Thalassophilantropy
APP-Grading Wet Slums

Floating urban components to address rising water challenges threatening communities in need

Waterstudio

PRIX 2012 « ARCHITECTURE & PROBLÉMATIQUE DE LA MONTÉE DES EAUX »

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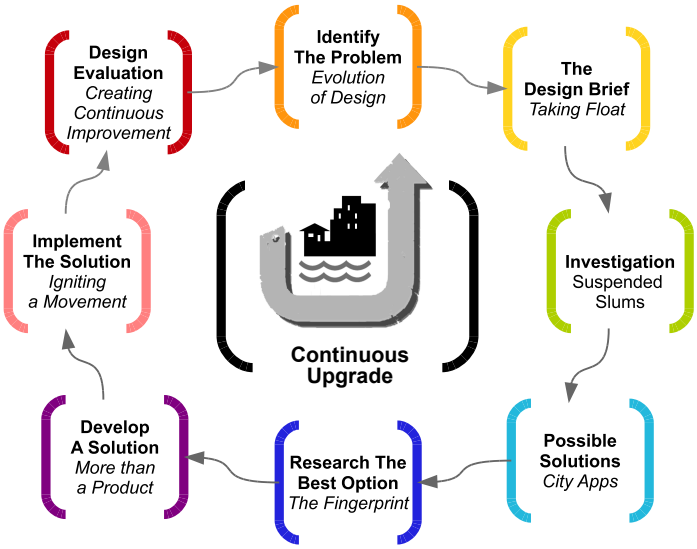
Thalassophilanthropy by Waterstudio

Why is it that the most famous architects are usually known for designing a monument, a skyscraper, or a church? Architecture is more than creating an icon and having it engraved, it is about designing something remarkable that shows the progression of humanity. There are greater obstacles to overcome than figuring out how to construct a modern version of the Tower of Babel. Great design is based on addressing needs, finding a simple solutions, and limiting unwarranted destruction.

The Design Process



Evolution of Design

With a population of over seven billion worldwide and a rapidly rising sea level, there is no question that soon something will have to yield. The climate change generation is learning that redefining traditional processes may be the best way to address common problems. The relationship people have with their surroundings is paramount to the cultivation of a healthy, happy, and productive community. Building cities the same way as 500 years ago is no longer addressing today's environmental concerns.

Although static designs have served well thus far, current conditions now require buildings to be multifaceted in order to justify construction. When a city's infrastructure no longer satisfies the community's needs, demolition and reconstruction is considered the common solution, even if the structures have not reached the end of their expected lifespan. This rigid, unforgiving design ends up costing a lot more than construction costs, as verified by environmental assessments. Apart from knowing the ill effects produced by traditional construction methods, there is enough data analysis and modern technology available to alleviate human impact and find more sustainable solutions.

How is the world changing?

In addition to a change in climate, the fabric of society that is composed of political, economical, and social threads is evolving as well. With each passing decade, it is becoming more and more difficult to predict the needs of tomorrow’s city. Since modern society's needs are variable, impulsive, and uncertain, architects and engineers are modifying the process of designing in itself to serve a mercurial atmosphere. The design process should not only offer suitable and reliable solutions, but should also be adjustable and apt to continuous improvement.

How are people adapting?

The
Design Brief
Taking Float

Taking Float

Fundamentals

Water is one of few liquids that when it solidifies and becomes ice, it becomes less dense, allowing it to float, and just the same the world's perception should be more inclined to changing phases, for only an open mind may allow society to overcome what seems impossible. Water offers a solution to rigidity. It cleanses, unifies, and revitalizes. It will once again prove its perpetual value by challenging the limitations of conventional urbanism. Water is the basis for a dynamic city because with water, the possibilities are indeed endless.

Is it possible for structures to overcome rising water issues?

Just as the elevator was essential to constructing higher when the value of land increased, the technology that is required to construct more buoyant already exists. Floating foundations made up of modern materials such as foam and concrete now allow for anything that is usually built on land to be built on water. Water offers the flexibility sought after by contemporary designers and urban planners as well as an ample amount of space in the forms of oceans, rivers, lakes, canals, and floodplains. Floating foundations could be as small or as large as necessary. It is now possible to make a floating city that offers all of the amenities required by society, complete with roads, houses, parks, and all utilities necessary to foster a typical, functioning community. Floating foundations allow for vertical movement, adapting to water table fluctuation. Buoyancy does not aggravate the quality of construction; any house built on land can be built and stabilized over water. Water is a platform with the ability of sustaining the next conversation. By providing a resolution to many problems stemming from rising sea levels and urbanization, water-based developments are redefining urbanism as they begin to influence the relationship people have with their surroundings.

Imagine the ***Possibilities*** *on Water!*

A Sustainable Approach

How can we construct on water without threatening our environment?

In contrast to land construction, constructing on water does not overcome our surroundings. A floating development is constructed in a controlled environment, a warehouse near the waterfront. After construction, the development is then moved to its appointed location for installation. It is critical to consider the potential effects of the structure on its surroundings before the floating development is approved for the proposed location. Any evidence of contamination or negative influence on the surrounding waters will be enough to perform a thorough analysis of the floating foundation in order to correct any weaknesses and/or propose an alternate location. This development process speeds up construction, lowering many costs associated with traditional construction delivery methods.

The adaptable design of floating developments is fundamentally environmentally friendly, especially when compared to static structures. Floating developments are used, re-modified, restructured, moved, and reused until a product's lifecycle has been completely exhausted, at which point the structure is recycled, and all wastes associated with this process can be appropriately discarded of. The dynamic quality of floating developments and the associated system of production offer a new method of construction that is minimally invasive.

Suspended Slums

Who are the most vulnerable to climate change?

How can floating architecture technology help ?

The Challenge

Due to an increase in population, especially in developing countries, the number of urban dwellers that are living in areas characterized by substandard conditions, commonly known as 'slums', is rapidly rising. According to a study conducted by UN-HABITAT, it is estimated that one billion people worldwide live in slums and that this figure will to grow to 2 billion by 20301. Slums are characterized by an organic structure composed by unplanned, consolidated, makeshift buildings resulting in a dense combination of random materials. Slums usually develop on the borders of a metropolis and many times are located on discarded waterfronts, strained to grow unsafely further and further into the open water.

On one hand, slums are sustainable by nature. They have a low impact on the environment, and over time inhabitants tend to transform an abandoned or condemned area of a city into something quite valuable. This transformation will usually result in a closed-knit community of hundreds of thousands of people living with their own culture, way of life, and economy. On the other hand, slums are fragile and very sensitive to the natural disasters, disease, and political threats. Slums contain some of the most impacting, social problems of the 21st century, and people living in slum communities need support to take on these challenges. Empowering the people to fulfill their basic needs will help these communities prosper, creating a brighter future for generations to come.

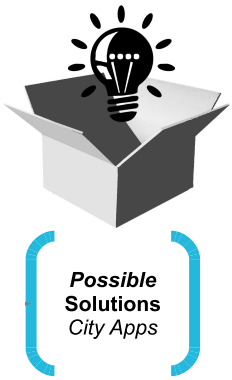
*Let Water **Lift** You !*

Accepting water

All over the world people have started to see the potential of floating developments. In particular, floating developments have the ability to make a positive impact on slum communities that are living in conjunction with water, known as wet slums. There are many communities all over the world that are threatened by rising sea levels, and it is important to shed light on people that are currently living without the most fundamental of necessities. A lack of sanitation, potable water, and energy sources are common problems within slum communities that could be addressed with floating developments. Floating developments could mitigate the effects a natural disaster, such as a flood, has on a community; furthermore, this technology could be utilized to expedite slum relief and recovery initiatives when a disaster strikes. Slum communities are not only here to stay, but they are growing, and aiding these communities by upgrading living standards will offer prosperity and fortify the unique ways of life and cultures associated with these areas.

How can water be considered an aid as opposed to a threat?

In this day and age, it is shameful to have so many people living without safe water, without adequate shelter, and without hope. Why wait for these problems to become exacerbated by a natural disaster or a waterborne disease that has the potential of killing thousands and of significantly affecting the entire world? The war against water has been traditionally fought defensively by trying to keep the water away through the creation of ineffective barriers. As these barriers come down, the urgency to come up with an alternate solution that will withstand the test of time, increases. Hundreds of lives could be saved and improved by accepting the water, realizing the great potential that it contains, and using its natural qualities advantageously. Water is currently considered the greatest threat to many of the poorest communities, but in actually, water offers solutions. Helping people realize and respect the value in water is the greatest obstacle that threatens a secure, global future.



City Apps

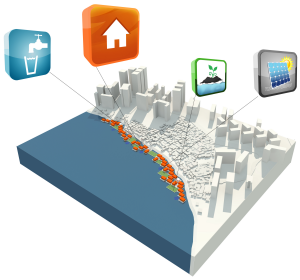
Consumption Urbanism

Since most modern urban developments have a functional lifespan of approximately fifty to eighty years, a home or business owner is considered a consumer of a product with a limited lifecycle, which will eventually expire. Consumption urbanism is an applicable term to describe this relationship that has evolved between people and their surroundings. Similar to how modern technology provides customization tools in order to organize and seamlessly integrate virtual amenities into a person's life, floating technology strives to make use of its adaptability by utilizing consumption urbanism in the form of mobile urban components, known as City Apps.

What are the advantages of floating developments?

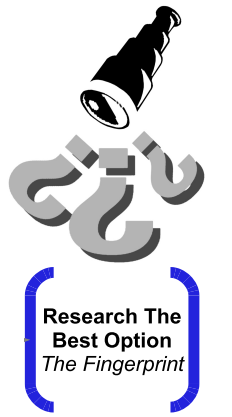
A Flexible Solution

The potential of water-based urbanism as a solution to rising water challenges is realized through the development of City Apps for communities in need around the world. City Apps are floating urban components offering all different kinds of functions and services, which are added to an existing city's static grid. Adding a floating app to a city is comparable to adding an application to a smart phone. Flexible, reusable, and scarless, City Apps are created off-site then moved to an area, providing instant solutions in response to a community's variable needs. Some examples of possible additions are floating sustainable housing, floating water purification systems, floating agriculture plots, or even floating energy plants. City Apps are easily moved and updated, which offers the possibility of relocation, lease, or resale by transferring them elsewhere when and if there is no longer a need for them in their original location. Mobile urban components have opened up a new avenue full of possibilities that address complex problems with sustainable, customizable solutions.



Weaving the Urban Fabric

Since the majority of the world's largest cities are located on or near the waterfront, a new application of consumption urbanism will not only prepare these communities to surmount rising sea challenges, but City Apps are also a method to guide and organize urban growth. Instead of practicing inhumane and inefficient tactics to 'clean up' slum communities through eviction and displacement, the location of City Apps could strategically guide urban development, organizing slum communities and transforming these unsanctioned settlements into an integral part of the surrounding city.



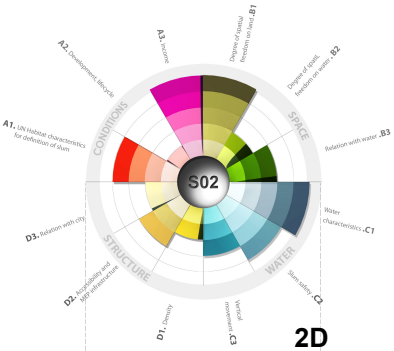
The Fingerprint

Identification

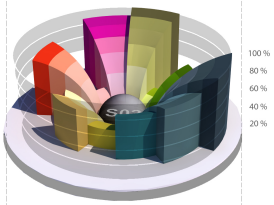
Fingerprinting is an analytical process that utilizes empirical data to come up with a holistic view of the circumstances of a slum as well as the potential for City Apps to alleviate a community's particular needs. A slum's fingerprint in 2D takes into account the area's social and physical conditions, composition, vulnerability, and scarcity to services in order to pinpoint the perceptible needs of the given area. The more colorful the 2D plane is the more impacting the circumstances are in the given region.

How can we pinpoint a community's specific needs?

A slum's fingerprint in 3D shows the positive impact City Apps would have on the given area, taking into consideration the area's current conditions, City App limitations, and the needs that were detected in 2D. The more colorful the 3D plane is the more potential there is for the City App approach to provide relief in the given region. City Apps are only limited by political complications or regulations that would hinder acceptance or integration of floating developments. The fingerprint serves as the slum's identification.



2D

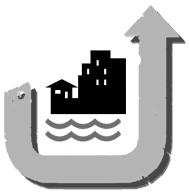


3D

Examining Colorful Fingerprints

Fingerprinting is also a way to compare slums to each other and gain perspective on a slum's progression over time. Examining and comparing fingerprints helps determine which area is in greatest urgency. A fingerprint is apt to change as conditions change. Just as sustainability strives to relieve the 'carbon footprint', City Apps strive to relieve the 'colorful fingerprint', by making it less colorful as more needs are met. The fingerprint serves to classify, prioritize, and show progression.

How can we measure progress?



Develop
A Solution
More than
a Product

How will City Apps come to life?

Implement
The Solution
Igniting
a Movement

More than a Product

The First City Apps

City App design prioritizes material availability and simplicity. Slum communities are usually in close relationship to a variety of useful materials. As evidenced by creative individuals such as contemporary junk artists, material manipulation is limitless. What some consider waste would be ideal for City App development. Discarded materials such as plastics, paper, rubber, and commonly found items such as netting can be combined to create reliable, floating foundations. Since many slum communities are inundated with waste, making use of these materials will simultaneously help mitigate water contamination. Once a floating foundation is created and stabilized, the possibilities are limitless. The design of the first City Apps should be simple, encouraging, reassuring, and as easily reproduced as possible. For example, creating a floating agriculture plot on-site that is composed of local or discarded materials will inspire people living in slums to take control of their surroundings and improve their environment. Slum communities merely require a jump-start to realize what is possible and to get their own imaginations rolling.

Do it Yourself

City Apps are more than products offering instant solutions for specific problems. Teaching people the value of water and the basics of floating foundations by utilizing an open-source methodology will allow people to tackle pressing obstacles on their own facing the rise of sea level. The City App approach is, first and foremost, a powerful idea: to empower people to improve their situation by altering their common misconception of water, equipping them with local resources and valuable materials, and giving them the knowledge required to create a sustainable community. This approach offers a community a set of instructions to use what they already have at their disposal to fulfill their needs.

Igniting A Movement

Spreading an Idea

In order for this idea to make a true impact on slum communities around the world, the people living in those communities first need to take ownership of their conditions. Once people start making small changes, City Apps will work as catalysts for these communities to reach stability, even prosperity, with the potential of igniting a global movement.

How can we create effective change?

Design
Evaluation
Creating
Continuous
Improvement

Partnerships

It is important to consider the potential of creating partnerships with non-profit organizations with the same priorities: to help people in need. There are many organizations with valuable experience and local knowledge that could help successfully ignite a movement. Other companies could also donate materials that are not found locally such as solar cells, seeds for agriculture plots, and water purification technology. Creating partnerships will strengthen City Apps and help realize their true potential.

Creating Continuous Improvement

The most important part of the design process is to be open to constructive criticism in order to create continuous improvement. The aim is not to create a perfect product –for that may be impossible, but the aim is to create a flexible design with the ability to meet the needs of many and to re-invent itself to ultimately meet the needs of even more.

With hundreds of thousands of people in urgent need for change, waiting for future generations to fix today's problems is no longer sound. The natural inclination to survive has already forced entire communities to endure devastating consequences of rising seas. Designers and planners should apply their vision to direct urban growth in a practical and realistic way. Respecting and utilizing water is the key to unlock what is possible. The transition from a static world to a dynamic one will provide the flexibility required to dodge obstacles, adapt to a shifting world, and enrich the lives of many. The solution lies in empowering people to take fate in their own hands and to help others grow by sharing knowledge and offering unconditional support. A great design is based on functionality, simplicity, and transparency, but over all it is crucial to remain open-minded and optimistic.

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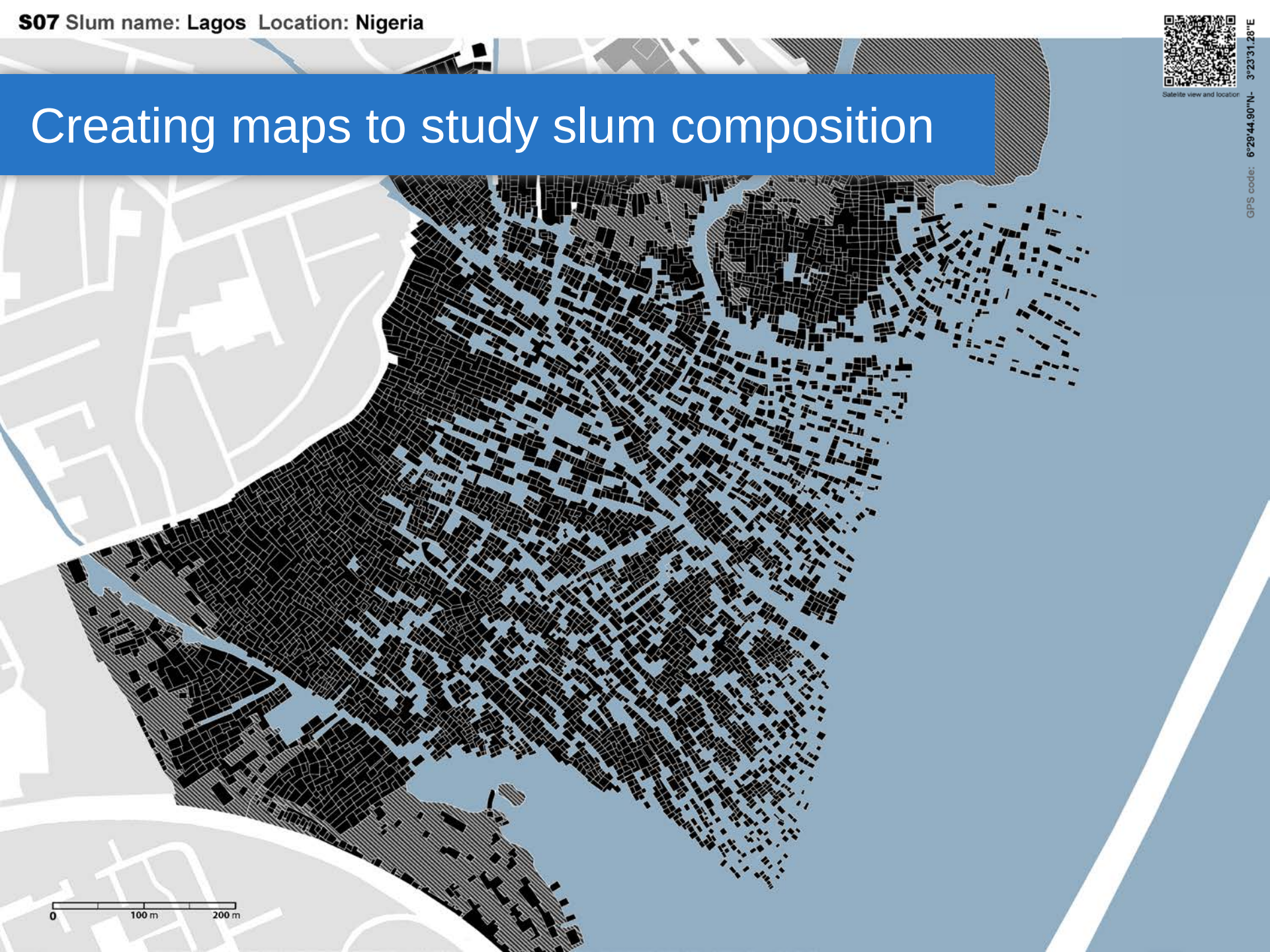
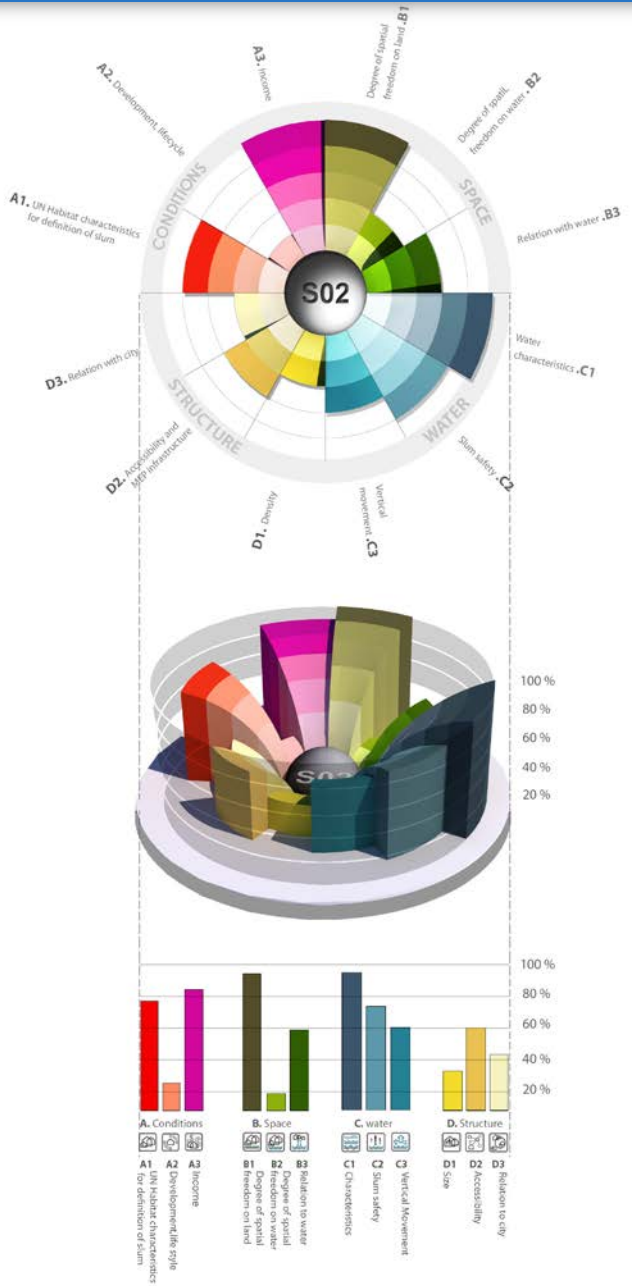
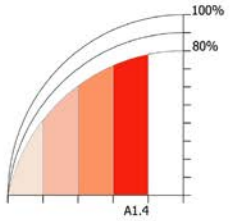
Wet slums are particularly vulnerable to sea level rise


S07 Slum name: Lagos Location: Nigeria
Creating maps to study slum composition
Satelite view and location
GPS code: 6°29'44.90"N- 3°23'31.28"E
0
100 m
200 m

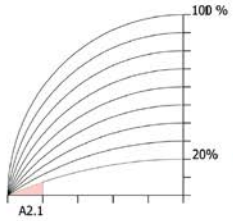
Fingerprints, an analytical process to identify needs



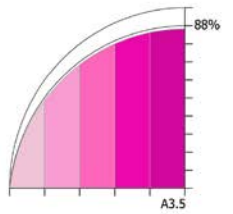
CONDITIONS



A1 UN Habitat characteristics for definition of slum

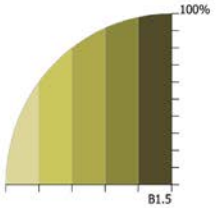


A2 Development, lifecycle

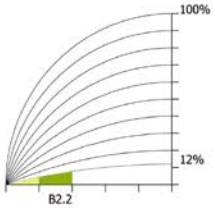


A3 Income

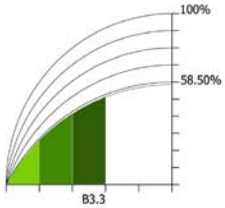
SPACE



B1 Degree of spatial freedom on land

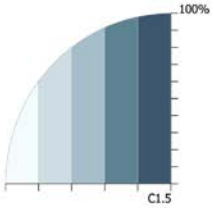


B2 Degree of spatial freedom on water

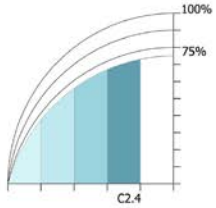


B3 Relation with water

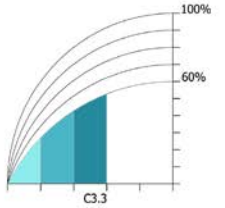
WATER



C1 Water characteristrics

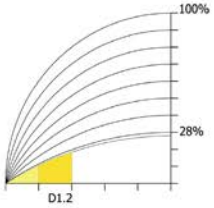


C2 Slum safety

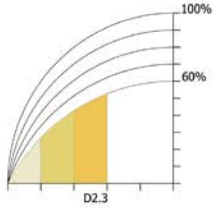


C3 Vertical movement

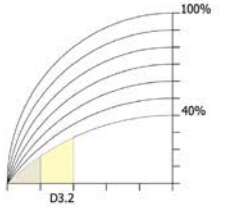
STRUCTURE



D1 Density

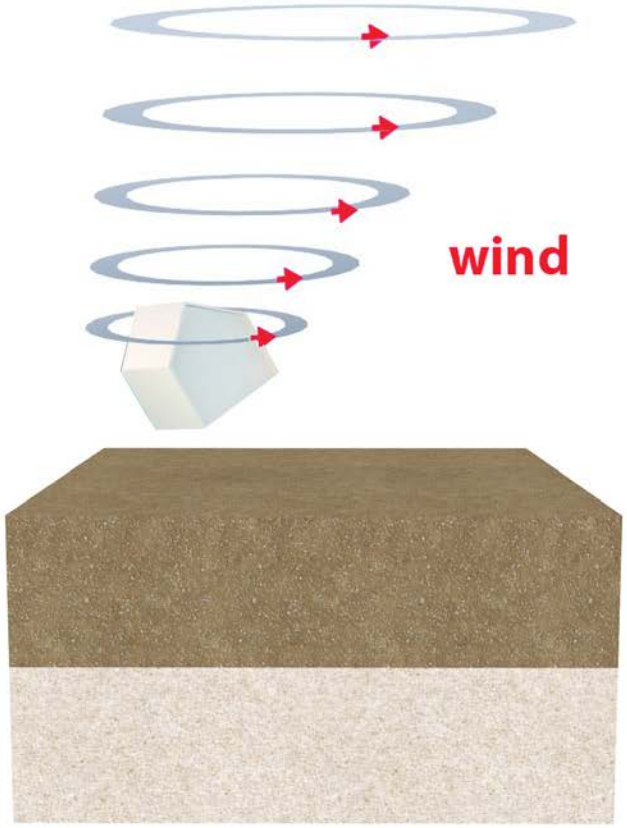


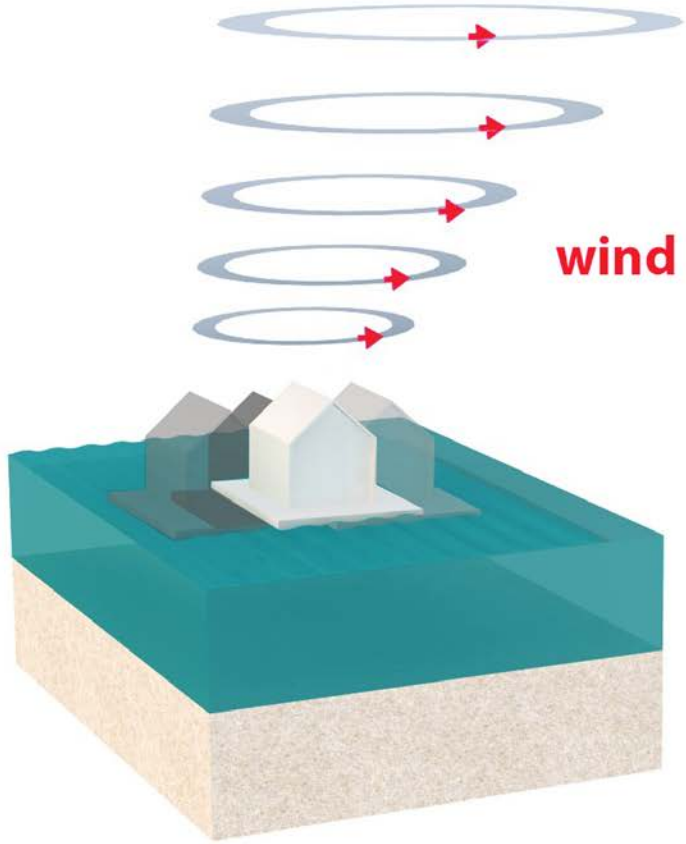
D2 Accessibility and MEP infrastructure



D3 Relation with

City Apps make cities as flexible as a smartphone





City Apps : a tool for change