Putting together all the options, they can resolve the problem...

...cleaning the river.



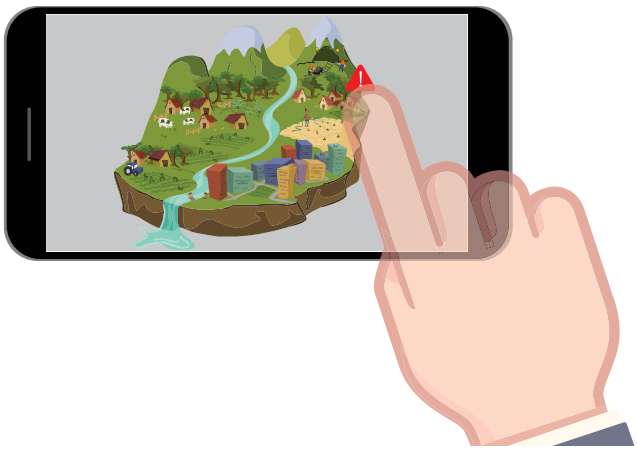
In the end, you will have all the components together in your phone to solve the problem and convert it to a check mark in the main (base) game platform.

4.2.2 Micro - game Model 2

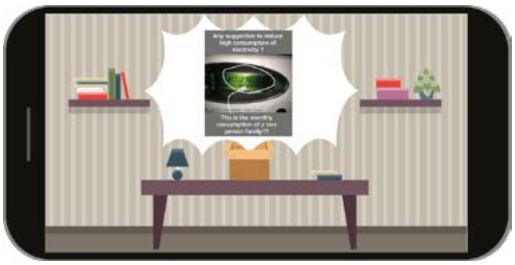
The model is based on the **collaboration of the other person who may not play** the game.

Example: solve the problems inside the house.
Your mission is to go to the house and find a solution to a problem which is asked by other people.

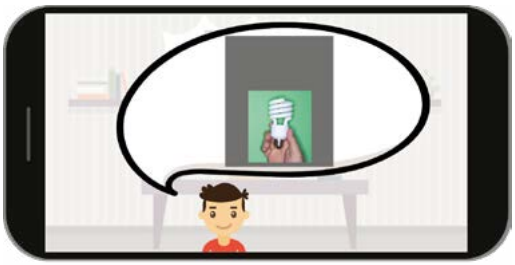
You go inside the house and a user asked how to reduce high consumption of electricity.



You are going to share your experience of using low energy light bulbs.
and every other participant may upload their experience for resolving this problem.



when the user finds the best solution to their problem, they are going to approve it and the level will be unblocked and get a green check mark.



4.2.3 Micro - game Model 3

In this case, the player is finding solution **being in touch just with the game and trying to interact with the utilities of the smartphone**.

Example: help the plants grow
The mission is to find out what is missing.

You tap on the farm area.

As soon as you understand what is missing, you will tap on the item and take a photo of that object and place it there.

You choose an item and the photo camera will be activated there. you can upload a story and put information including photo and text and wait to be confirmed or rejected.

Obviously, the less error will give you the most score and if your first choice is correct you will get the whole score of the level.

When you uploaded the photo, if the answer is correct you exceed the level and you get the green check mark on the base (main platform of the game).

4.2.4 Game in progress

All the other micro-games are based on these three models.

So in some of them, the participants are collaborating with the other participants, whether they are all in the same place, so they can enjoy the game all together thanks to Bluetooth and communicate between their devices, or even if they are in the long distance so they can play online.

In some, the participants could ask the collaboration of people who are not playing the game, so they can have interaction and engagement of more citizens and also present the game to them.

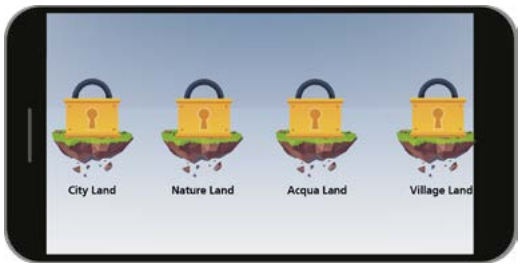
And in the rest of them, the participants play the game by interacting with their device so they are being challenged to use the utilities of their smartphones in all the possible ways.

When all the red exclamation mark signs become green check mark, you know that you have accomplished the level and the territory is in its best situation.

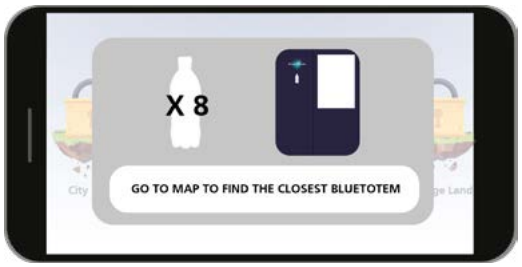
As soon as a platform is all settled, the player gets to choose another one and here is when the participant needs to interact with the Bluetotam, go there and throw the requested number of the bottle which is asked to unblock the level. More complex games request more bottle to be unblocked.

If the user wants to share the experience of playing with their friends they can invite them to play in the same territory that they are playing.

When the users go to the game map, they might see most of the territories are displayed as locked. By tapping on the locked level they would find out how many bottles are needed to unlock the level.



As soon as the users see the number of bottles which are needed to unlock the level, they also can understand where is the closest BlueTotem to them by tapping on the button which is popped on the screen.



By allowing the game to access the location, the application will tell you which are the BlueTotems around you and also it is possible to get the real-time information of any of them.

After going to BluTotem, the user can log in through the smaller display on BluTotem, and after inserting the bottles the user can select which territory they want to unlock.

In addition, further information about user's activity is available on their profile in the app and also it is accessible on the BluTotem by logging in through the smaller display.

This information includes:

1. The number of collected bottles by the player from the beginning of the game.
2. Ranking of players in comparison to the others in the city according to the number of collected bottles.
3. The activity of the invited friends.

4. Information about the final destination of bottles and what they are supposed to become.
5. The cases in which the proceeds will be spent in.

So the things you are able to do with BlueTotem and its application are as following, accessing information and data, playing the game with collaborating and interacting, doing a sustainable friendly action which is giving the PETs to the compactor and having awareness of your and other citizens' action which results in well-being of you and the city you live in.

Obviously, the game and the application are expandable, so as the BlueTotem itself which has much more missions and it is supposed to become a social hub for the city. So that, as BlueTotem go forward, the game should grow with it.

This is where we all are trying to practice how to be responsible for the world that we are living in it.

4.3 Conclusion

As we know BlueTotem is trying to propound a sustainable behavior in the society and that is why communicating it is essential. If we use the same pattern and try to convert it to a game, citizens can exercise the same behavior in a very fun and gamy ambient, and it may become easier and more intuitive for them to apply it in a real life.

So that, we are trying to exercise all these patterns, such as collaboration, sharing and being responsible. That way, the users can percept the effect of their little efforts in the large-scale and they can see the result immediately, so all these can learn the user slowly how does it work to do the same for the reak society.

Meanwhile, as we are practicing how to be a port of society and take responsibilities (bottom-up approach), we are also are doing a sustainable act for our city and also for our world, which is change the destination of PETs, from being just a piece of garbage that ruins the nature, to a reusable material that can be converted to something useful.

Also, it is important that this game gives all the possibilities to the users to decide on their own and it is just a smaller scale of the same society that shows the results to the players or citizens of the game in a simpler manner. So that, everybody will understand how all of us are connected together if we want to solve the problems of one level and move forward.

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https://www.newzoo.com
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http://www.watershed.co.uk/
https://www.recycleyourplastics.org/consumers/kids-recycling/plastics-can-become/

Bluetotem was realised and installed in Cittadella politecnica del design, Torino during the design week 2016 by a team from Innovation Design Lab of Politecnico di Torino and it is still there.
The project was designed to encourage citizens to undertake some actions leads to improve the quality of the city.
In this thesis, possible solutions for communicating between this machine and human are studied and at the end, one of them is being suggested.

September 2018