

Biosfera

BLO^C



PIXELCITY

Developing urban areas with
a measurable positive footprint

Project brief, April 2018

Website: <http://biosfera.online>



A UNIQUE COLLABORATION

Make it happen.

BLOC Next generation development

BLOC is a creative development agency. We develop pioneering concepts and projects for a wide variety of fields. Not limited to one specific theme, and never limited in ambition and societal relevance. This is our pitch for our first endeavour in India.

Let us know what you think!

Find us at www.bloc.nl and info@bloc.nl

BIOSFERA Make your ecosystem smart

Biosfera has developed a methodology and technology that enables ecosystems to maximize value generation. Our revolutionary approach combines measuring the value that both natural and engineered ecosystems generate with a smart ecosystem monitoring and managing platform that can automate the (re)distribution of this generated value amongst the ecosystem actors. Generating measurable and quantifiable positive impact is our core business – a business you can share in.

Find us at www.biosferafoundation.com and info@biosfera.nl

DECCAN GROUP Beyond walls

The Deccan Group of Companies is a collective of diverse manufacturing companies based out of Bangalore, India since 1982. Our expertise is in the field of Electrical Equipment's, Building Materials, Real Estate, and Textiles.

Find us at www.deccangroup.com and projects@deccangroup.com

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KEY FEATURE BANGALORE

Bangalore has been known by many names; the Pensioners Paradise, the Garden City, the Silicon Valley of India and now the Start-up Capital of India. IT majors from around the world have set up their offices in Bangalore. This has created a rich pool of talented engineers.

But the environment for conducive growth across all sectors is under stress. Heavy congestion because of vehicular movement, high-density development, pollution and degradation among others, contribute towards less than favorable living conditions in the city.

Bangalore still has retained some of its old charm in areas that have been untouched by such rapid industrialization. It also features a pleasant climate all year round and many green spaces that naturally cool this urban city. How interesting would it be to combine these two factors and create a new utopia of green hi-tech living and working environments?

With people from a multitude of industries, Bangalore houses the highest ex-pat community in India. With a critical mass of socially conscious, environmentally conscious and creative people, there is a strong demand for green work-life balance environments, developed along socially inclusive and environmentally sound principles.

PIXELCITY focuses on this demand and offers a smart city template that fuses high-end real estate development with generating positive socio environmental impact. With 1.2 billion people in India, and 100 cities listed for smart city development, there is a huge market potential for similar Pixel City projects across the country and great potential for the rest of the developing world.

CONTEXT

Could we create a Garden City 2.0 where you can work, live and relax while generating positive impact?

ECONOMIC TRENDS

India is urbanizing rapidly and cities need to keep pace with this process. The urban population is almost 30%. Two-thirds of GDP is generated in India's cities. The quality of life in these cities is critically low. To manage rapid urbanization in a way that enhances the livability of India's urban spaces, a cooperative model of governance between the central government, states, and city-level governments has been set up to guide this process based on a Mission Program approach. Under this Program, selected cities receive central financial incentives to achieve intended milestones. This programmatic approach is the most relevant driver for India's urban development in the coming years.

SOCIO ENVIRONMENTAL TRENDS

The current rural to urban migratory trend and the natural growth of India's urban population requires for the urban building stock to increase severalfold in the coming decade. This explosive increase in built-up area will have an enormous impact on the quality of urban space, on water and energy resources in cities, and on waste generation. The extraction of the required feedstock and resources from the rural, natural ecosystems to facilitate this explosive increase will lead to their further environmental degradation, accelerating and increasing, in turn, rural-urban migration.



KEY FEATURE **FOR-IMPACT AND FOR-PROFIT:** **CAN IT BE DONE?**

In the race of moving from a developing nation to a developed one, city planning often takes a back seat. PIXELCITY is a unique concept to tackle site-specific problems with a generic toolbox for next-generation real-estate development. This template addresses and solves both social and environmental challenges. The template combines circularity, impact generation and user participation for the rational and efficient management of its metabolic loops: the use of energy, water, food and materials. Each pixel design includes physical interventions to regenerate polluted soil and groundwater within its perimeter, and preserving the levels of water, soil and air quality thus attained. Productive green areas and state-of-the-art eco-technologies stabilize a healthy living environment and create a positive footprint compared with the city-as-is. This helps to reduce the overall urban environmental footprint while the land value of the pixels and the adjoining plots will increase. This economic trend allows the number of pixels to increase, and even though geographically separated, these nodes are systemically connected working together to increasingly generate positive impact and a cumulative economic value for the city as a whole.

PROPOSITION

PIXELCITY: Pixelating Urban Regeneration

CONCEPT

PIXELCITY develops an ecosystem of inner-city plots, inspired by nature and backed by service intensive and technologically focused companies. It offers well-serviced stays in a green, lush and healthy living environment, which contributes to the productivity of its dwellers. By diminishing travel time to work it unburdens the existing urban vehicular congestion.

The services and utilities of the ecosystem will create new livelihoods across the urban social strata and will help Bangalore to reverse further environmental degradation.

PIXELCITY is designed to generate positive impact that can be measured, quantified, assigned and traded.

PIXELCITY FEATURES:

- A circular economic model with clean energy and food production, flexible workspaces and long and short stay residences.
- Inter-connected smart grids for electricity, cooling and heat generation, distribution and storage.
- Smart infrastructure for water collection, supply, sanitation and reuse, waste collection, re- and upcycling.
- A smart mobility system with automatic moving vehicles and good connectivity to the rest of the city with point to point transfers;
- A facility service company that coordinates a unique collection of services by local and international parties such as Dell, Tata, Microsoft, Infosys, etc., enabling the end-users the automated use of the 'City as a Service';
- A real-time PIXELCITY operating system that measures and assigns positive impact generated by the pixels and its users. All value that is added to and subtracted from the pixels is tagged and tracked and all data is traceable, transparently and securely stored, and shared with the end users.

CONCEPT DRAWBACKS / PARALLELS:

- Builders (eg. Brigade, Embassy Group, Shoba, etc) located in Bangalore have already built eco-systems (Hyper-cities) in which IT/BT companies have set up shop.
- Commercial spaces, located next to lush green residential spaces with access to schools, hospitals and shopping centres, located within their space itself.
- Green buildings with focus on implementing solar energy has also found its way into such Hyper-cities.

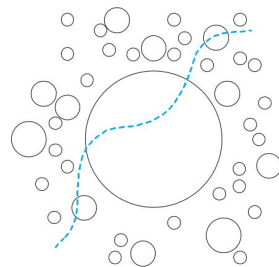
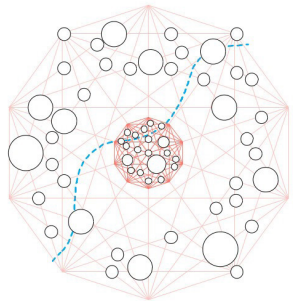
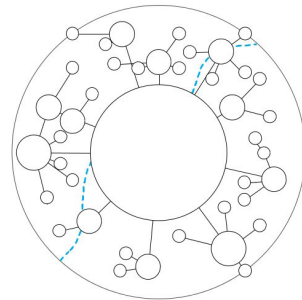
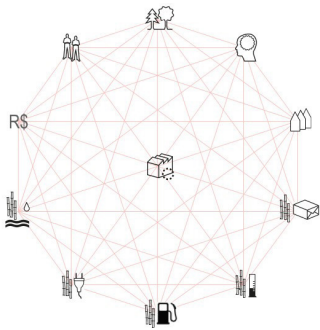
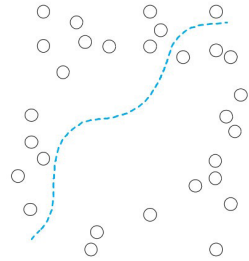
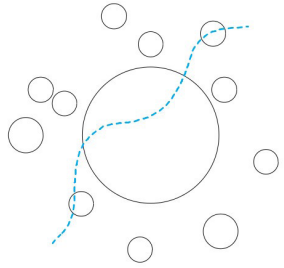
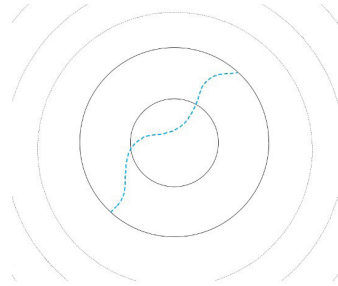
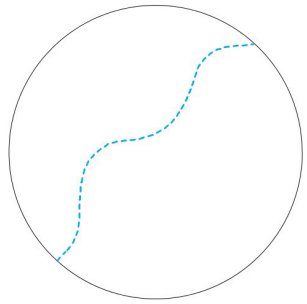
WHAT MAKES THIS CONCEPT DIFFERENT?

We propose to develop intermittent plots of land located within densely populated areas. These plots of land can be acquired by:

1. government land;
2. private partnership;
3. adjoining properties through public partnership.

This offers the opportunity to develop land located across the city without restriction on size or partner (Pixelated); PIXELCITY is thus a network of interoperable Pixelated plots (pixels), superimposed on, and interfacing with, the city-as-is: a regenerative peer-to-peer urban network.

PIXELCITY works with partners across the board, such as governments, public and private players, IT/BT companies, Defence, SME's and even small stores.



KEY FEATURE **MONITORING AND MANAGING PIXELS**

ECOSYSTEMS

Natural and artificial ecosystems are all around us, the pixels make up one as well. Harmonizing ecosystems benefits everybody.

OUR APPROACH TO ECOSYSTEMS

Ecosystems can be defined as a network of interdependent and interacting assets, services and actors that jointly generate, add, use, destroy and exchange value. Whether an ecosystem is natural, engineered, social or economic, a smart ecosystem puts its inherent intelligence and that of its actors to work using optimal methods and tools to monitor and manage its efficiency.

CONTROLLING PIXELS

To monitor and manage pixels as an ecosystem at low cost, yet with maximum control, we implement TupiX. TupiX is a state-of-the-art operating system developed by Biosfera.

WHAT IS TUPIX?

TupiX is an efficient and groundbreaking solution that employs cutting-edge technologies to make 'ecosystems smart', through their automated optimization at a low cost.

In application, TupiX is all about optimizing contractual and operational processes using specialized software and hardware, combining the Internet of Things, Artificial Intelligence, blockchain and programmable money. It provides a service by thoroughly analyzing the value-generation processes, locating areas that can be supported and automated and simulating the optimal state of efficiency. With a thorough evaluation of its efficiency, TupiX provides the platform to coordinate all relevant actors/stakeholders and assemble all the right tools for its application. All stakeholders involved in an ecosystem benefit from the added value of a more efficient and self-governing network.

HOW DOES IT WORK?

To facilitate an understanding of our platform and service, we provide the step-by-step process which forms the backbone of the application of TupiX in any given ecosystem.

1. Setting the perimeters of the ecosystem.
2. Mapping out all the ecosystem assets and services in the perimeter
3. Measuring the value of those assets and services.
4. Assessing all the actors involved and their relationships in the set perimeter.
5. Comparing the current agreements set by the actors in the defined perimeter with the optimal agreements.
6. Simulating the average of the optimal ecosystem with that of what the actors will commit to.
7. If the value of the ecosystem increases the application process can begin.

SPATIAL AND TECHNICAL

Plug-and-play impact

STARTING POINT FOR THE SPATIAL COMPILATION

The concept could aesthetically be symbolized by a pixelated urban plan, creating a striking contrast between green and urban functions. We took inspiration for other pixelated architecture typologies such as the façade of Toshihide Kajiwara / Koseki architect office in Japan.

PIXELCITY FUND

PIXELCITY will be supported by a for-impact financial instrumentarium which provides the market with both a lucrative impact investment opportunity and with real-time, licensed feedback on its quantifiable footprint. This strengthens private parties with their impact portfolios and their CSR endeavours.

TOOLBOX

The base of PIXELCITY is an ever-updating package of elements which can be compiled depending on the specific context. This package is the PIXELCITY toolbox, not made up by loose products but a carefully curated system of as-a-service spatial elements. For this toolbox we develop a highly-ambitious collective of commercial parties.

ELEMENTS

The elements which make up the PIXELCITY toolbox are:

- Small housing units – efficient living units with a small footprint, featuring high-end materials and adaptable furniture.
- Larger housing units, which offer a larger footprint and spatial quality and are complemented with high-end shared facilities (sports, leisure, wellness, working).
- Co-working spaces, with a mix of supporting functions.
- A solar power station with smart grid.
- A waste collection and recycling plant.
- A workshop featuring local-for-local material reuse.
- Mobility functions, such as autonomous vehicles and electric charging stations.
- Food producing gardens, boosting the local biodiversity, cleaning the air and offering an urban escape.

WORKING TOGETHER

These elements – the pixels - function on an Internet of Things-inspired software platform with a physical smart grid providing electricity and other commodities.

INDIA - NETHERLANDS

**RESEARCH PROGRAM
'PIXELCITY'**

potential partners and contexts

How to improve Dutch and Indian cities by combining insights, knowledge en willpower?

insights and market-ready concepts

How to create an area development with a positive footprint and what does it look like?

**IMPLEMENTATION
'PIXELCITY'**

project ...
project 4
project 3
project 2
project 1

How can we implement all these great, socially relevant ideas in the best way?

URBAN AREAS WITH POSITIVE FOOTPRINT



**WHITEPAPERS,
ARTICLES,
BOOKS, FEASIBILITY REPORTS,
URBAN DESIGNS,
PROTOTYPES**

**PIB, MoU'S,
BILATERAL DEVELOPMENT,
KNOWLEDGE EXCHANGE,
BUSINESS DEV**

STRUCTURE AND PHASING

Step-by-step, pixel-by-pixel

THE DUTCH APPROACH

PIXELCITY is part of the Dutch Partners for International Business (PIB) on Spatial Planning, Smart City Development and Ecosystem Engineering in India. The projects and programs developed by this PIB fall within the Indo-Dutch MoU on Spatial Planning that focuses on:

- spatial planning;
- urban and regional planning and architecture;
- water management in terms of water supply and sanitation, and governance structures;
- transport management;
- transport systems and infrastructure;
- energy-efficient and sustainable built forms and sustainable building.

Both the PIB and MoU follow the so-called Dutch Approach, the enveloping method by which integrated planning, participation, design and adaptation are connected in a structured and sustainable urban and rural development praxis.

To be able to conceive and materialize the Dutch Approach in those cross-sector fields of activity listed above, this approach should exceed the constraints of simply targeted smart city development, and put forth a methodology that can both overarch and underpin the integrated planning, participation, design and adaptation that hallmarks the Dutch Approach.

DEVELOPMENT STRATEGY

An initial research & fact-finding phase will conclusively map suitable plots in Bangalore for pixel development as well as identify the local development partners. For each pixel

- a program of demands will be drafted with the relevant stakeholders;
- a set of physical interventions will be defined, geared towards attaining a positive socio-environmental footprint;
- several viable scenario's will be simulated to determine the most (cost) effective pathway for developing the pixel as a self-sufficient, value generating urban module.

Following and overlapping with, investment and development schemes are deployed for each pixel as a prelude to the actual design phases.

THERE ARE STILL MULTIPLE ENTRY POINTS IN THE PROCESS FOR AMBITIOUS PARTIES.



WANNA TALK?

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