



**POLITECNICO
DI TORINO**

DESIGN

Master's Degree in Ecodesign
Politecnico di Torino

BlueTotem
Communicating the Sustainability in the city

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February 2018




COMMUNICATING THE SUSTAINABILITY IN THE CITY

ABSTRACT

The current study is based on how to communicate in a cultural and fundamental way -using interaction design- to let citizens be a part of recycling Water Plastic Bottles (PET) and exercise sustainability through gamification. The thesis is started from the "BlueTotem project" which is a research done by Polito Innovation Design Lab in 2016. The project was designed to encourage citizens to undertake some actions that lead to improvement of the quality of their city (bottom-up approach), in this case giving the PETs to the BlueTotem to be compacted and be prepared to recycle.

The major goal of this thesis is dealing with the existing issues 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 and BlueTotem, then we discuss the proper way of communicating.

At 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.



 INTERACTION  DESIGN
GAMIFICATION  **D**
COMMUNICATIO  **N**  **E** BLUETOOTH
SUSTAINABILITY  **S**

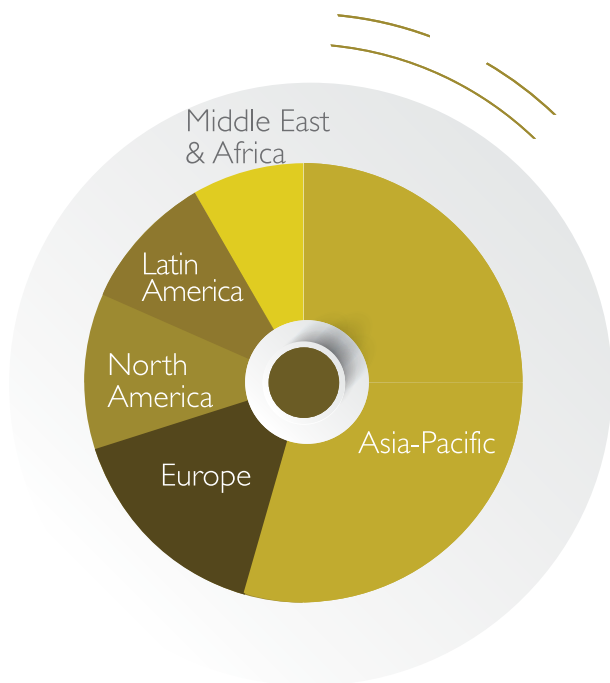
PREFACE

Plastic bottles (PET)* were commercially used in 1947 for the first time, but it was expensive until 1960s when high-density polyethylene was introduced. It was embraced so quickly by both producers and consumers because of its low weight, low production, and transportation costs compared with glass bottles. Furthermore, the most important advantages of PET over glass bottles is its resistance to breakage in production and transportation.

Because of all these glass bottles have almost completely been replaced by plastic ones in the food industry, except for wine and beer.

*PET: Polyethylene terephthalate is a thermoplastic polymer resin that is commonly used in the beverages.

Global production of PET has continued to rise every single year. The annual production of PET capacity stood over 28 million tons in 2012. Asia-Pacific was allocated half of the total capacity and China's ranking was the first, not only in the region but also in the world. Europe and North America each one supplied 14% of the total production. The global PET production was anticipated to exceed more than 24 million tons in 2015.



Global PET Supply and Recycling

America is the biggest consumer of water in plastic bottles. According to the data released by Beverage Marketing Inc., the quantity of bottled water used rose 7.9% in 2015, whilst there was a 7% increase in 2014.

Container Recycling Institute announced, that 100.7 billion plastic beverage bottles were sold in the U.S. in 2014, and 57% of those units were plastic water bottles. More than 75% of plastic bottles are never recycled, they are landfilled or simply thrown away. While the average time for a plastic bottle to decompose is at least 450 years. A significant amount of recycled PET is used to make fibers for clothes and carpets. Recycling five two-liter plastic bottles can provide enough polyester to make a square yard of carpet. The second usage of these recycled plastics is in making bottles of beverages and food. In addition, they are used to produce non-foods bottles, strapping, sheet, films, etc.

Abstract
Keywords
Preface

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- 1.2 Case Studies

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CHAPTER I:

SCENARIO





PRESENTATION OF THE BLUETOTEM

Today we know that the health of nature and living organisms are interdependent. Therefore nowadays not only it is crucial to resolve the problems and deficiencies that have been created in the past by humans but also there is an urgent need to prevent new contaminants. This will not be 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 their 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 crowd mapping

2) In hospitals

To fund medical research

3) In Universities

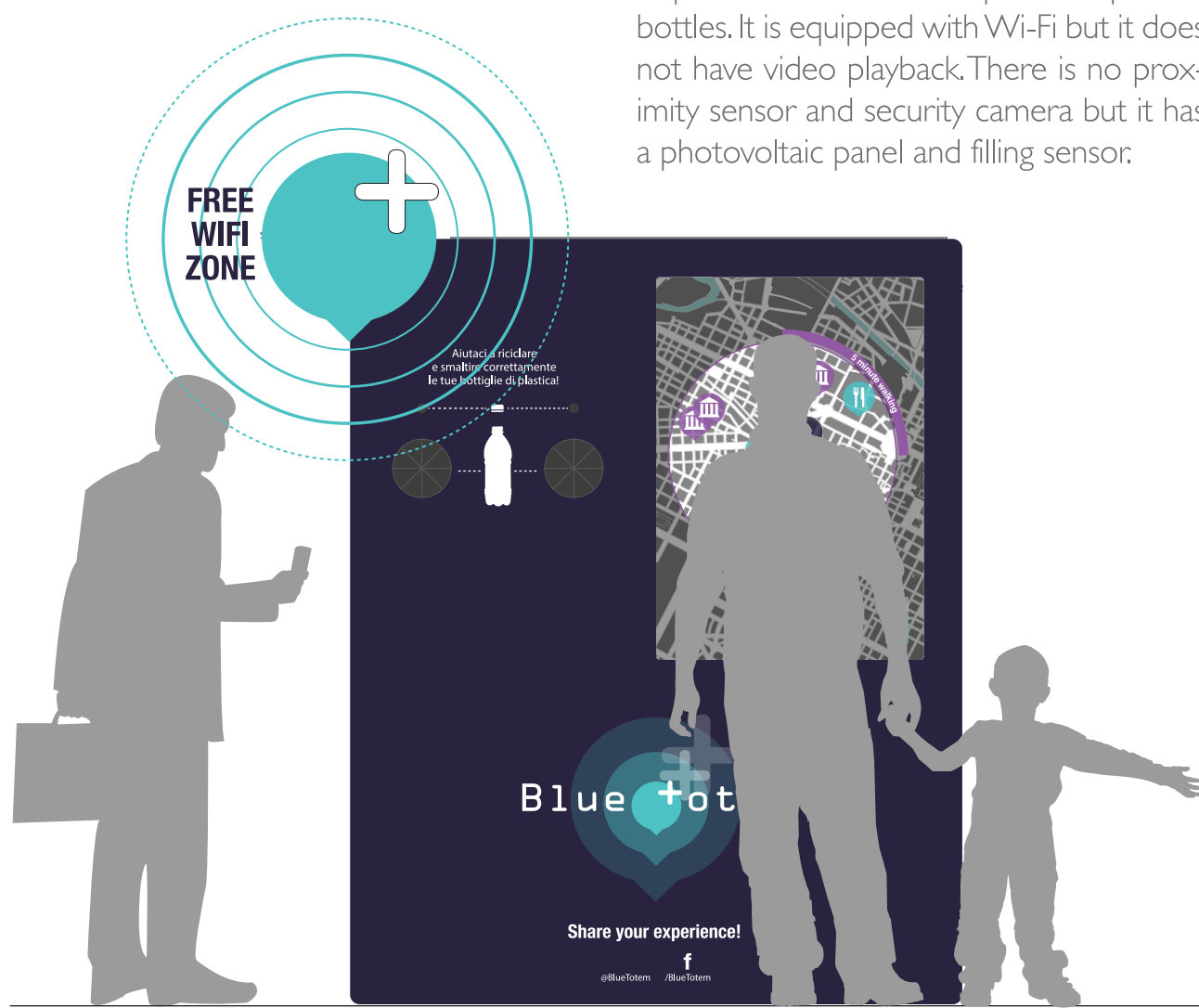
In sustainable practices

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

More details about Bluetotem

This device is designed in two sizes and can be installed in public places. The dimension of the larger one is 200 x 160 x 70 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 required 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 180-degree security cameras. In addition, there are two proximity sensors and a filling sensor that indicates tank filling. The accessories of the smaller BlueTotem are 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.



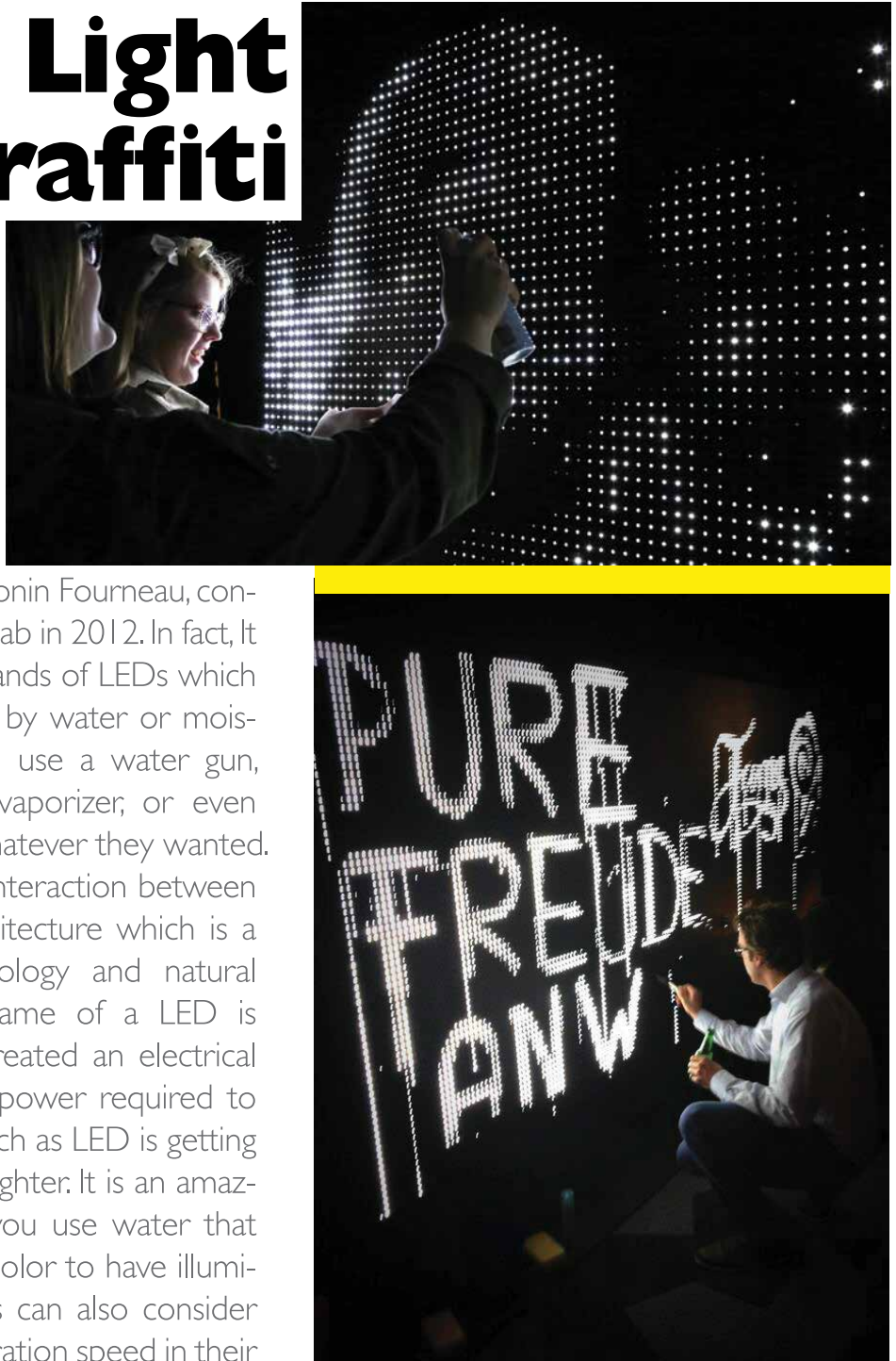
CASE STUDIES

A graphic consisting of three concentric yellow circles, centered behind the letter 'I' in the word 'STUDIES'.

Water Light Graffiti

Water Light Graffiti is the painting with water and LEDs. It was temporarily installed in Poitiers, a small city in France by the artist Antonin Fourné, conceived by Digitalarti Artlab in 2012. In fact, it is a wall made of thousands of LEDs which light up when touched by water or moisture. Participants could use a water gun, paint brush, sponges, vaporizer, or even their fingers to paint whatever they wanted. Actually, it is a kind of interaction between people and urban architecture which is a combination of technology and natural element. When the frame of a LED is touched by water, is created an electrical bridge that brings the power required to light up the LED. As much as LED is getting wetter, the light gets brighter. It is an amazing experience when you use water that has neither shape nor color to have illuminated design. The users can also consider the weather and evaporation speed in their drawing and probably would be an exciting firework in rainy days.

This project ran just three days, Fourné calls the installation "low-tech" but he would like to develop the idea and also he hopes to use long lasting material in new and bigger version of Water Light Graffiti in the near future.





Smart Highway

The Smart Highway project was presented by Dutch designer Daan Roosegaarde at the Design Indaba conference in Cape Town in 2013 and it was tested on a highway in the Brabant province of Netherlands. The smart highways are sort of interactive and sustainable roads for future. It is an attempt to save more energy and money while making the highway and roads safer. The goal is to make roads that are more sustainable and interactive by using light, energy and road signs that automatically adapt to the traffic, environment and people, says Roosegaarde.

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. Hence the night-journey turns into a fairy-tale experience. In winter when the temperature drops below zero, paint would show images of snowflakes and will indicate to drivers that roads are icy.



For roadside lighting, instead of normal lamps, they have been designed some interactive street lamps with pinwheels which work by the air from passing vehicles. They dim after vehicles pass by, therefore when there is no traffic, energy will be saved.

In addition, by an induction priority lane, it is possible to recharge electric cars while on the move.

Amphibious Architecture is a floating installation created by The Environmental Health Clinic at New York University and the Living Architecture Lab at Columbia University in the Pike street of New York. It was a project led by David Benjamin, Soo-in Yang and Natalie Jeremijenko for the Situated Technologies exhibition "Toward the Sentient City" in the fall of 2009. New York city is surrounded by rivers but citizens have very little interaction with water and underwater. It provides an interface between water and the ecosystem below.

There are two networks of floating interactive tubes contain underwater sensors and display lights above water.

These sensors display water quality, the presence of fish, hydrodynamic forces and users interest in water ecosystem. Then this data will be displayed above water using an array of LED lights, with wireless sensor communication and a text-messaging interface.

Through sending text message participants can correspond with fish and receive real

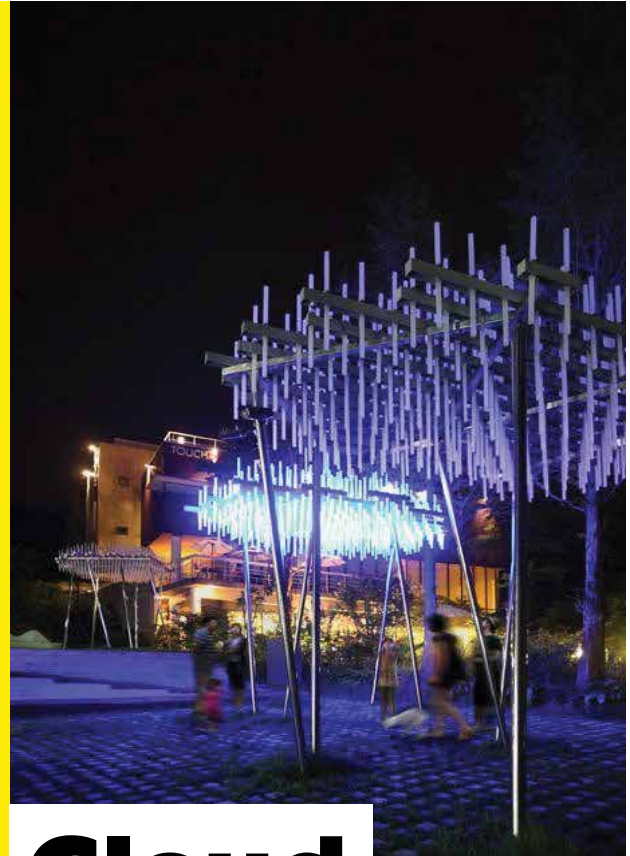
Amphibious Architecture



time data about the river, and water quality. The project encourages curiosity and engagement between citizens meanwhile It creates a dynamic and attractive layer of light above of water that makes an interaction between people, fish, their shared environment, buildings, and public space.

Cloud is an interactive light and sound sculpture designed by SsD Architecture + Urbanism. These three clouds have installed in the Heyri Art Valley in South Korea in 2012.

between human and climate through light and sound. When it is cold, its LED turns orange and crackles like a fire but when it is rainy Cloud copies droplets of rain with alternating blue light.



Cloud

The sculpture transfers communication to light and sounds and responds not only to the movement of passersby but also to weather.

By changing light and sound, people are invited to discover new path between or under it. When people pass, the cloud follows them and whispers ominously to them, it can be heard from hidden speakers and also the lights and sounds behave differently to groups and individuals.

When there is no human to interact with, the sculpture responds to atmosphere change. It takes different weather condition like wind, rain, and humidity and reacts very differently. In this way, it makes a new link



The “Water Cloud”, “People Cloud” and “Fire Cloud” mixes people’s whisper and nature’s primeval sounds. This combination is very fantastic.

The ambient whispering “invites the public to participate in what is now a public ‘secret,’” says SsD.

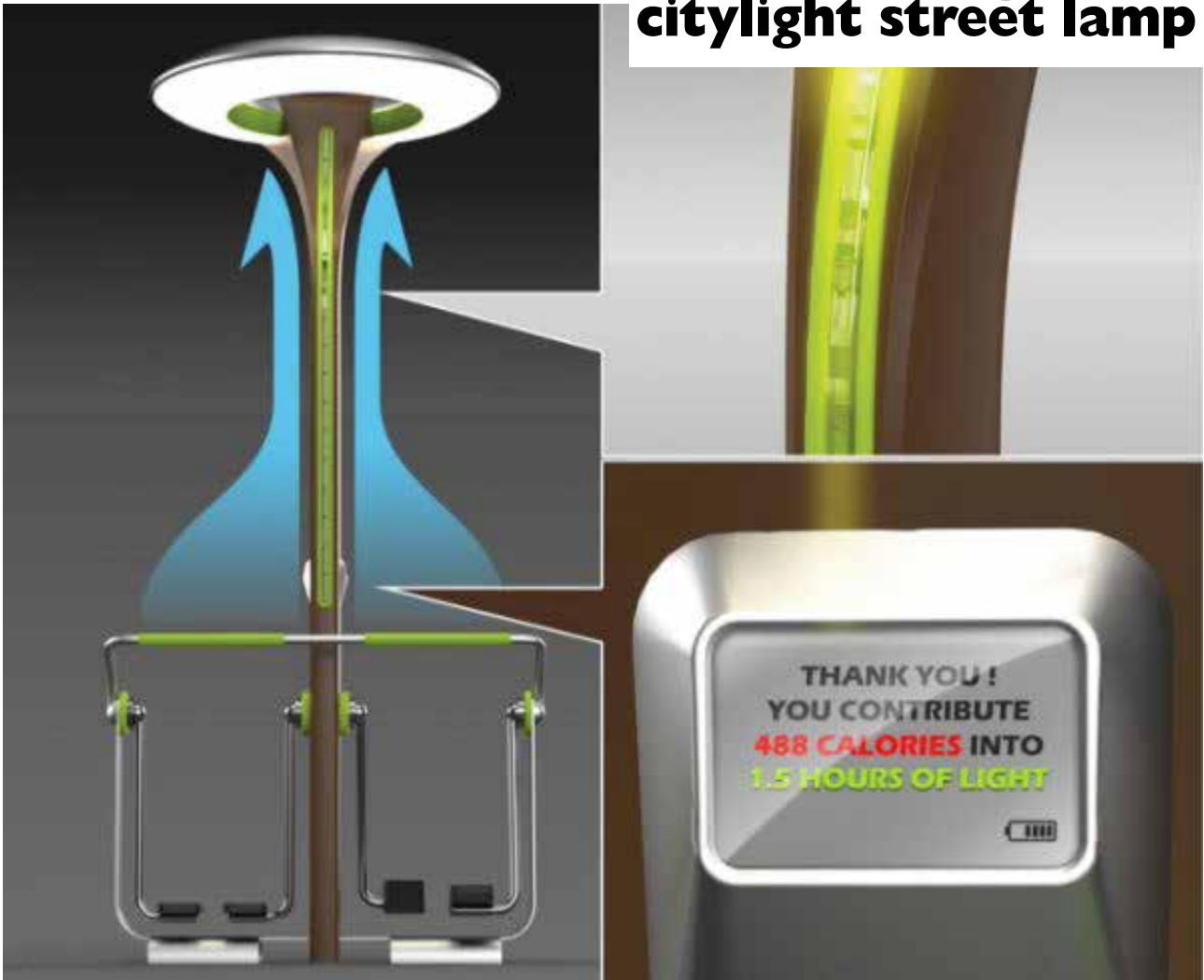
ENER-GYM is a great combination of street lamp and fitness equipment toward smart lighting concept, designed by Dido Studio. In fact this is a hybrid urban lighting system is working by electricity and human power and it is installed in public area. This is the first street lamp connected to fitness equipment that illuminates through kinetic energy.

Instead of traditional bulbs lamps, new LEDs have been used and they are connected to

some outdoor fitness facilities. When a participant uses one of the health equipment, it transfers the human generated power to the illumination system.

Users can check if the LED lamp is being charged by human-power and battery status, it encourages people to participate the green exercise.

Energym citylight street lamp



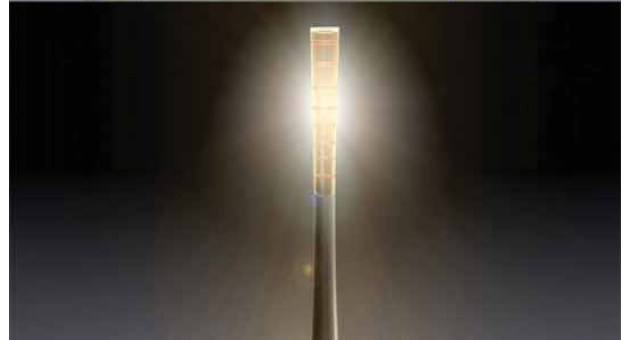
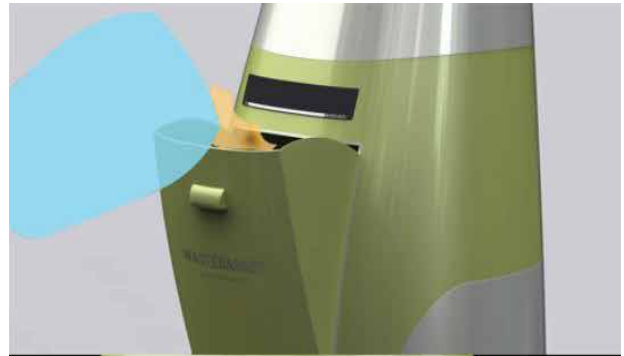
There is a monitor on the pole shows the calories burned and the duration of lighting generated by user's exercise.

Would you donate your gym time for the good of the city you live in? That's what the designers of the ENERGYM street light concept would like all of us to do.

The Gaon street light/wastebasket concept has been designed by Haneum Lee to turn trash into the light in 2009.

A lamppost that eliminates waste while illuminating the streets, it's a brilliant and great idea for the environmental issues. It composts biodegradable wastes, then uses the methane byproduct as a fuel to power the lamps. In fact, it uses the energy that is stored in the garbage and eliminates what's in the basket. Passersby throw their organic garbage inside of it, the wastes are composted there. Methane from the compost is used to power the lamp, and the whole process begins again. Then the compost also can be regained to re-green our cities. The Gaon street light consists of five different parts.

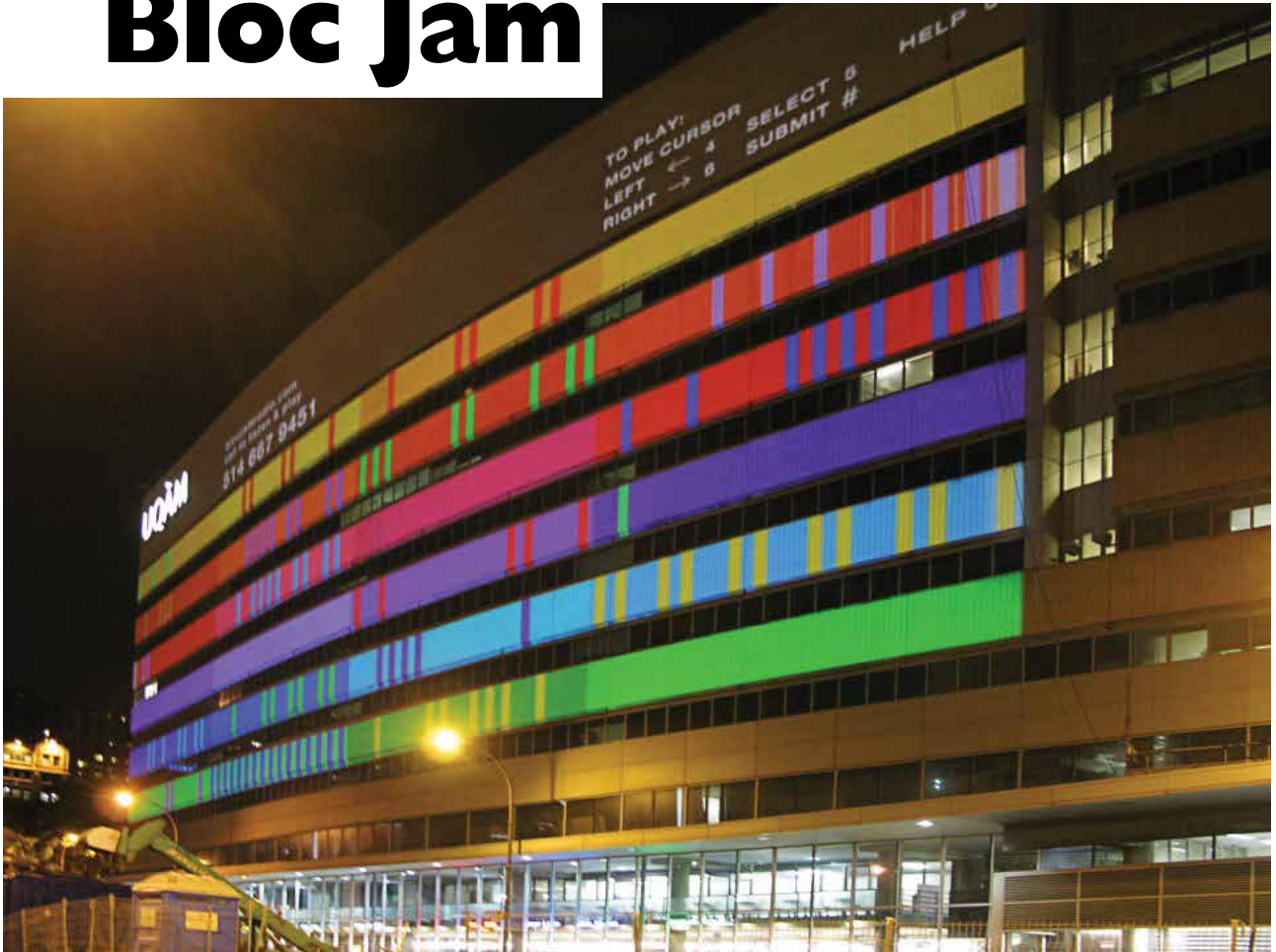
1. Street lamp parts.
2. Wastebasket parts
3. Status display
4. Wastebasket cover
5. Fertilizer parts



May be in future if we can make the right changes, it would light our streets and parks and would warn us that even an apple can be extracted from energy.

The Gaon street light wastebasket concept

Bloc Jam



Bloc Jam is presented at Mutek Extra Muros 2010 and Nuit Blanche 2011 in Montreal.

It is a project by Mouna Andraos & Melissa Mongiat, with Rob Seward and Kelsey Snook which invited electronic music fans to the city's cultural venues.

They have brought the magic to the streets by transforming the facade of an 8 story building in downtown Montreal into a game of improvised musical composition collectively composed by the public.

This project is a kind of visual spectacle that is created by passersby who are making rhythmic vibration through their cellular phones.



The citizens are called in to contribute individual notes and beat to the enormous colorful projection.

Then the submitted rhythms immediately turned into "tracks" of animated colors on the wall and everyone can listen to the soundtrack on their cellphones.

Hello Lamp Post premiered in Bristol in 2013 by PAN Studio. It is 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 messages. It ran just eight weeks in summer and over 25,000 text messages were sent by residents and visitors.

It is an interactive system that encourages people to talk with each other and share their thoughts and stories in the city.

All street objects have unique codes. Hello Lamp Post uses this infrastructure and encourages participants to send messages and stories for each other.

They text the object's code and name to an advertised number, which 'awakens' the object, prompting it to ask the person some questions that become more personal with every reply.



Hello Lamp Post



Biolamp is not just a normal street lamp but it has the ability to transform pollution into fuel to light up the street by algae. So it not only removes carbon dioxide gas from the surrounding atmosphere but also illuminates the street.

Biolamp is designed by a Hungarian engineer Peter Horvath in 2010.

The object I have designed aimed air cleaning and the production of fuel. This solution is combined with street lamps because there are many of them on the streets. Inside the street lamp, there is a liquid, alga mixed with water, which transforms CO₂ to oxygen." Horvath said.

There is a fan that is sucking the smog inside and flows into the alga liquid, then



the alga absorbs the CO₂.

The spiral shape of smog tube helps the algae absorb the CO₂ better; then photosynthesis can happen. The created oxygen in the photosynthesis 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.



Biolamp



This is an interesting concept for rainwater catchment. The Hydroleaf is an attractive idea that is a bus shelter, street light, rain catchment system, and finally water dispenser at the same time. This concept is created by Iranian Industrial Design student Mostafa Bonakdar in Tehran, Iran in 2010.

The structure is both a shelter during rain as well as a drinking fountain, it can act as a bus shelter, a sunshade for benches in the park, or some other places where both a canopy and a little of fresh water are pleasant.

Photovoltaic panels are embedded on the top of a small sunshade, so it powers LED lights below to light up space around during the nights. It also absorbs rainwater like a leaf and collects it in a container installed on the pole. A filter is considered to purify the collected water and offers it in a container at the bottom of the pole.

The red and blue bottoms at dispenser indicate not only you have cool fresh water but also you can have hot water for tea while you are waiting for a bus. This concept is fantastic for providing several services at once with renewable energy and resources.

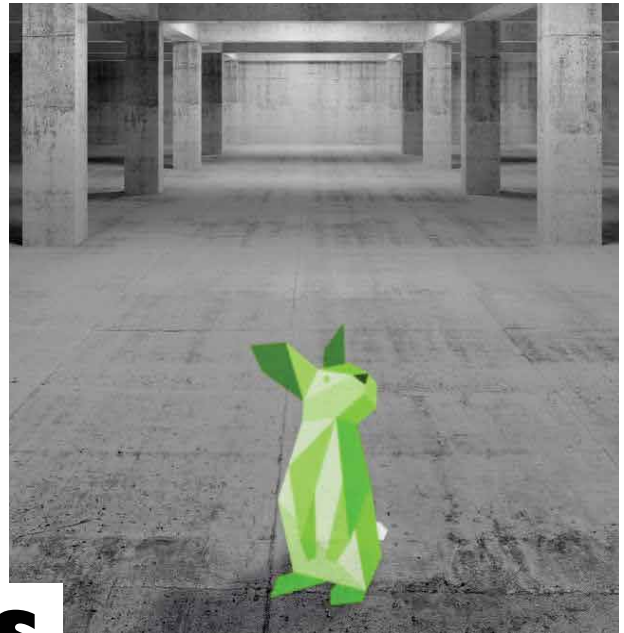


Solar-Powered Hydroleaf Shelter



It was designed by the Laboratory for Architectural Experiments, LAX, based in Poland and was the winner of the 2015 Playable City Award.

Designers say: "Urbanimals is the project of interactive visual installations displayed on the empty surfaces across the city. It draws inspiration from the traits of popular animals and implies it into an adequate sport activity."



Urbanimals



URBANIMALS are eight origami-like animals in all corners of the city that were designed in the interactive form of light projections on the wall and the ground in the city. Over 26,000 people have played with Rabbit, Dolphin, Kangaroo, and Beetle over the Urbanimals for 10 weeks between September – November. When people pass or stop in front of them the

Urbanimals wake up. Those animals were supposed to interact with their environment, street objects and passers-by in the same time and this magical interaction is created by using projectors and sensors in the whole city of Bristol UK in unexpected places. Also, every citizen behaves and interacts differently because each animal represents different personality as well.

Shadowing was designed by Jonathan Chomko and Matthew Rosier and it premiered over six weeks in Bristol in Autumn 2014. There have been embedded eight augmented street lights in some of the unexpected pathways and quiet streets of Bristol. In fact, Shadowing gave memory to

Shadowing



When people discovered how Shadowing works, they start playing, dancing and forming their shadows alone or in a group. Many creative, funny and thoughtful responses were received from the people who interact with Shadowing. They change their normal behavior; play with people who they don't know, maybe to contribute a

city lights, when the sun sets, streetlights start to record the pedestrians' movement while they are passing and then play them back as shadows to the next persons who pass underneath. Shadowing invites people to interact not only with streetlamps but also with others to make amazing moments.

wave or a dance.

As mentioned above, it first installed in Bristol in 2014, then was installed in York and Design Museum London in 2015 and Tokyo in 2016, also in the City of London from July 20th - October 22nd, 2017

Make Your Rhythm is a new concept for bus stops. It gives people an opportunity to have fun while they are waiting for the bus. It is created by Elham Souri and Nushin



Samavaki in Iran in 2016.

Waiting for a bus in bus stops is normally boring, for this reason, "Make your rhythm" tries to offer new pleasant atmosphere to the passengers who have to wait for a while. At the first glance, the seats invite people to sit because they look like swings but in fact, they move vertically like spring seats.

Another exciting aspect is the colored LEDs are located in bus stop's sidewalls. Each column of LEDs lights up by the movement of a seat because they are linked and it makes a beautiful harmony. The movement of seats encourages passengers to participate in the competition to achieve the highest level of colorful LEDs column. Also watching the competition and the beautiful harmony of colors makes playful moments instead of boring time waiting for the bus.

Make Your Rhythm





Mischievous Footprints

Mischievous Footprints is a project to make cities more fun and engaging. It is designed by PCT Team in Japan in 2016.

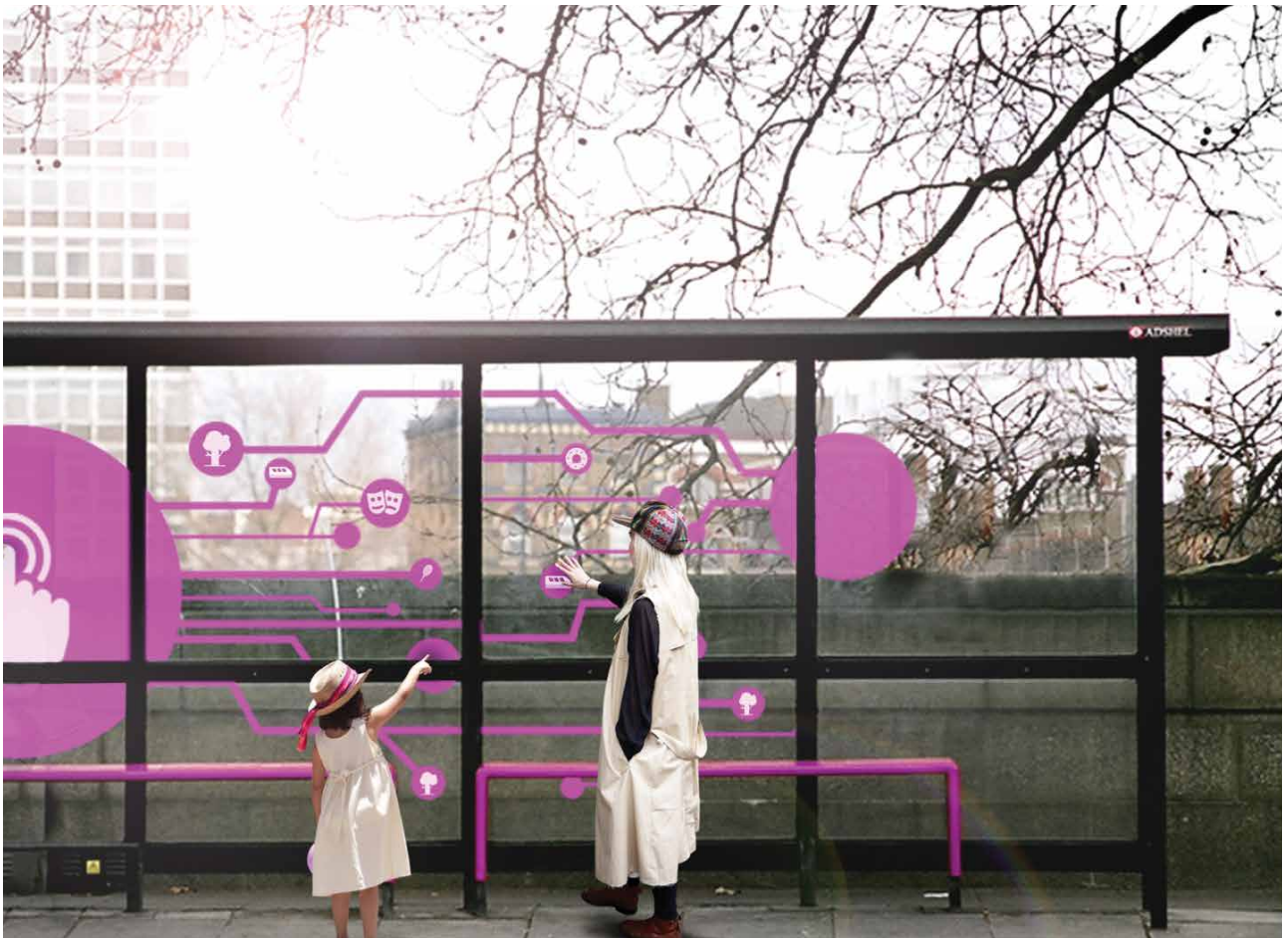
It is created as an antithesis to walking with down head while using mobile phone in public place. It encourages people to play and connect with the city in a new way as they walk in street.

In this installation, there are embedded LED lights and pressure sensors to take footstep data of citizens walking on the road and leaves a trail of glowing footprints.

According to Playable city: "Mischievous Footprints places playful prompts in city streets, drawing out new behaviours such as taking a meandering path or standing still to look around through playful prompts. Using technology so pavements show the changing behaviour of people, a reflection of the natural evolution of roads, Mischievous Footprints shows that the city landscape is alive with new discoveries. When



the playfulness of pavements make us journey through the city with the eyes of an explorer; we start to cultivate a stronger interest in our cities and our travels through the city become journeys that initiate new connections, person to person, person to city."



The Conversing Circuit

The Conversing Circuit is created by Urban Conga a design firm in 2016 in United State. It tries to make a conversation between citizens and their environment while they are waiting at the bus stop.

Creation of the installation is based on a map of main places in the city.

All these main places are presented by an icon and these icons invite people by attractive visuals to touch the installation.

When they touch each point emits a different and special sound or light from the transit shelter.

Totally the design creates an interactive relationship between people and environment by focusing on sight, sound, and touch.





The singing house

There is a house in the Dresden area of Germany which is transformed into an art project by Annette Paul (sculptor) and Christoph Rossner and André Tempel (designers) in 2012.

It's called Singing house because when it rains, the building starts to sing and provides a soft melody for passersby. The creators were inspired by St. Petersburg's Rainy Theater, although their installation is quite different.

On the house walls, as it can be seen on photos there is a system of pipes and funnels which is pretty complex and these



are made of aluminum in the form of musical instruments.

The building walls are painted with a nice blue color that has beautiful harmony with the color of aluminum pipes while it is raining and the sky is gray, so it has become a tourist attraction.



In addition, this is equipped with an audio system for handicapped / blind users, static information board -short or long sized, seat and nighttime illumination.

It is simple to install PSI and maintenance, while this also vandal proof.

This bus stop is automatic and self sufficient and doesn't need any external connection or wiring.

The PSI made a big jump to the quality of public transportation & user experience. It encourages citizens to use the bus and helps reduce traffic.

PSI, the Informative Solar Bus Stop



The PSI is Spain's first solar-powered bus stop designed by four students of the IED Barcelona, Jaciel Reyes, Gerard Lorente, Erik Simons and Ruben Oya in 2009.

It informs the arrival times of bus for up to 6 lines on the displays. Furthermore, it is an innovative bus stop which is able to provide real-time information to public transport users also citizens and tourists. It has a display for additional graphic information, also it is easy to check time forecasts on the display.





The FUNtain Hydraulophone



The FUNtain is a public interactive installation which is the world's largest hydraulophone installed outside of the Ontario in Canada in 2006.

It is designed by Steve Mann and can be played by any member of the public at any time of the day or night.

This is fountain keyboard, it means each key is a water jet. It is made of stainless steel like surgical instruments' material. In addition, it is a self-cleaning expressive musical instrument that visitors play it by blocking the water jets, so the keyboard also cleans itself. It works like a pipe organ, but it uses water



instead of air. When users stop one of the jets by their fingers or hands, it also makes a sound as all hydraulophones usually do, at the same time it sends water out through the mouth of organ pipes.



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Interactive Floor Projection in Bahrain Airport

is an interactive advertising floor projection system which is designed by GestureTek and installed in Bahrain International

airport duty-free in 2010. It has been designed to attract customers, passersby and shoppers attention in the departure area by displaying colorful and interesting advertisements about products and services.

This is the first one of this kind that is provided in middle east.

According to GestureTek, "the project uses GestureTek'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."

This system makes fun and entertainment by using new technology for passengers and shoppers.



Brings Someone Back to Life

ASSS is health organization in Canada desired to encourage people in pursuing public health careers.

Therefore Quebec agency Ig2 designed an interactive bus stop shelter ad to achieve this. It was released in April 2011.

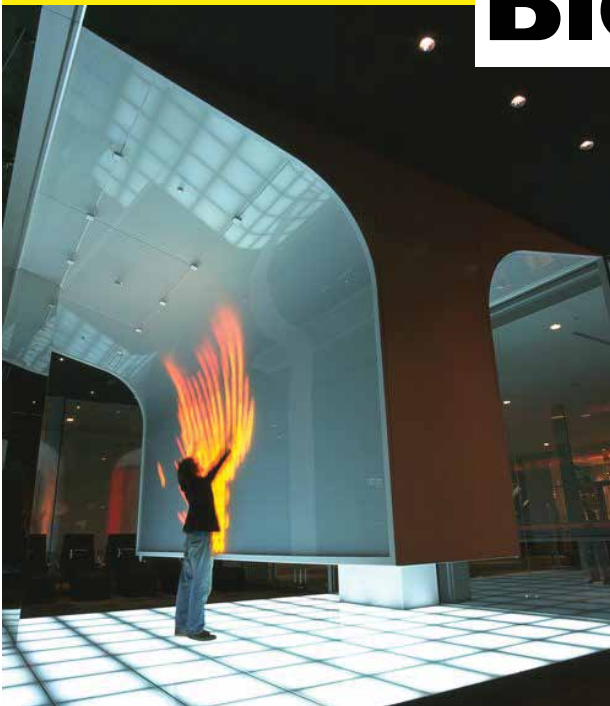
There is billboard at the bus stop shows a patient man lying next to his electrocardiogram with the message "press here" on his chest.

when the passersby enter to the stop they hear a sound of the patient flatlines. In fact, people are invited to do a heart massage. They can decided to place their own hands on the patient's chest to bring him to the life.

If the people do that a heartbeat is heard and then it gives people the feeling they can save lives.



Bloomberg Ice



Bloomberg Ice is an interactive media terminal designed by architect Klein Dytham installed in Marunouchi, Tokyo in 2002.

Klein Dytham with the collaboration of

multi-media artist and interface designer Toshio Iwai, KDa tries to transform financial information into a tangible and even playful experience.

It is aimed at communicating with users and interacts in different ways when the user approaches it.

It is a glass wall 5m x 3.5m and there are infrared sensors behind it. As soon as users approach ICE these sensors recognize their presence even from 500mm then they can interact with the data and there is no need to touch the glass.

When there is no user and it is its resting time it just expresses stock tickers in a very fun way and it is also understandable. For instance when the stock is up, the sign swells but if it drops the stock shrinks and drops below the line.



Nike+Nine

Nike+Nine won the 2013 Victorian Premier's Design Award in Sydney Australia.

It is created by Melbourne-based brand communications agency Local Peoples founded by Giuseppe Demaio.

According to Dexigner "it is a pop-up store that ran on London time (open at night, closed during the day) and featured a pinnacle retail fit-out, seamlessly combining physical and digital innovation with cutting-edge interactive technology.

The design and delivery of the physical retail experience transformed an empty shell into an interactive window display by day and a fully functional physical and digital retail space by night."

Juliana Nguyen, Marketing Director – Nike Pacific told Mumbrella: "Nike has always focused its efforts on creating the very best products and technologies to assist the athlete – both at an elite and everyday level. The new Nike Innovation Pop Up showcases all of our latest and greatest



products, some of which will be worn by the world's greatest athletes in 2012. The space provides an opportunity for consumers to experience these innovations first hand in a unique and engaging retail environment."



Body Movies

Body movies is an interactive installation by Rafael Lozano-Hemmer in Schouwburg square, Rotterdam between August 31 - September 23, 2001.

The designer is inspired by Samuel van Hoogstraten's work "The Shadow Dance" (Rotterdam, 1675)

"Body movies" is produced by V2 for the cultural capital of Europe.

Body Movies tries to change public space by interactive projections. It uses many

portraits taken on the streets.

They are shown utilizing robotically controlled projectors and those portraits seen inside the silhouettes of the people which are projected. The size of shadows is from two to twenty-five meters depending on their distance from the light sources.

"Body Movies" has the intention of exploring the crossing between new technologies, public place, and public activation.



M Shade



M-shade is a shelter for collecting rainwater designed by Chan Young Joo from Korea in 2009.

Designer's own words:

"It's a shelter which gathers rainwater for sustainable use of rainwater resource. by using a mushroom, material of nature, as an object, the M-shade gives natural emotions in the artificial environment of the

metropolis.

When water is pouring from the skies, the M-shade collects rainwater from its roof and flows down the inner pipe down to the underground reservoir. We'd like to suggest a sophisticated system that allows for the collected rainwater to be applied to gardening (landscape use) and for bathroom and firefighting use."



Aperture Facade Installation

Aperture is an interactive display same as a dynamic wall with dozens of tiny apertures which open if there is no light and close if there is.

The installation uses iris diaphragms (similar those found in cameras).

It makes an interactive matrix by connecting with passersby in public space.

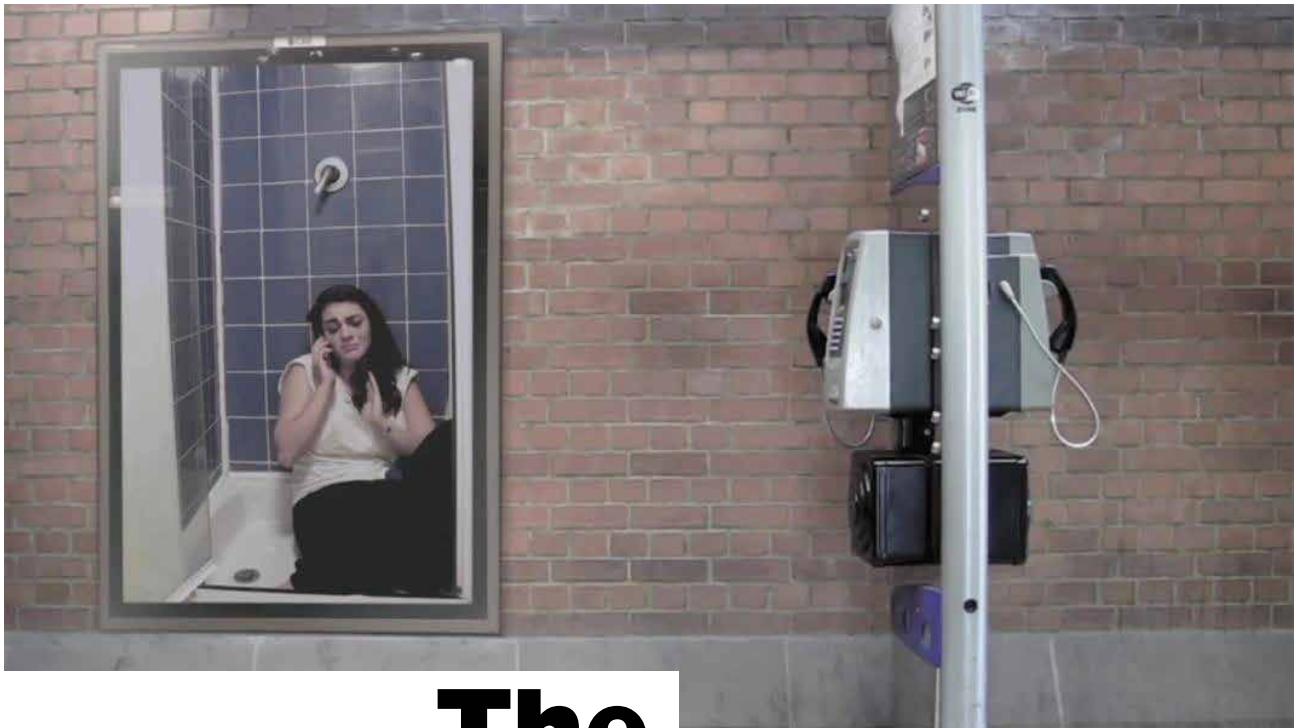
It is created by Frédéric Eyl and Gunnar Green; University of the Arts Berlin in 2004-05.

Every single aperture responds quickly to incoming light by changing their diameters. Iris diaphragms open and close according to the external light.

This makes people notice the opening diameter of the iris diaphragms by their movement in front of the facade and also



when a person walks by one side of the wall, another one can feel it with the opening of the iris and see the person's silhouette, therefore two strangers can communicate to each other on either side of the once opaque wall from inside and outside of a building.



The Samaritans

This is an interactive ad created by CSM, in the United Kingdom for The Samaritans and it is published in March 2013.

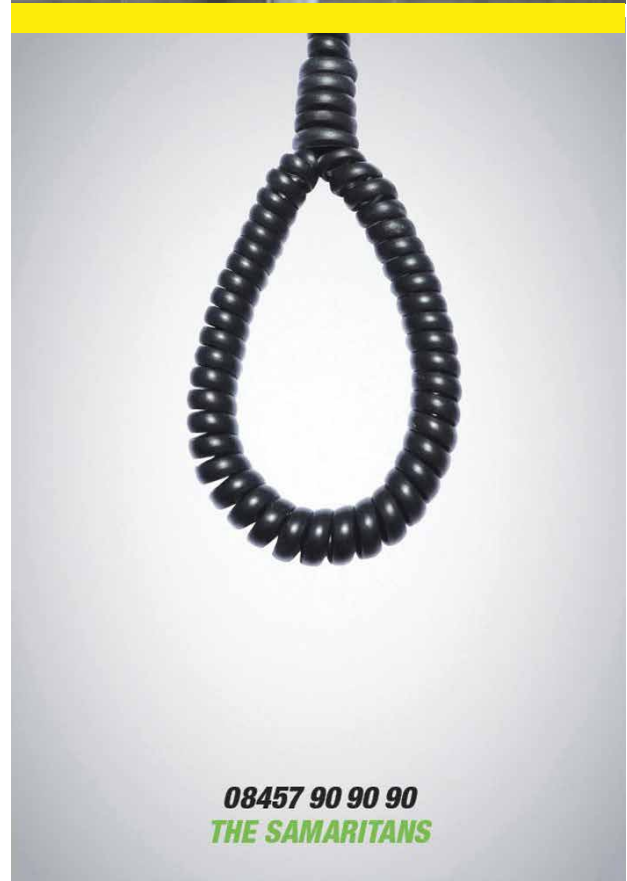
In fact, there is an interactive campaign which asks people to join it voluntarily.

They say "They receive about 1 million calls a year, 1 out of 5 is suicidal calls"

At the moment, there are 18,750 persons who involved in the campaign to respond to these calls, but they always need more persons. In addition to phone calls, people contact also through email, letter and face-to-face meetings. Samaritans' motto is "Let us not miss a single call"

Samaritans introduce themselves as confidential, non-judgmental emotional supporters.

Designers have created series of interactive adverts. The advert shows a terrible condition for a person who needs help. It is situated in a busy tube station and there is also a telephone booth close to it. The telephone has been suspended for the

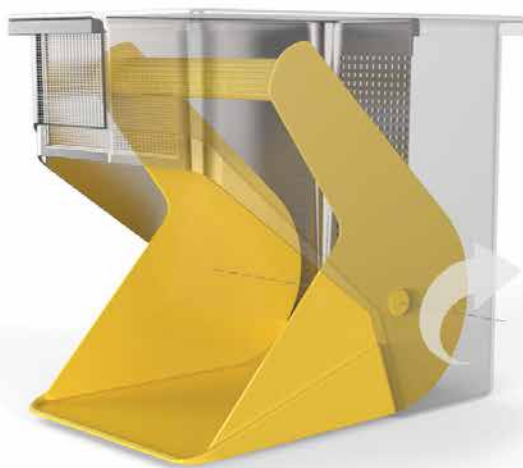


08457 90 90 90
THE SAMARITANS

advert. when passersby are passing beside the ad, the telephone rings and invite them to pick it up and be a good listener to change someone's life.



Trash Interceptor



- ① Handle
- ② Filter
- ③ Cleaning basket
- ④ Support frame
- ⑤ Refuse entry
- ⑥ Rotary shaft

Rubbish in sewers system is one of the main problems in cities and cleaning urban sewer systems is difficult because needs to open the fences and obviously it takes a long time

Trash Interceptor is a solution to collect garbage easily and quickly.

As shown in the photos just needs to put it into the sewer hole. After the garbage flowing and get stuck in its basket and when it is full, the cleaning staff can lift the handle easily just by a hand, rotate the reels to close the basket. This can prevent urban sewer system block.

Trash Interceptor is designed by Huang YI-Chang in Huafan University, in New Taipei City of Taiwan in 2016



BIRD MUV's Smart Ring

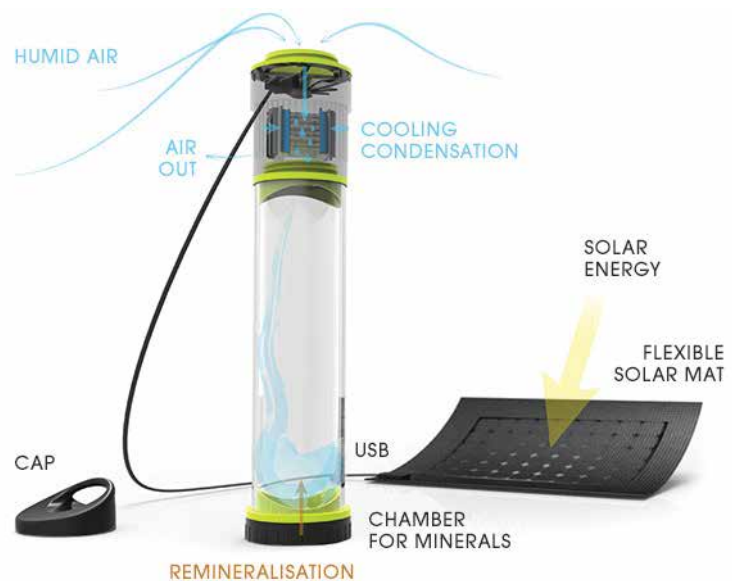


The Bird is an amazing Bluetooth device which is very small and wearable. It is capable to convert any space into an interactive playground. In other words, it transforms surfaces of any media source (Windows, Mac, Android, iOS) into giant interactive touchscreens and you can simply control it. It let you touch, push, pull

drag and move, scale or rotate, tap and hold, draw or highlight every visible element. With touching the small screens Bird makes it to a big one with the finest resolution and 10 people can collaborate together on one screen at the same time. It is created by Israeli-based start-up MUV Interactive in 2011.



Fontus Water Bottle



This wonderful bottle is created by a group of innovators from a company called Fontus in Vienna, Austria in 2015. Since water shortage is a very important issue, this bottle has a great potential to make a change in the world's future. Fontus self-filling water bottle can extract water from the air. It is capable to turn the molecules of air into water by using solar power then it can also cool the produced water. It extracts humidity up to 0.8L per hour.

Due to its size and weight, it is easy to daily use everywhere. Fontus has designed 2 types of bottles: The Airo and the Ryde. First one is for daily use or hikers, the second for cyclists. Fontus group says: "The Earth's atmosphere contains around 13,000 square km of mostly unexploited freshwater. Fontus was invented to bring an alternative way of collecting safe drinking water to regions where drought and unclean water are a big issue."

This is an outdoor light installation by Marcos Zotes/UNSTABLE which is installed in various places like Detroit, Reykjavik and New York from 2011.

This project gives a tool to people to send a nameless message as a proclamation on a very big screen in town. It aims empowering local communities and making their voices to be heard by others.

Citizens are given the opportunity to participate in a free dynamic speech by sending a text message through their cell phones and the message will automatically projected in a large size on a building for about 10 to 20 seconds.

In this way, they are invited to share their feelings, secrets, criticism, support, opinion and whatever they want.



Your Text Here





Interactive Dancing Traffic Lights



This is an interactive pedestrian crossing light which is installed in Lisbon.

It was part of a wider marketing campaign. It is designed in 2014 by Smart (car brand) and an advertising agency called BBDO Germany working together.

It aims to make waiting time for the red light more entertaining.

The small guy on the red light starts to dance right before the light changes to

green. The movement of the dancing man is created in a booth nearby the junction by citizens who were filmed. It is fun of course but in fact, dancing traffic light encourages pedestrians to watch dancing man and wait rather than walk when the light is red. In this way, it makes the street safer for the pedestrians. Smart says: "81% more people do stop for the red traffic light when the little guy is dancing."



The Void



Its hyper reality experiences on a VR environment and created by The VOID VR a virtual reality startup company in Utah in 2017. It is designed for the headset crowd. The void, is a physical playground for VR. Its mixed reality experiences utilize aspects of virtual reality, haptic feedback, and other physical effects; users wear a helmet with a head-mounted display, noise cancelling headphones and a hand tracking sensor, and a haptic suit containing 22 vibrators

and a computer to power the headset. "Our technology allows us to create the illusion that the player is exploring miles of terrain or incredibly tall structures without ever leaving our game pod. The end result is a physical connection to the virtual world and a sense of exploration never before possible." By The VOID



Real Time Posture Scanner

Real Time Posture Scanner is a sort of billboard which is installed by Microsoft in Stockholm, Sweden in 2016.

The goal is to help people correct their posture in real time by using Kinect technology in an unexpected way.. Its slogan is "carry right, Carry light"

A survey represents that 1 in 4 has back and/or neck problems. Many of them caused by carrying heavy things during the day. By kinect camera they can find out some information same as the angle of shoulders and then the people can get the result if their posture is fine or needs to be corrected.





The Social Swipe

The Social Swipe is an outdoor advert installed by Kolle Rebbe Hamburg advertising agency in Germany in May 2014.

It is designed for Misereor organization which helps people in the world through self-help initiatives.

It is an interactive poster which invites and encourages people to donate. The credit card is accepted and when people swipe their credit card, they donate 2 euros and at the same time, a short video shows what their donation does. For instance, by swiping the card symbolically they cut a piece of bread for a family in Peru or cut bound hands of an imprisoned child in Philippine.





Eye Stop

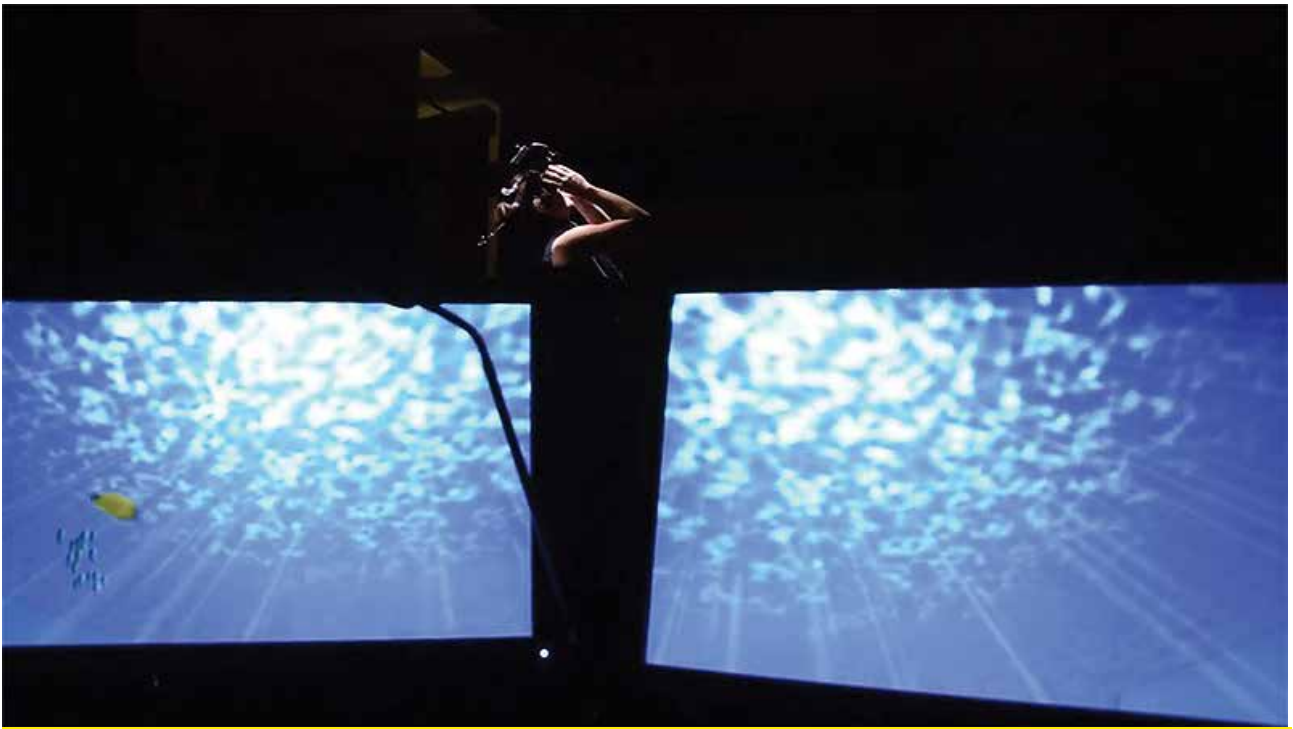
This bus stop has been developed by the MIT SENSEable City Lab in 2009. It is unveiled at the Genio Fiorentino festival in Florence, Italy.

There is an interactive map, people can plan their trip through it and they can find out the location of the bus that they are waiting for and even it is possible to monitoring the local air quality.

Eye stop is powered by sunlight and makes it possible for the citizens to use their mobilephone as an interface with the bus shelter; check their email or share community information.

“The EyeStop could change the whole experience of urban travel,” said Carlo Ratti, Head of the SENSEable City Lab at MIT.





Fish Avatars Project

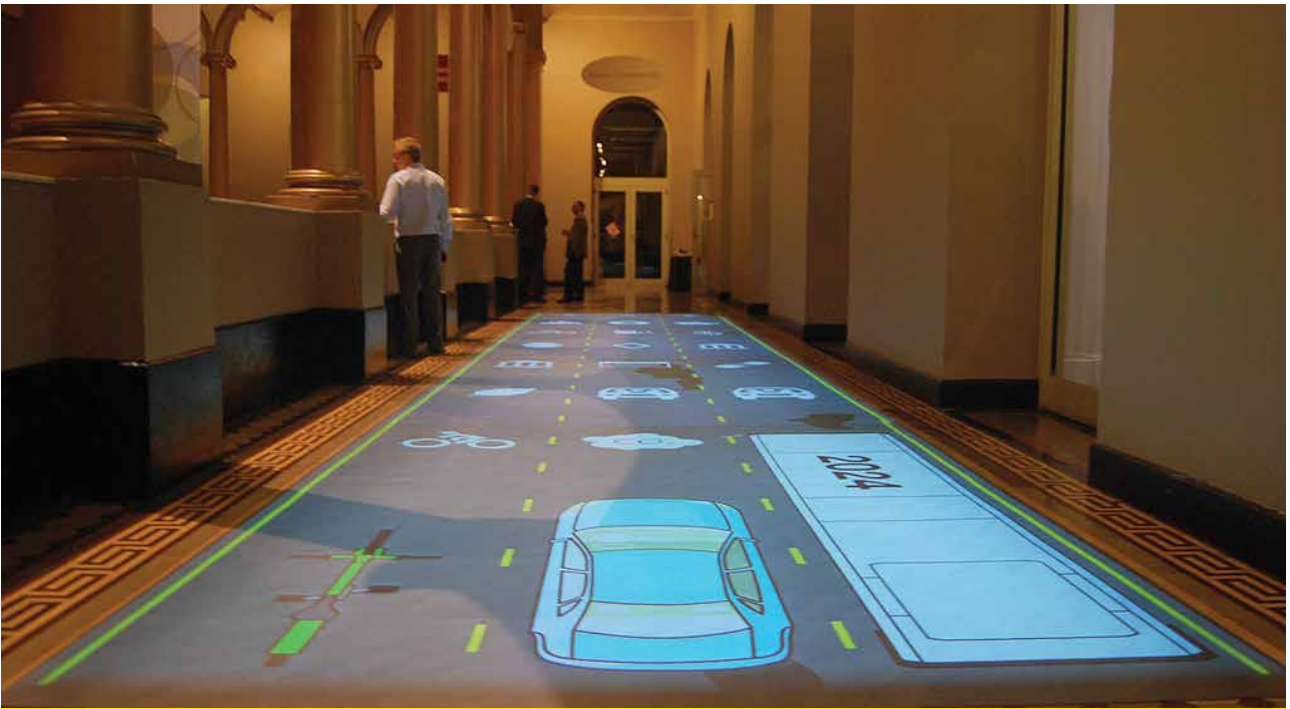
Fish Avatars project started in Stanford University in 2015.

Since they are few people in the world that have diving experience between reefs, they seek to create a project which transfer movement data from fish that are tagged electronically into virtual reality. Thus people can enter the underwater and see

the virtual version of fish.

Stanford Woods -Institute for the Environment- is the sponsor of the project and they are cooperating with the Goldbogen lab to construct underwater tracking sensors, and making a system to show fish avatars.

The main target of this project is to make it possible for anyone in the world adopts a fish with a head-mounted display in VR.

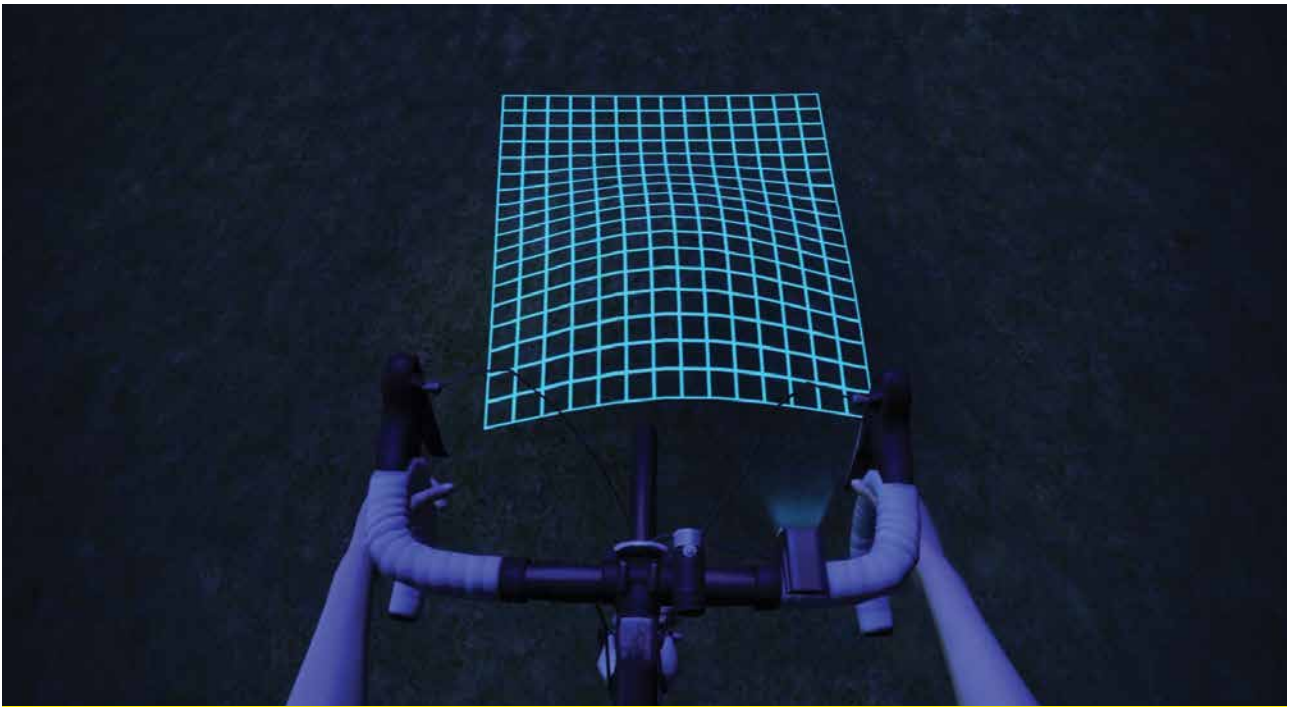


Transportation Hallway

Transportation Hallway is presented by Potion Design in National Building Museum's Green Community exhibit in 2009. Transportation Hallway is formed of three traffic lanes consist bicycle, bus, and car. It is projected in human-scale on the floor. In fact, this is an interactive road that the visitors can choose one of those three transportation modes. Their chosen vehicle

moves with them in this road while they are walking in the lane. Meanwhile, they can read some description about vehicle's advantages and other information about its' effect on the environment.

Portion in this project tries to make experiences for different age groups by using technology. It informs, educates, and at the same time entertains.



Lumigrids

It is a simple and clever LED projector which is somehow an improvement of old bicycle lamps

It keeps cyclists to avoid potholes and its' target is improving the safety of cycling during the night.

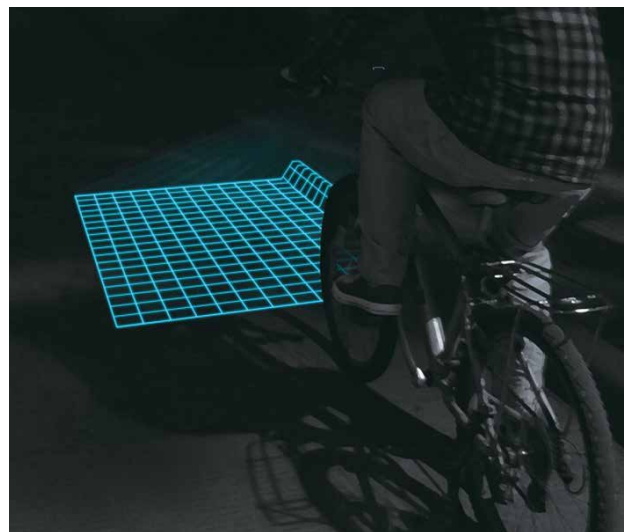
The projector is placed on the handlebars of the bicycle and it projects square grid in front of the cyclist on the ground.

If the grids are seen asymmetric or abnormal, the cyclist recognize the obstacles so it helps him/her to avoid crashes and falls.

The way that grids are bending even shows the cyclist the abnormality is an obstacle or a pit.

It also has three different modes for various conditions: normal mode, the high-speed mode, and the team mode.

Lumigrids is designed by a team of researchers from the Sichuan University in China in 2012.



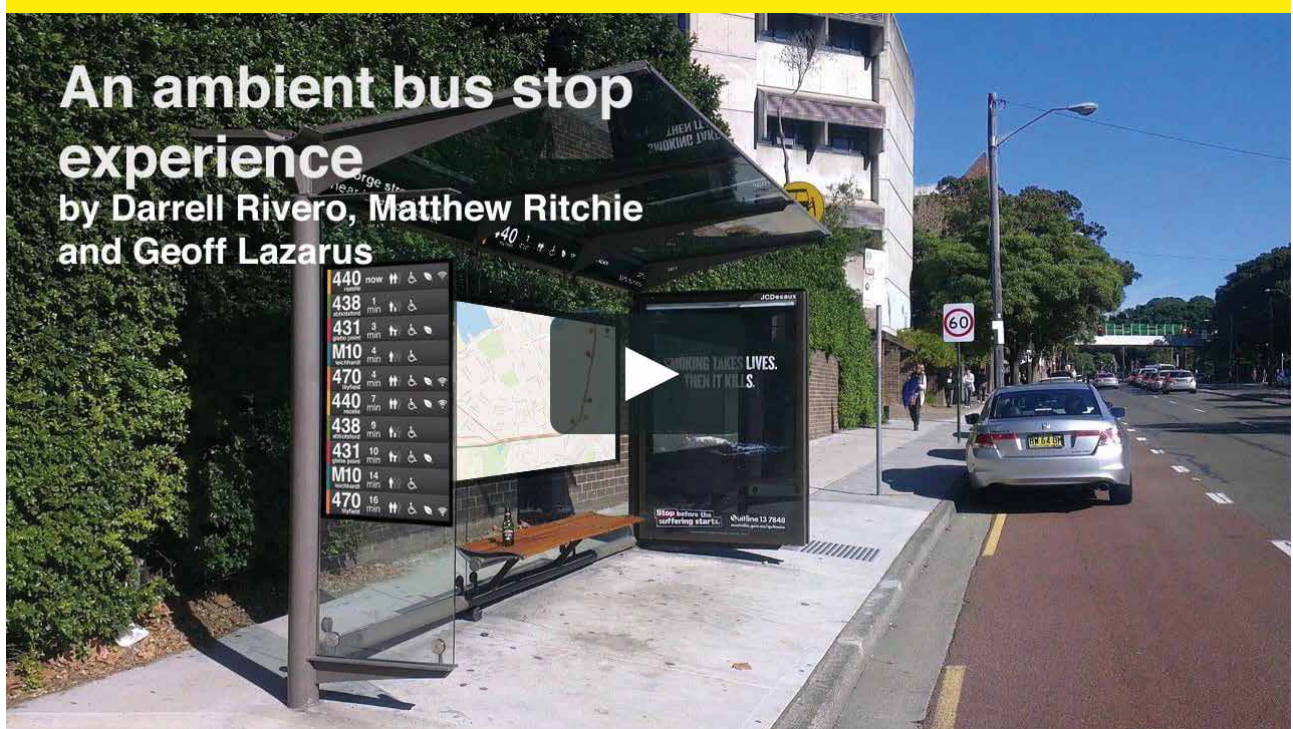
The Ambient Bus Shelter

This study has been done in 2013 in Sydney by Darrell Rivero, Matthew Ritchie, and Geof Lazarus, undertaken for the University of Sydney as a part of Advanced Interaction Design.

It is providing information to the users. They can see the list of incoming buses and further information like arrival time, the capacity of these buses and if they have disabled access, wifi and eco status.

On the other hand, there is a live, real-time map of the area which shows the buses routes, how far away they are and also their movement on the map by using GPS.

On the top bar of shelter is shown some basic information about weather, time, next incoming bus.

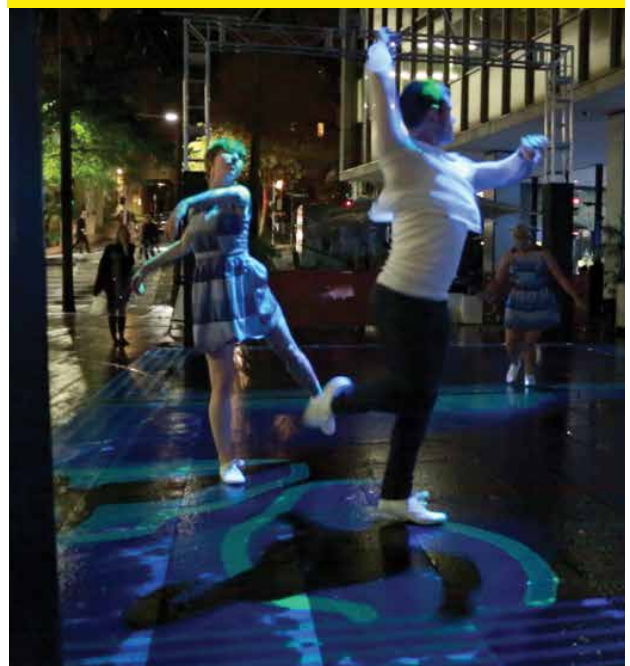




Solstice LAMP Installation

Solstice LAMP was exhibited during Vivid Sydney in May 2013. This installation is created by Luke Hespanhol, Ollie Bown, Martin Tomitsch, Miriama Young, Reuben Young in Sydney, Australia.

Solstice LAMP project is an interactive light and sound installation which turns the AMP Building into an urban musical instrument. When the visitors are passing through space, they face sonic and visual creation which is made by overhead depth-view cameras and then they will find out they are making different forms of light on the ground with a blue outline. Visitors can make different shapes with different music by their movement on the stage and finally, each shape will across toward up on the building and meanwhile, the shapes will transform from organic shapes to squares, into origami cranes fly up the building and then disappear.





Smart Sidewalks

“Smart Sidewalks” is a project by “Group Project” in 2013 as a response to the Mayor Bloomberg’s challenge to create a new image for the pay phone. The project aims to offer a single device to provide directions for way-finding and communication, as well as addressing the climate change impact through over 11000 existing payphones in New York City.

Two principle design aims at “smart sidewalk” project are 1- gathering all intended functions in a single device and 2- trying to eliminate the phonebooth’s footprint. In this project communication, sustainability, and wayfinding are summed up in a device which is nothing but an interactive strip of almost 15cm wide, the device’s form is as simple as a folding up strip to reduce the most the visual impact.

Having recognized the city multiple functioning, the concept was studied both as



the object and network scale.

The project provides internet access and works on solar power and it is equipped with a system of wayfinding. The utility of the device is considered also for the wheelchair access.

In the city scale, on the other hand, all the 11000 payphone locations give the possibility to integrate water filtration and to collecting data in a real-time system on the flows on pedestrians, buildings for water volume collectively and the capacity of the reaction to the city’s emergencies.



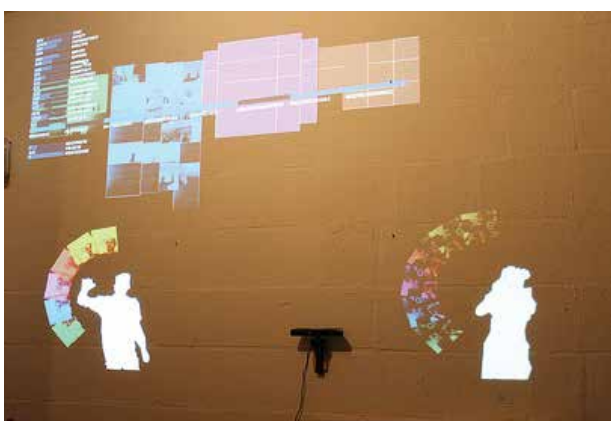
Smart Citizen Sentiment Dashboard



Smart Citizen Sentiment Dashboard or (SCSD) is the name of a project which proves the possibility of an interactive feedback system for the citizens about the urban challenges via visual comments, the project has been designed in city San Paolo, Brazil in September 2013. It is installed by Nina Valkanova and Moritz Behrens with the support from Verbe Cultural and Galeria de Arte Digital do SESI-SP.

The project is consist of some interactive and inclusive installation to let the citizens

comment challenges amongst the city. The comments will be translated into a visual language and shown on a display located on the Galeria de Arte Digital's facade to make a stage for a social meeting on a city scale. The Display's position is on the main avenue of San Paulo which is considered to be the most important financial center in South America, where millions of people from all over the city pass every day. The project aims to gather people from different social, cultural and economic classes.



Cuenesics

The project Cuenesics is the study of an interactive design to provide some public displays which interact with citizens via mid-air gestures. That's a design that provides a space for a mid-air selection technique that is based on a selection through a hand gesture on a mid-air technology. The selection of techniques is all about interactive public displays which have been all evaluated in different locations among the world.

This research project was held by the Mobile And Physical Interaction Group, Quality and Usability Lab, TU Berlin, Berlin, Germany in 2014.



Reveal-iy

“Reveal-iy” is the name of a project that is considered to be a system that provides a picture of citizen’s energy consumption via on-site data in a city. It offers a participatory intervention that discovers and visualizes the data in an interactive mode on urban surfaces via public monitoring. The interactive graphics are visualized by the display, they are both gathered collaboratively and downloaded from the public, based on the data. For sharing there are some mobile web forms which are accessible through a QR-code for those who want to access right from the street or simply use of the online address of the project.

The process is based on an actively involved discussion through citizens about their level of energy consumption to achieve an urban visualization via some playful challenges and with cure of the data which is shared. The project held in 2011 is aligned with an on-going investigation about getting involved inhabitants about their shared urban spaces via publication of data related to them to engage them in an awareness discussion.

The collaborators of the project are Javier Lloret, Max Kazemzadeh, Erica Takenouchi, Victor Diaz and it is created in Medial-ab-Prado Madrid in 2011.

CHAPTER 2:

UNDERSTANDING THE TARGET



KNOWING THE TARGET

“I invented the term because I thought human interface and usability were too narrow. I wanted to cover all aspects of the person's experience with the system including industrial design graphics, the interface, the physical interaction and the manual. Since then the term has spread widely, so much so that it is starting to lose its meaning.”

— Donald Norman

“In the early 1990s, designers started to use the term “user experience” which was first used by Donald Norman -a user experience architect-, as Wikipedia defines “User experience design (UX, UXD, UED or XD) is the process of enhancing user satisfaction with a product by improving the usability, accessibility, and pleasure provided in the interaction with the product.”

— from Wikipedia

According to Norman, it is unlikely to hold in consideration all the factors of a project to make it completely efficient, however considering the users' experience as a whole, it is possible to balance the various factors involved in design to get a better result. So, here we tried to build a small survey to understand how people treat with their waste and also with technology and of course the concept of technology in different ages so that we can understand different audiences.

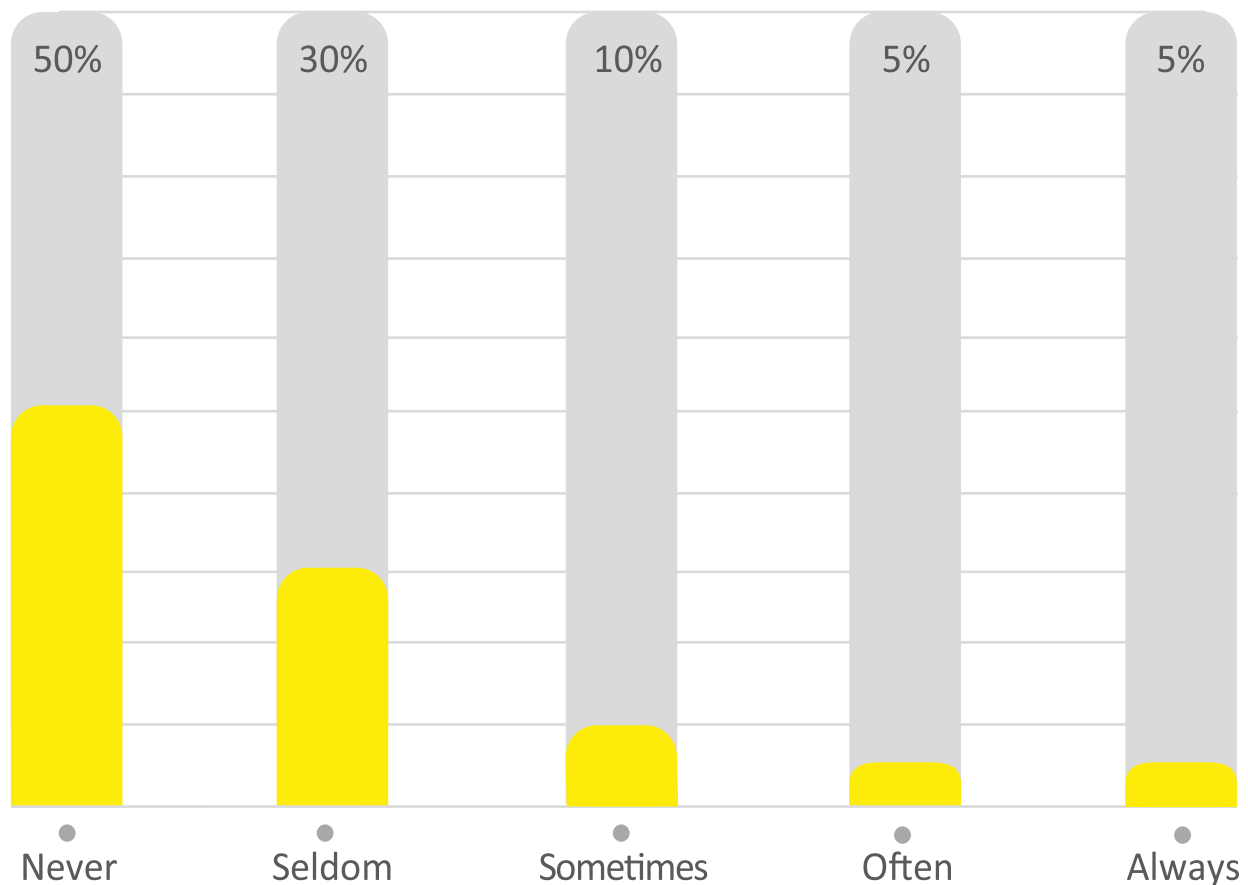
The aim of the survey was to identify the audience in order to design a user-friendly method as a third party to communicate between the people and the BlueTotem in

the city. In case we can identify different target types, distinguish them and satisfy them to throw their plastic bottles into the BlueTotem.

Since the BlueTotem was originally installed in the corridor of the design faculty of the Politecnico di Torino in Mirafiori, we asked 20 students how they communicate with it. We tried to ask about the BlueTotem from different nationalities, different gender and age, and also different courses of study and educational grade to confront various types of users.

The very first question of survey is the most obvious one:

Q. Have you ever noticed the BlueTotem?



CHAPTER 2: Understanding the target

According to our first question, most of the student had not even noticed that there is a big compactor inside the corridor in front of the coffee shop of the campus.

When we asked them how it is possible to do not realize the BlueTotem, they said that they rarely use the interior door of the coffee shop or the entrance door on the opposite side of the hallway.

The 50% who had seen the BlueTotem before had been asked the following question:

Q. Have you ever used the BlueTotem?

40% of them had never tried to use the BlueTotem.

50% were curious and they did/wanted try the BlueTotem.

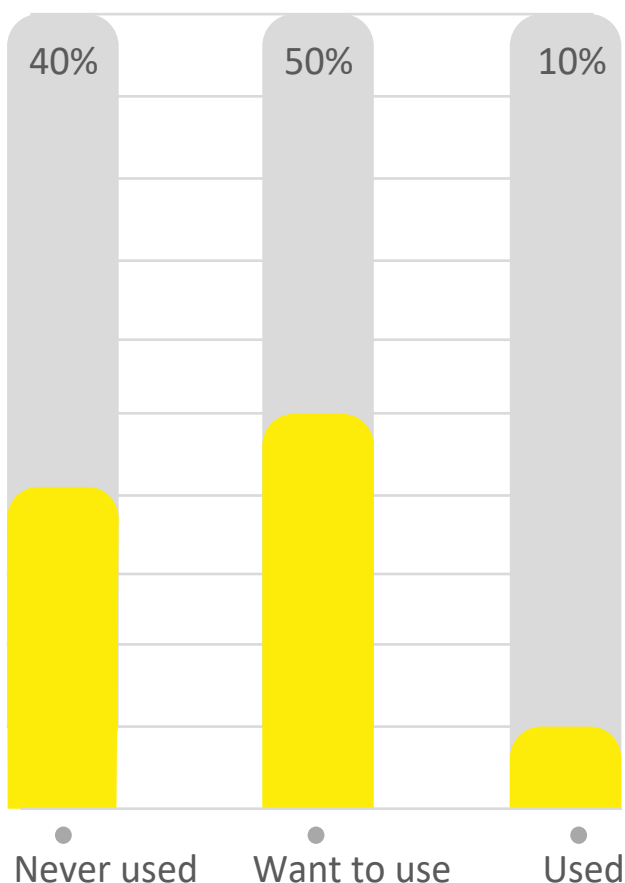
10% of the participants in survey declared that they tried to use the compactor.

After this result we wanted to know which percentage of them throw their plastic bottle in to the compactor.

A small percentage said they use the Blue-Totem every time to compact the bottles, however some of them were using it every now and then to vote or to play.

NB. This survey conducted during the academic year 2016-17.

Conclusion of the survey: The results of the survey helped us to understand there is not enough advertising or information for the users -in this case students of the campus- to have the opportunity to find out what is the function of the BlueTotem.




PERSONAS

Considering that this thesis is based on communicating the sustainability in the city, there are more variety of audiences with different cultures, different ages. So that we need to be more specific to know the target and give them enough information to motivate them.

In order to specify the target, it is better to define the type of users who are going to be expected to use the BlueTotem. Considering the fact that the number of individuals that are part of a city is very large, we used the Personas, which is creating fake users who represent the wide range of imaginary users.

These archetypes of users are created to give a better understanding of the target. The concept of "persona-based design" helps the designer to have a wider comprehension of the user by putting the human in the center of the project..



The User Persona represents the goals and behaviors of a hypothesized group of users. Profiles are described in cards that include behavior patterns, goals, skills, attitudes, and social context, with some imaginary personal data to make the character a realistic one. For the project, it was necessary to imagine more than one user profile, although a person, in particular, would have more influence in describing the primary design goals.

The profiles made will be as much as possible based on contextual research, and not exclusively on the creator's imagination. Contextual research helps to create a number of archetypal users that provide realistic experiences. Using real data allows avoiding the stereotyped users that may have no relation to the real user's reality.

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 databases 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, we have placed possible types of users on a hypothetical timeline, ranging from 10 to 80 years old. This operation allows placing 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 housewife, a doctor and a retired.

CHAPTER 2: Understanding the target



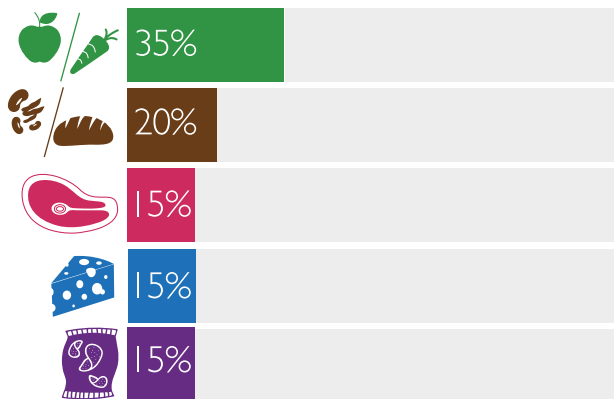
LILI
12

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.

Diet



Waste Production



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.

Question, Answer

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.

waste in my daily routine

06:45 Breakfast



07:00 shower



08:00 1st activity



14:30 lunch



16:00 2nd activity



20:30 dinner



21:30 free time



22:30 sleep



CHAPTER 2: Understanding the target



HARRY
23

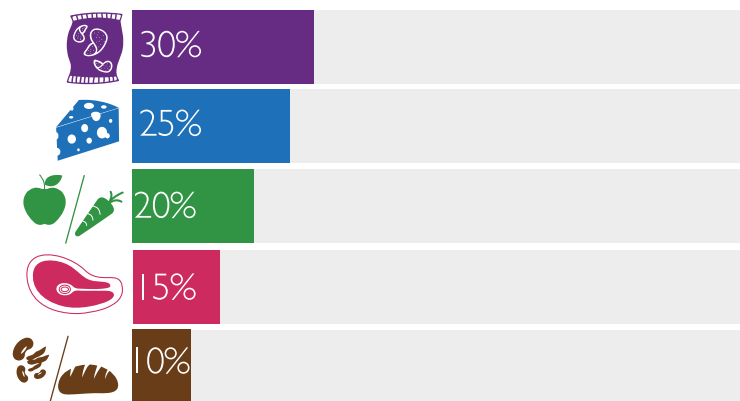
UNIVERSITY STUDENT

Autobiography

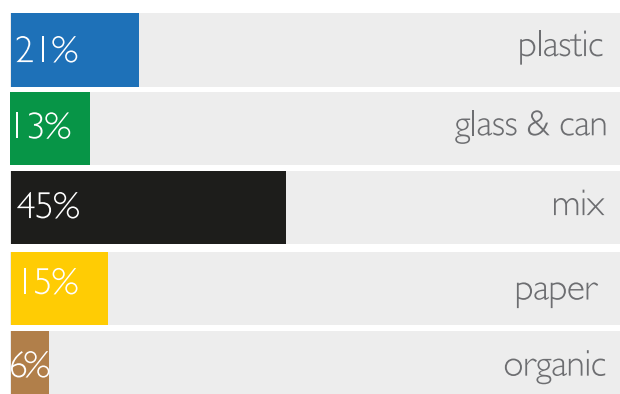
I'm a 3rd year student of economics. I study in a different city and I don't have many friends here, I just have some close friends in my hometown. I love video games and that's why I always have the last version of the games.



Diet



Waste Production



Waste Treatment

I have a little time to go shopping and cooking 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.

Question, Answer

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.

waste in my daily routine

09:30 breakfast
09:45 shower
10:00 free time
11:00 1st activity
14:30 lunch
15:00 2nd activity
18:30 free time
21:00 dinner
21:30 free time
01:30 sleep



CHAPTER 2: Understanding the target



RICHARD
30

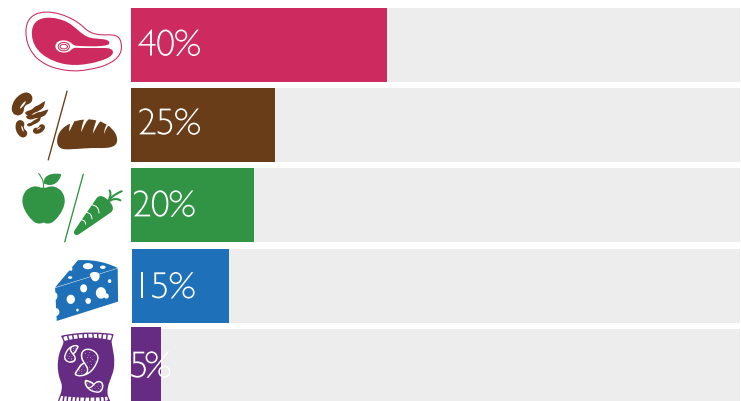
PERSONAL TRAINER

Autobiography

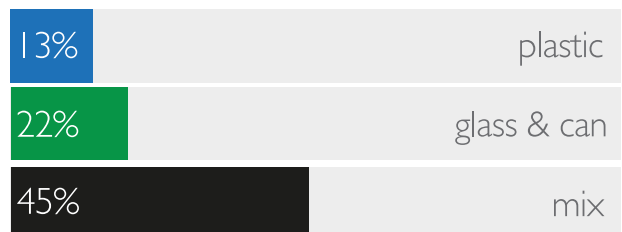
I am a personal trainer of bodybuilding from Nigeria. I like to do sports and meet beautiful girls. At my leisure time I like to drink and dance with my friends. I love my country and family and try to keep in touch with them.



Diet



Waste Production



Waste Treatment

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

Question, Answer

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.

waste in my daily routine

09:15 breakfast

09:30 shower

11:00 1st activity

13:30 lunch

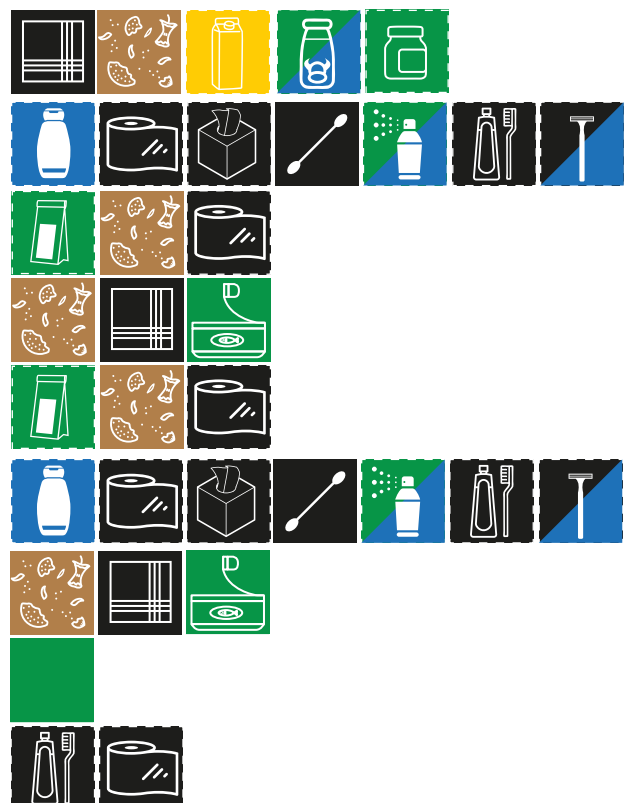
14:30 2nd activity

21:00 shower

21:30 dinner

22:00 free time

01:00 sleep



CHAPTER 2: Understanding the target



SARAH
42

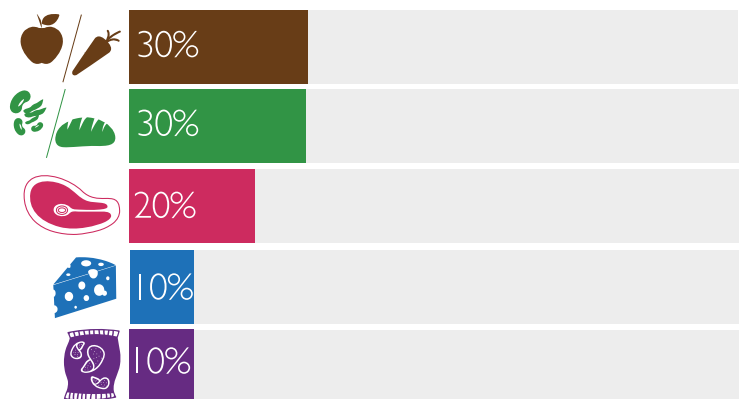
HOUSE-WIFE

Autobiography

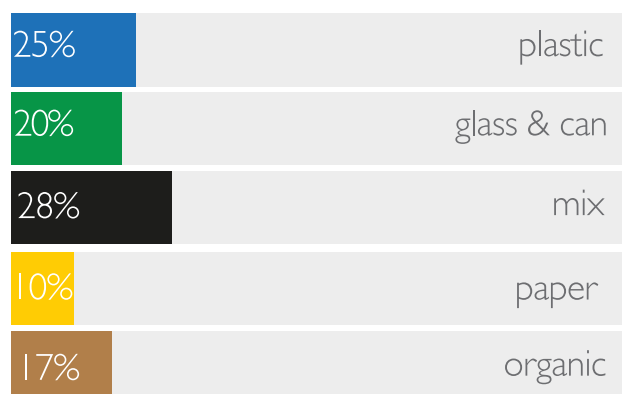
I am a mother of three naughty kids.
I always like my home tidy and clean.
I'm going to Sewing training class and in my very little free time, I crochet and sell them for more allowance.



Diet



Waste Production



waste in my daily routine

06:15 shower

06:30 1st activity

08:30 breakfast

9:30 2nd activity

13:30 lunch

17:00 3rd activity

21:00 dinner

21:30 free time

01:00 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.

Question, Answer

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



CHAPTER 2: Understanding the target



MEREDITH
63

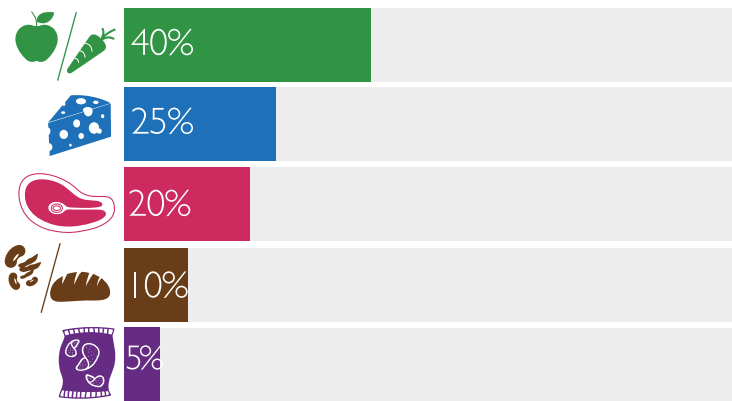
DOCTOR

Autobiography

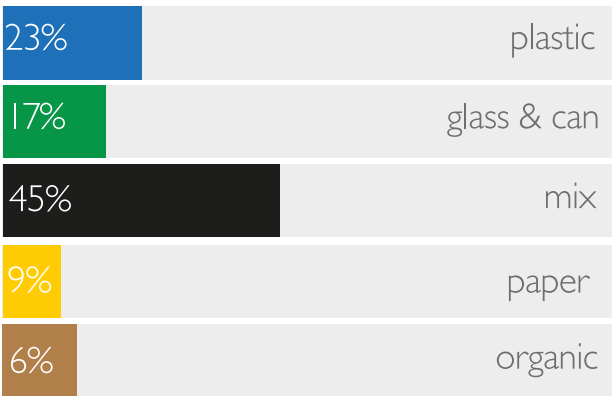
I am a doctor specialized in dermatology. I have a son who lives with my ex husband and I spend the weekends with him. I'm a very busy woman but I try to find some time for yoga and keep myself young and fresh.

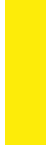


Diet



Waste Production















































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.

Question,Answer

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

waste in my daily routine

07:15	shower						
07:30	breakfast						
08:00	1st activity						
14:00	lunch						
14:30	2nd activity						
20:30	shower						
21:00	dinner						
21:30	free time						
23:00	sleep						

CHAPTER 2: Understanding the target



ALFRED
81

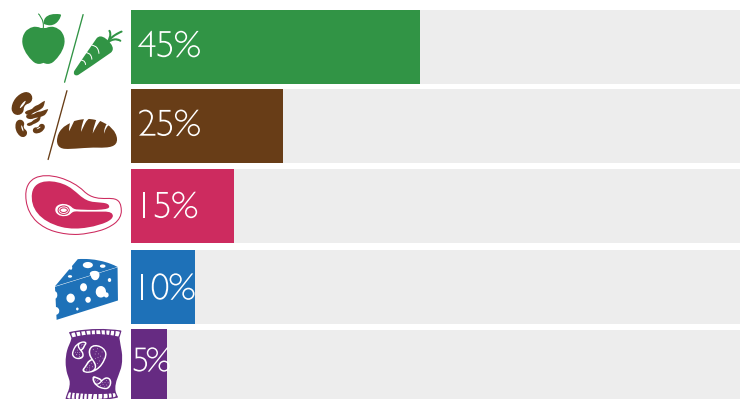
RETIRED

Autobiography

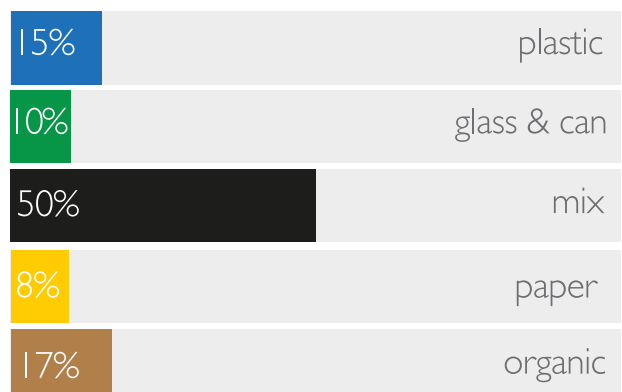
It is more than 50 years that I am living with my beautiful wife. I have 3 children and 5 lovely grandchildren. I'm a retired postman. Now I spend my time for gardening and my grandchildren and often Temporize with them whole evenings.



Diet



Waste Production



Waste Treatment

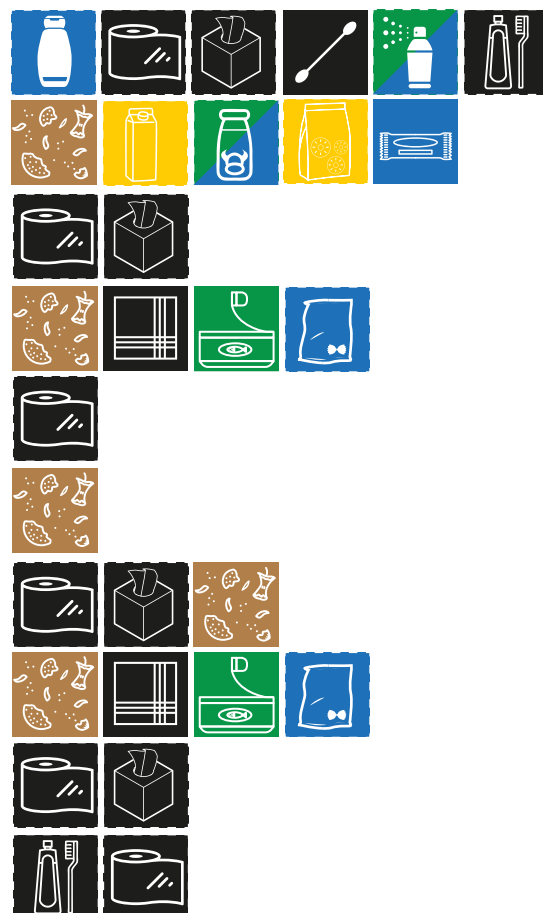
My wife and I collect wastes carefully but our grandchildren don't when they are with us, I also try to use organic wastes as a compost for garden.

Question, Answer

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

waste in my daily routine

06:15 shower
07:00 breakfast
07:30 free time
13:00 lunch
14:00 nap
16:00 activity
19:00 free time
20:00 dinner
20:30 free time
22:00 sleep



CHAPTER 3:

METADESIGN CONCEPT

A graphic consisting of three concentric yellow circles, centered behind the word "DESIGN" in the title.

Blue otem

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 the waste management through apprising people and encouraging them to participate to approach the goal.

In fact, Bluetotem is a plastic collector but it tries to act differently with other kinds.

Many of plastic collector machines reward people in exchange for receiving their used plastic bottles. For instance, IKEA machine



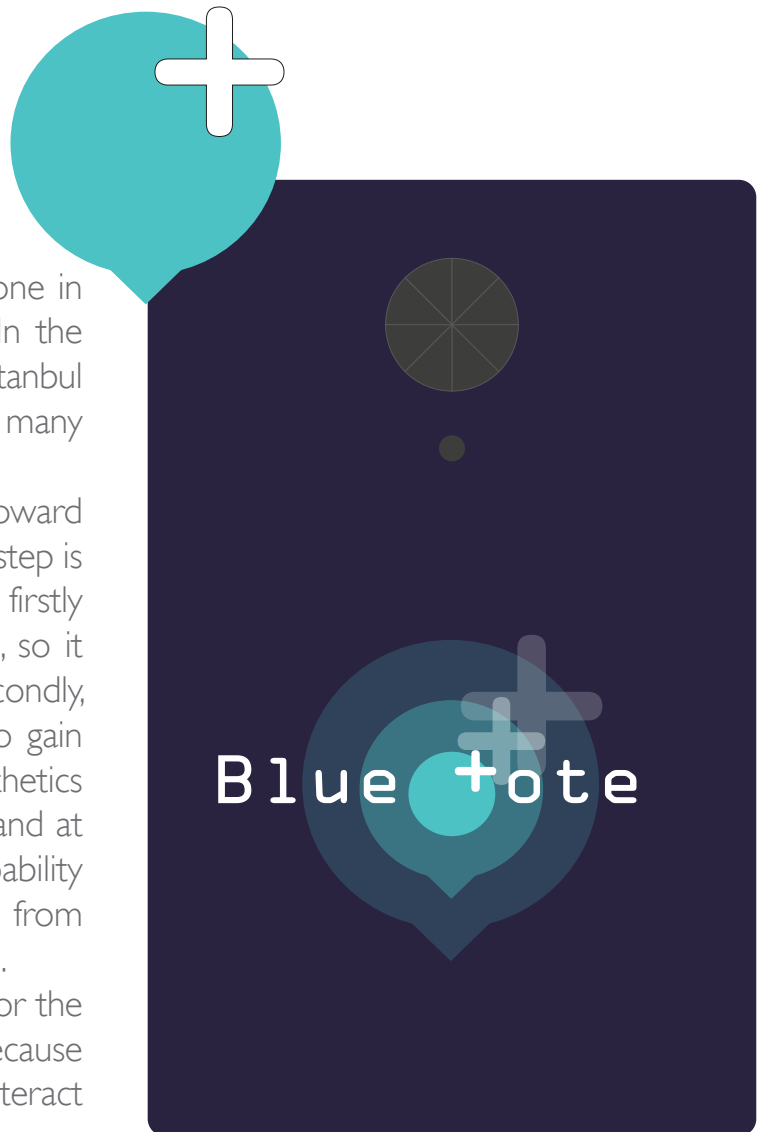
gives vouchers or there is another one in China which offers subway tickets. In the same way another machine in Istanbul rewards pet foods since there are many stray dogs there.

It is believed that the first step toward change is awareness and the second step is acceptance. Therefore Bluetotem firstly needs to communicate with people, so it should be attractive to the public. Secondly, for being accepted it is necessary to gain people's trust. Thus, from an aesthetics point of view, it should be pleasant and at the same time, it must have the capability to encourage and invite passersby from distance by creating curiosity in them.

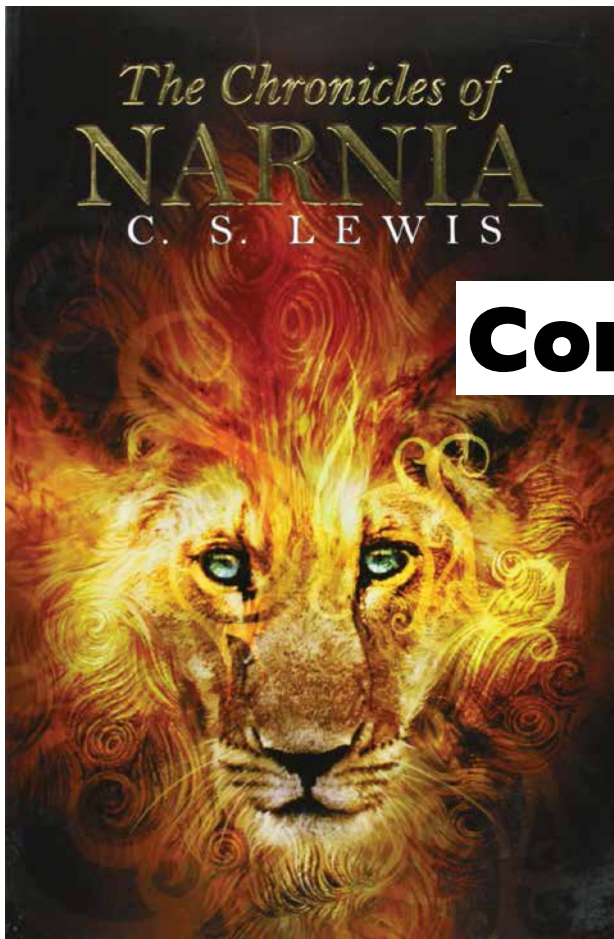
It is required to be understandable for the various age groups of its audiences because it is supposed to communicate and interact with people.

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's better to be fun and entertainment 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.



CHAPTER 3: Metadesign / Concept



Concept

Today, the pace of life speeds up and people have many choices in their daily life. If people communicate with something between a bunch of similar cases, it can be considered as a kind of success for that project.

According to "Mediated Nostalgia" book by Ryan Lizardi: "In media and advertising, nostalgia-evoking images, sounds, and references can be used strategically to create a sense of connectedness between consumers and products with the goal of convincing the public to consume, watch, or buy advertised products."

Since the users of the Bluetotem are of both sexes, men and women, and age groups of children to adults, the device must narrate a story that is attractive to all of them to follow the story.

There are a lot of stories that besides being nostalgic for adults, are still attractive to today's children. One of them is The Chronicles of Narnia. In the following will be discussed in more details on the reasons for choosing this story.

The Chronicles of Narnia



The Chronicles of Narnia is a series of seven fantasy novels by C. S. Lewis. It is considered a classic of children's literature and is the author's best-known work, having sold over 100 million copies in 47 languages. Written by Lewis, illustrated by Pauline Baynes, Chris Van Allsburg in 1978, and Leo and Diane Dillon in 1994, and originally published in London between 1950 and 1956, The Chronicles of Narnia has been adapted several times, complete or in part, for radio, television, the stage, and film.____- from Wikipedia

The story is about four siblings During the World War II bombings of London. Since their father was in the army and had gone off to the war and the mother was involved in war work so the children were sent away from home to a country house to be watched over and be safe because of London air raids and also the absence of parents.

The house was owned by an old professor who was living alone in the country. One day one of the children found a closet while playing a game of hide-and-seek.

CHAPTER 3: Metadesign / Concept

She could travel through it into another world. In fact, the closet transformed her into a magical and mysterious world which named Narnia. After she came back she told her siblings and they return together very soon.

In the past, Narnia was a quiet and peaceful place full of talking animals, fauns, giants and dwarves but when the children entered, Narnia was under a cursed by the wicked White Witch who called Jadis. The white witch kept the land of Narnia in an eternal winter.



On the other side, there was Aslan, a majestic lion that the children joined him in the battle against the Jadis to give back peace to the land. Aslan is a talking great lion also the king of animals.

Aslan, the wise great lion who was creating the living things of Narnia in the past by singing and made the land magically and also gave birth to the animals and plants, at the time, then he started to help those four human beings to fight against evil and finally be kings and queens of the Narnia. Aslan also established an army which was made up many kinds of beasts in Narnia.



The main reasons for choosing this story as a concept are; firstly, the story is well known and attractive for different types of people, not only in terms of gender and age but also in different cultures. Secondly, Narnia's story in some aspects can be very similar to the subject that we are discussing.

Narnia suffers from an eternal and unbreakable winter because of a curse and it needs struggling and as well as a great desire of change from humans in order to get rid of this winter and its problems.

The purpose of the specific topic which is studied in this thesis is to help even a small aid to save our "land" from the pollution that not only we are confronted with, but also living beings. More or less as it is happening in Narnia's story.

Those four children who entered the Narnia, in our project could be a metaphor

of people who want to start changes from within to the better life. They work on their own to save their "land". Each will enter this adventure with different reasons. Meanwhile, Aslan as a sane creator tries to guide them and it can refer to the resources and information given by Bluetotem to participants in this system.

Since changing old habits is not easy, it requires training, effort, struggle, and pursuit, which is exactly what the kids do in Narnia to achieve their goal. In addition, they formed their own army, consisting of Narnia's inhabitants, just as users of Bluetotem are expected to invite others. It will be explained later that direct invitations will also have advantages for the previous users, and same as any similar stream there will definitely be some people who will join this system without any invitation.

CHAPTER 4:

PROJECT

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- 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 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."



Gartner 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* 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 a non-game contents 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 connect digitally instead of personal engagement. Gamification is one of the most grown areas in the digital world. Many impressive subjects same as design, creativity, animation, music, interaction, communication, images, storytelling, virtual reality, artificial intelligence and etc. are prepared to make an entertainment 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.

*Assistant Professor in the Game Design Program at Northeastern University & associates at the international design agency Hubhub.

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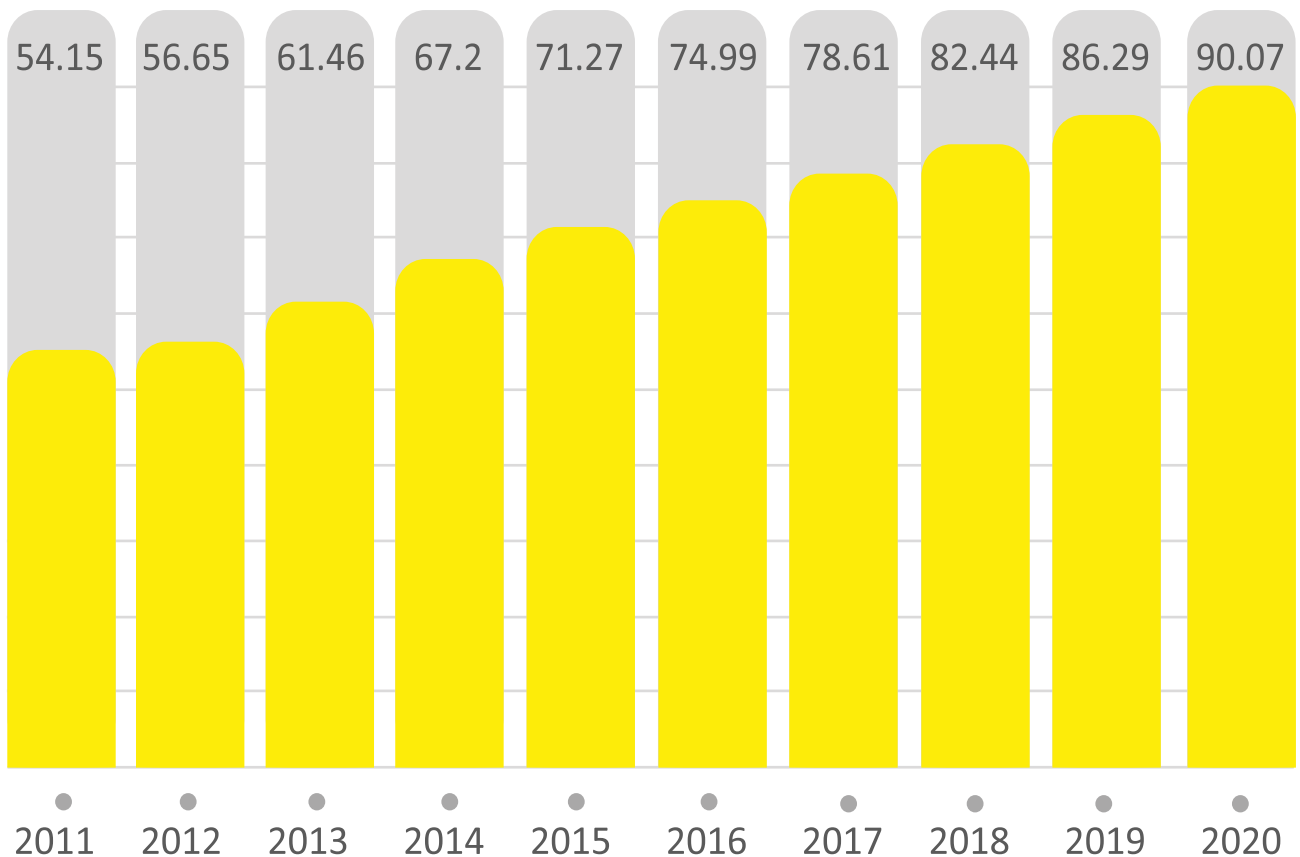
Value of the global video games market from 2011 to 2020 (in billion U.S. dollars)

The video game business is a billion dollar trade and in the past decade, its value has been growing. This bar chart shows the growing value of the video game market from 2011 to 2020 in the world.

It is anticipated that by the end of 2020 the value of this business will be more than 90 billion US Dollar

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 this 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 interesting to note, 48% of all gamers play social games.






Communication and Interaction

In a simple way, we can say transferring or exchanging the information from a person or place 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.



It is obvious, the prerequisite for any conversation is understanding and it is predictable there can be a misunderstanding of any communication. Therefore the main target for any communication process can be full understanding.

In today's world, it is almost impossible not to communicate during a day. and In addition, there are different kinds of communication.

These are some primary methods of communication:

1) Verbal communication: 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, an e-mail or etc. we are simply engaged in the written communication process. It lets the receiver to understand it but it doesn't bring instant feedback and takes more time to receive feedback.

c) Visualizations: They included signs, logos, maps, charts, tables, and graphs and others visualizations which make the communications possible.

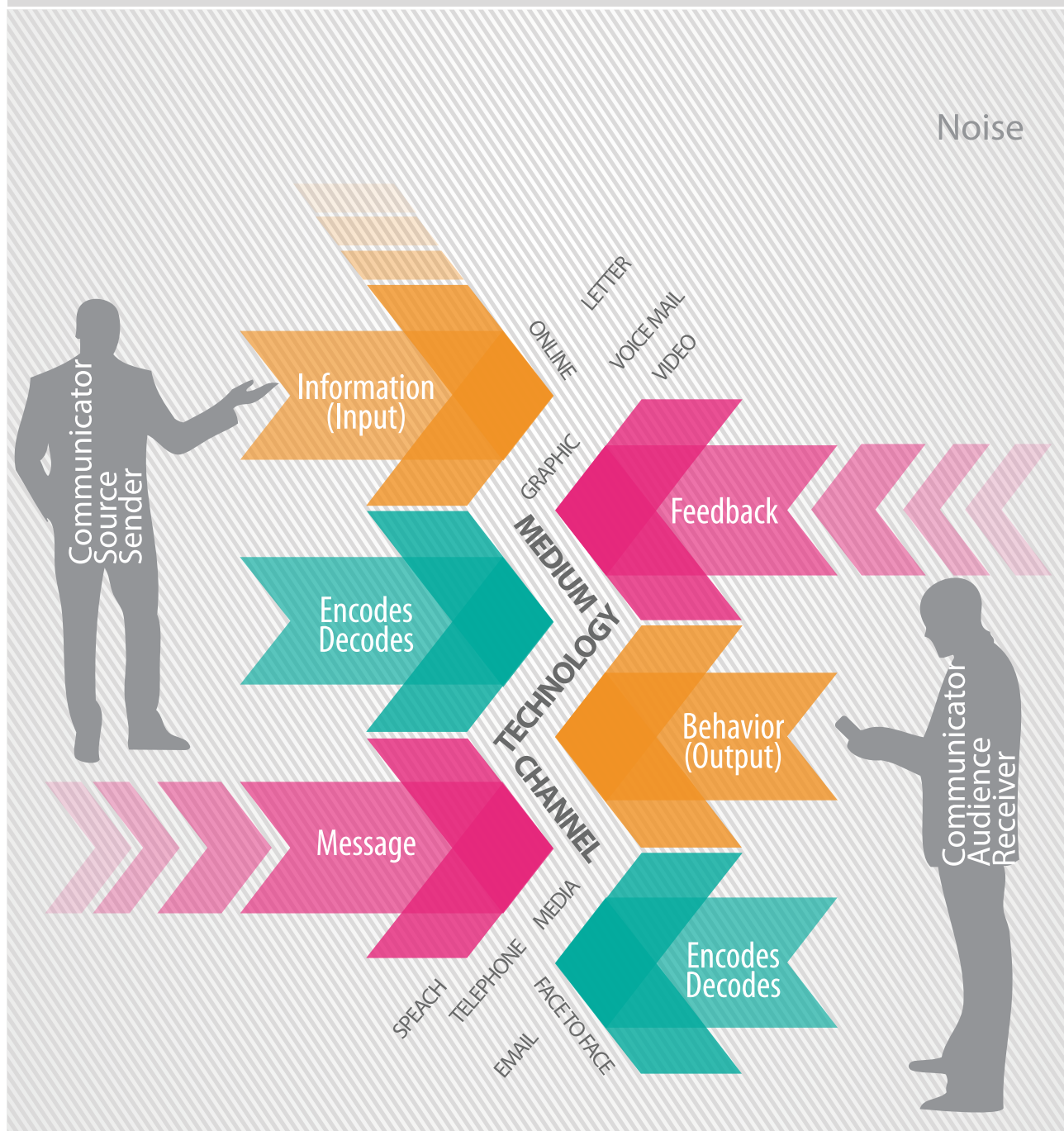
CHAPTER 4: Project

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 anger or happiness simply by looking at someone's facial expression.

In all cases listed, the communication is transmitted through a channel or a 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 symbols, sounds 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.

Communication Process



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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 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.

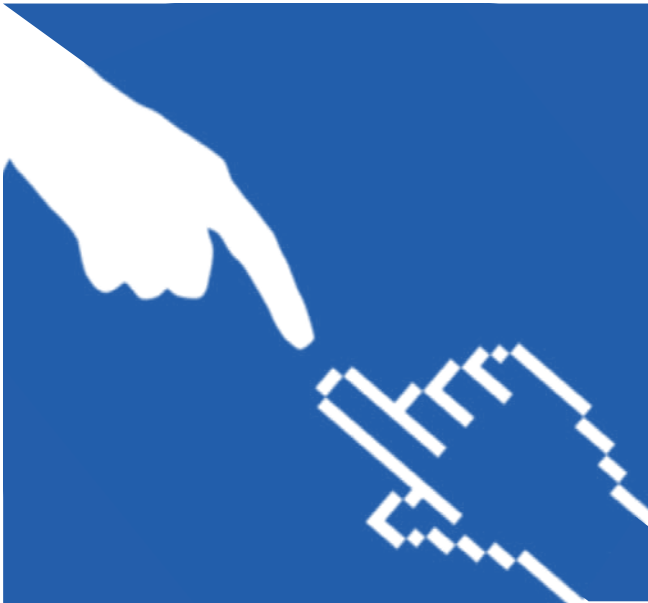
Communication can be considered as a form of interaction that engaging in exchanging information.

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 same 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"

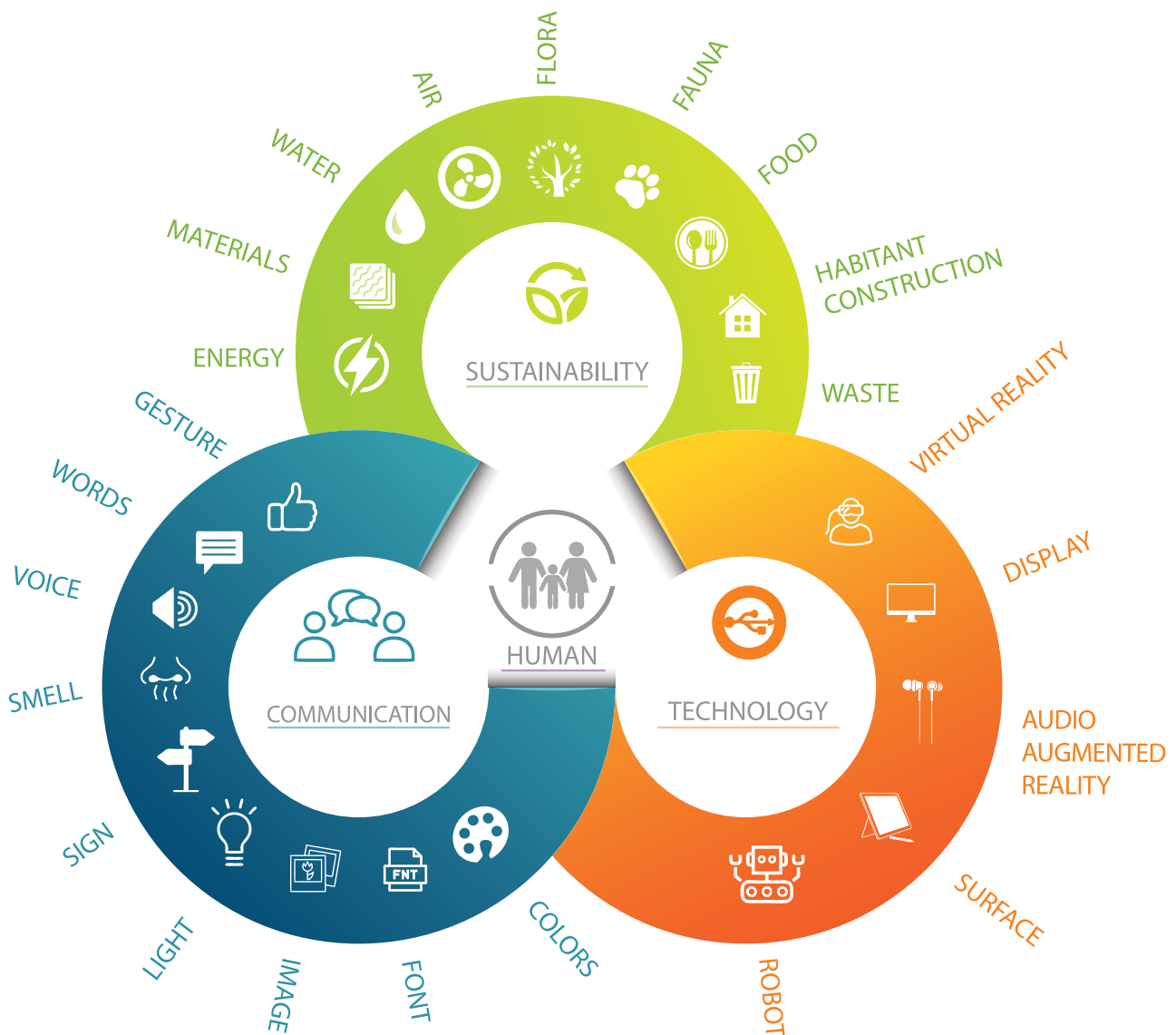
For establishing requirement first identify the needs is inevitable for designers and in the next step to develop the alternative designs, designers must consider those needs. The third step is to create an interactive version of the design that must be communicative. In the last step which is the main 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 with people, asking them to fill 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.

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human-centered design

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

As is clear, humans, their needs, and interests are at 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 tools that can be seen on three sides of the chart: sustainability, technology, and communication.

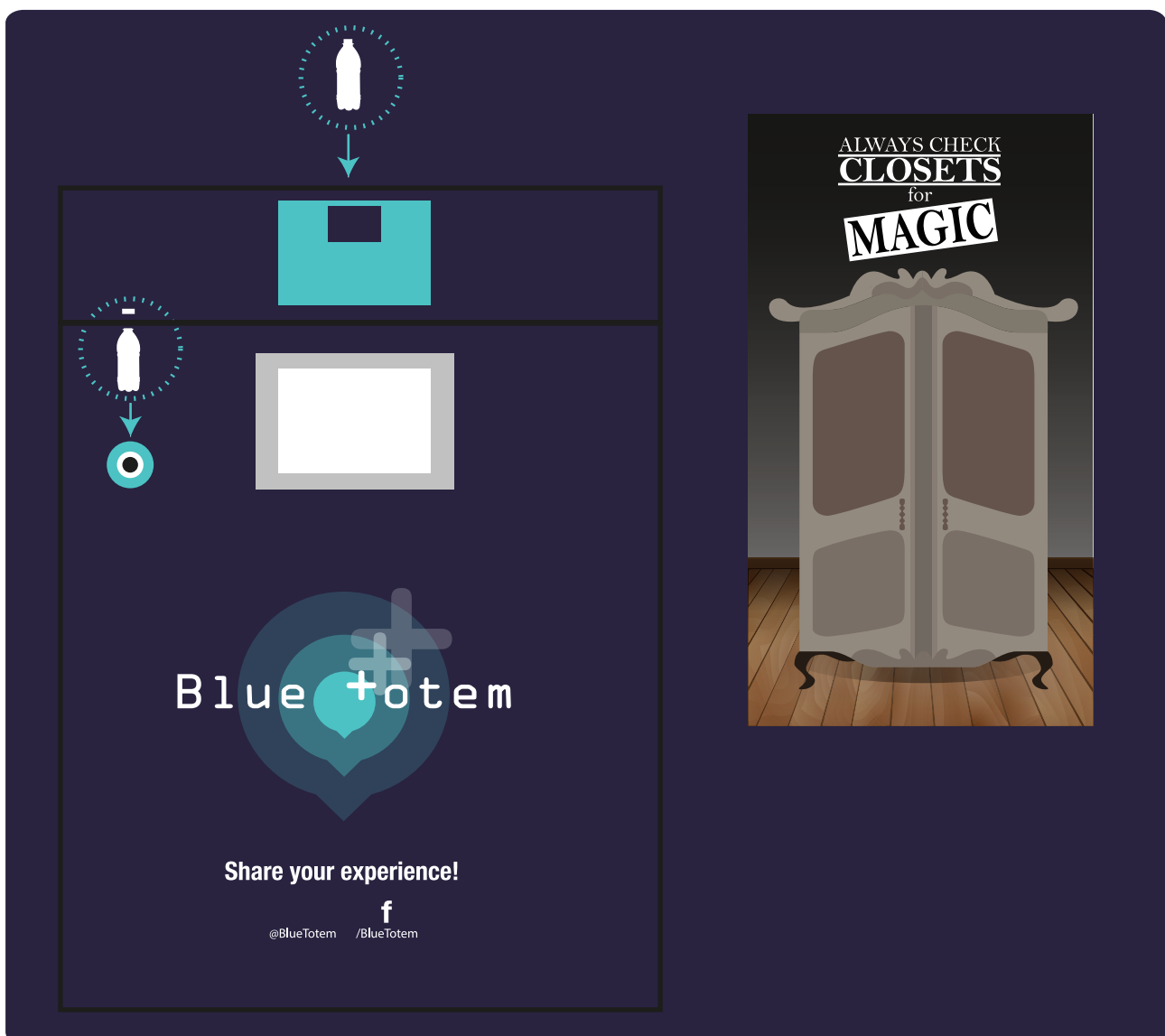


Video Game

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.

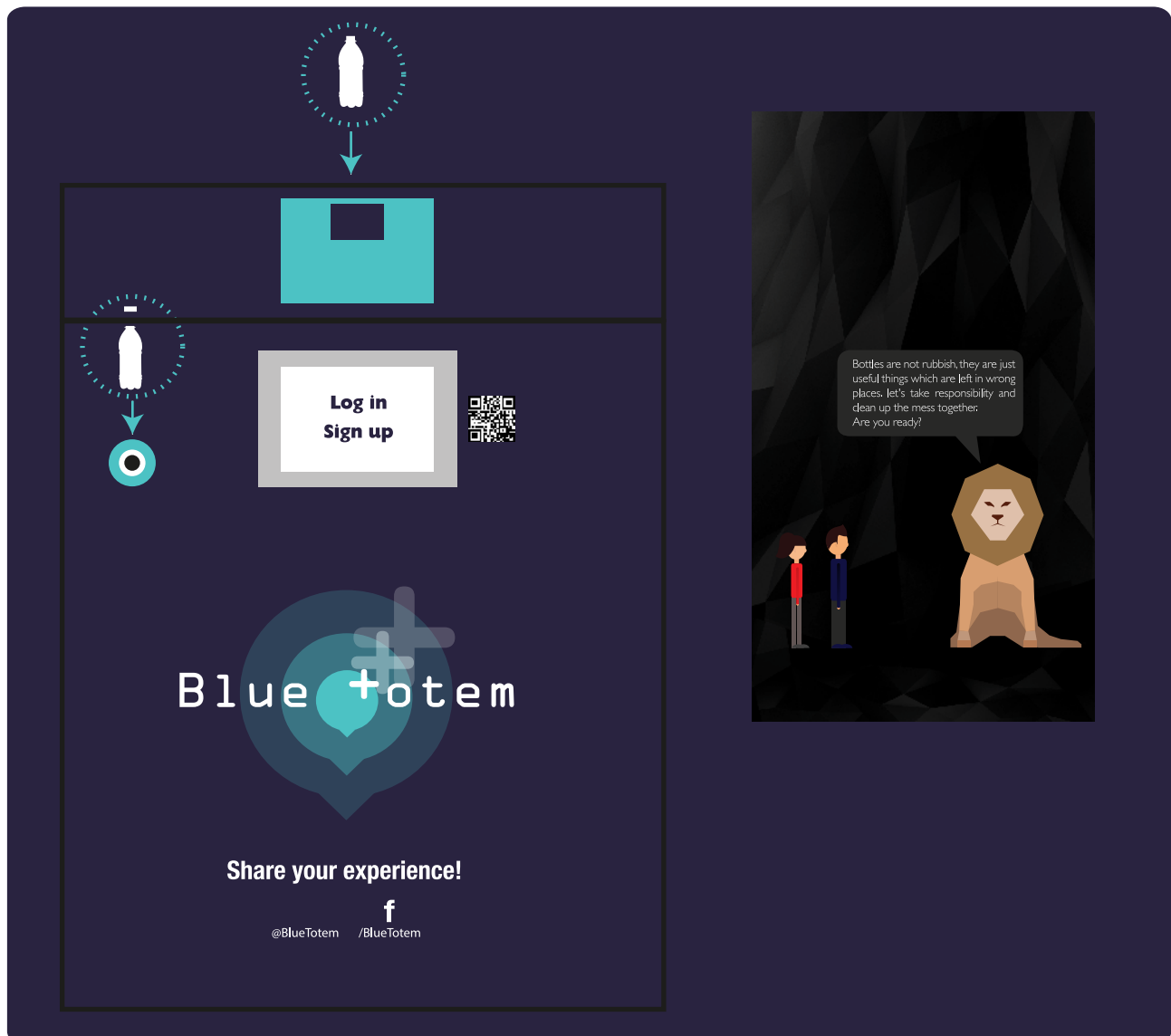
On the bigger display is seen a closed closet with a message on it: "Always check the closet for magic". For checking that, it is enough to touch the screen, then the magic closet opens and they can see inside of it.



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A lion is waiting for them to give them some tips, Lion says: "Bottles are not rubbish, they are just useful things which are left in wrong places.

let's take responsibility and clean up the mess together. are you ready?"



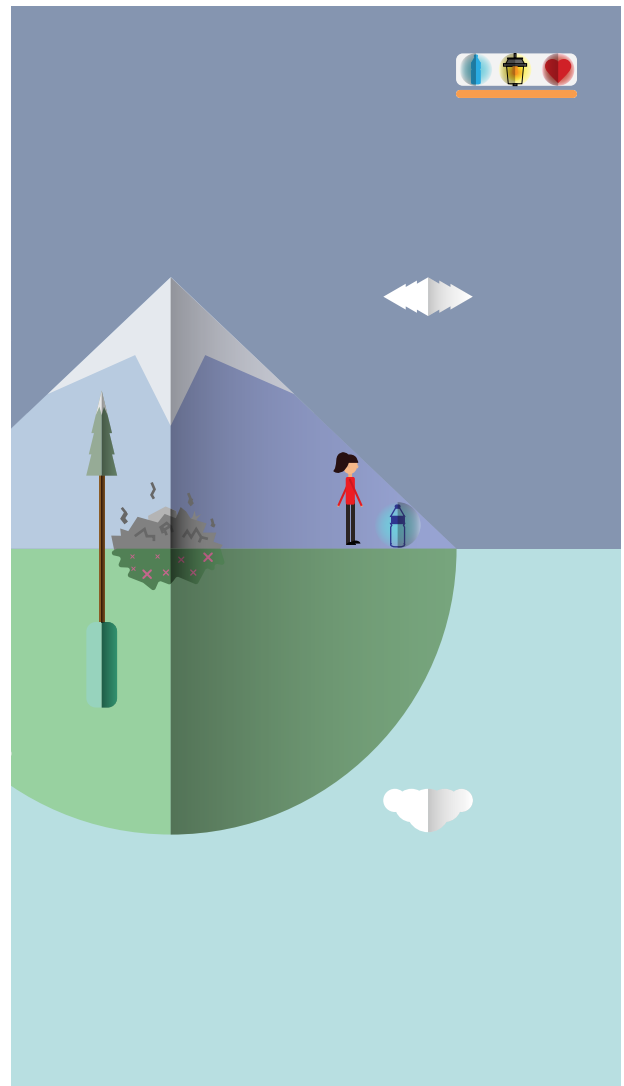
Then the game introduction starts, after watching the introduction if they want to play they are going to be asked to install the application and sign up. For this purpose, there is a QR code on the device if they

scan it by cellphone they would reach easily to the app. They can also sign up on the smaller screen. Now they are the magic world's citizens so they must have a unique username and password.

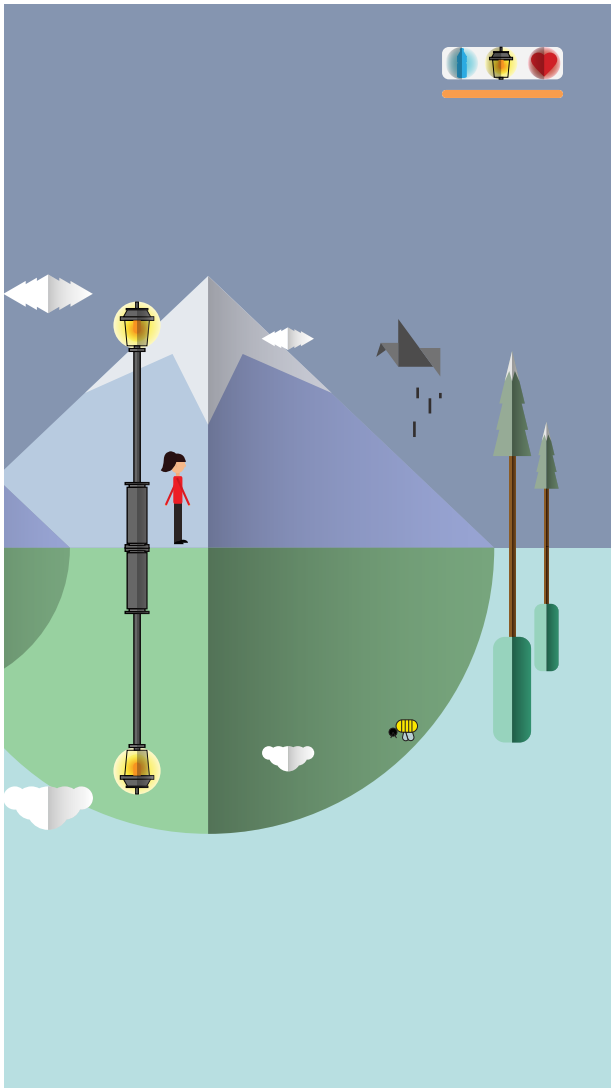


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After crossing the obstacles, the character reaches the bottle and grabs it then returns faster towards the lamp which has come here through it.

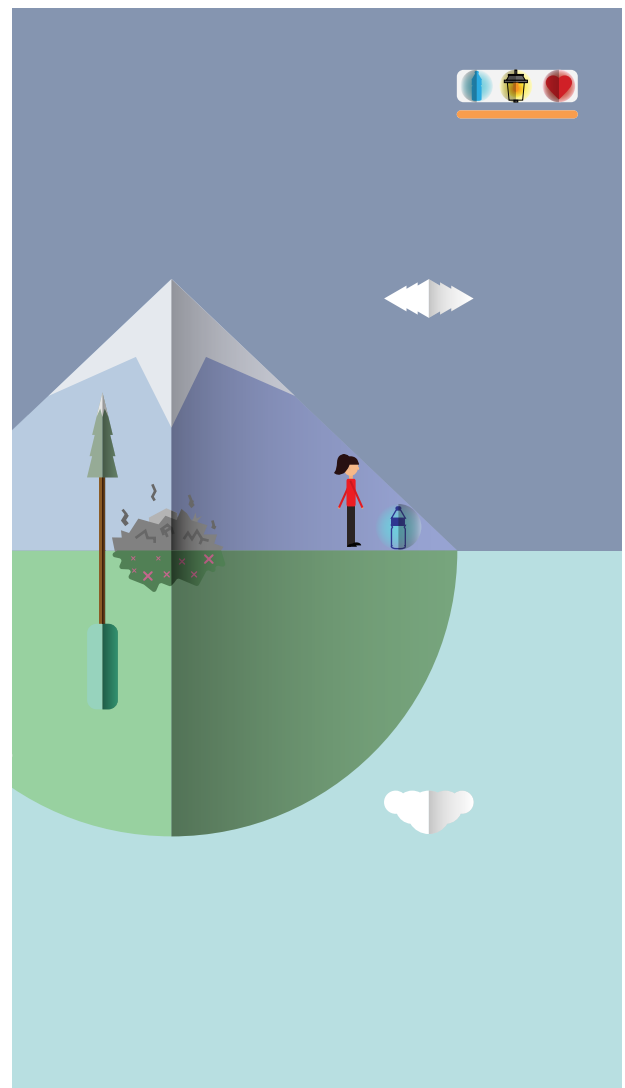


When the player takes the bottle, there is a limited time to reach the standing light because the great witch of the magic world follows the character to prevent him/her return to the safe side.



After crossing the obstacles, the character reaches the bottle and grabs it then returns faster towards the lamp which has come here through it.

When the player takes the bottle, there is a limited time to reach the standing light because the great witch of the magic world follows the character to prevent him/her return to the safe side.



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The character runs and passes the obstacles until reaches to the lamp and goes back to the other side by touching it again and goes on.



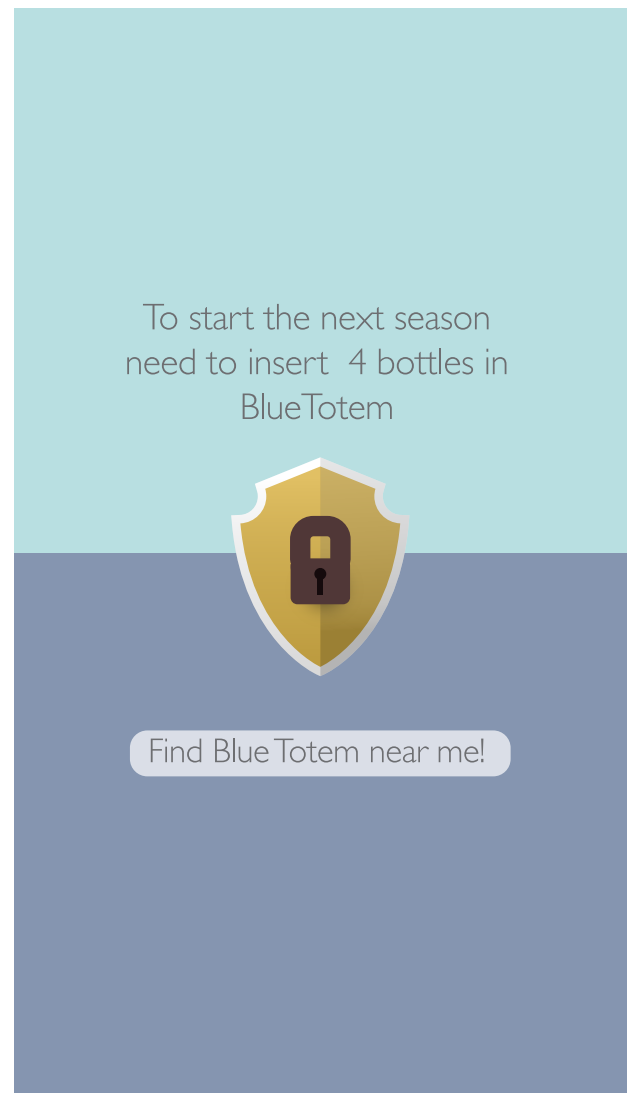
The path which started is new level with new obstacles.

The game has unlimited seasons and each season has five levels. There are three lives for each season and if the player loses a life in a level he/she should start from the beginning of the same level.



At the end of every season, the player will see the next season is locked. To unlock the new seasons the user is asked to put number of real bottles into the device to receive a release code.

The number of requested bottles is directly related to the number of available bottles in the past season of the game.



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After collecting the needed bottles, if the user is playing on cell phone, can find the nearest Blutotem device on the application's map easily.

.After logging in through the smaller display, the user inserts the bottle into the device and receives the code for releasing the next season. The next season will be unlocked by entering this code through the mobile phone or the small display of the device.



In addition, further information about user's activity is available on their profile through the app installed on mobile phone and also the device's smaller display.

This information includes:

- 1 The number of collected bottles by the player from the beginning of 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 which the proceeds will be spent in



CONCLUSION



Conclusion

In this thesis is attempted to create a communication between human and machine. This report introduces a sort of communication that is simple, fun and also targeted in everyday life in the city, which also has valuable goals.

It tries to encourage people not only to have fun but also get engaged in a social collaboration. In fact, people or groups interact with machine and technology to achieve a sustainable goal. And at the same time, they will get useful information.

In addition many related projects have

been selected as case studies and the communication and interaction of people in these projects have also been studied.

Some archetypes of users are created to have better understanding of the goals because generally human centered design gives a wider comprehension of the user.

The main target of the study is to know the audiences to achieve a user-friendly method because at the end of the project they should enjoy to communicate with the device and be satisfied to throw their plastic bottles in it.

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