FIELDS *of* VIEW

OUR GOAL

With the rapid growth of cities in India, it becomes imperative for people and institutions with diverse perspectives to come together and tackle different issues we face. But even articulating what the problem statement is, becomes a contentious issue when such different points of view come together. How do we then ensure that these diverse perspectives find a common ground, from framing the problem to debating options? At Fields of View, we create such spaces for collective dialogue and enquiry to understand our cities better using games and simulations.

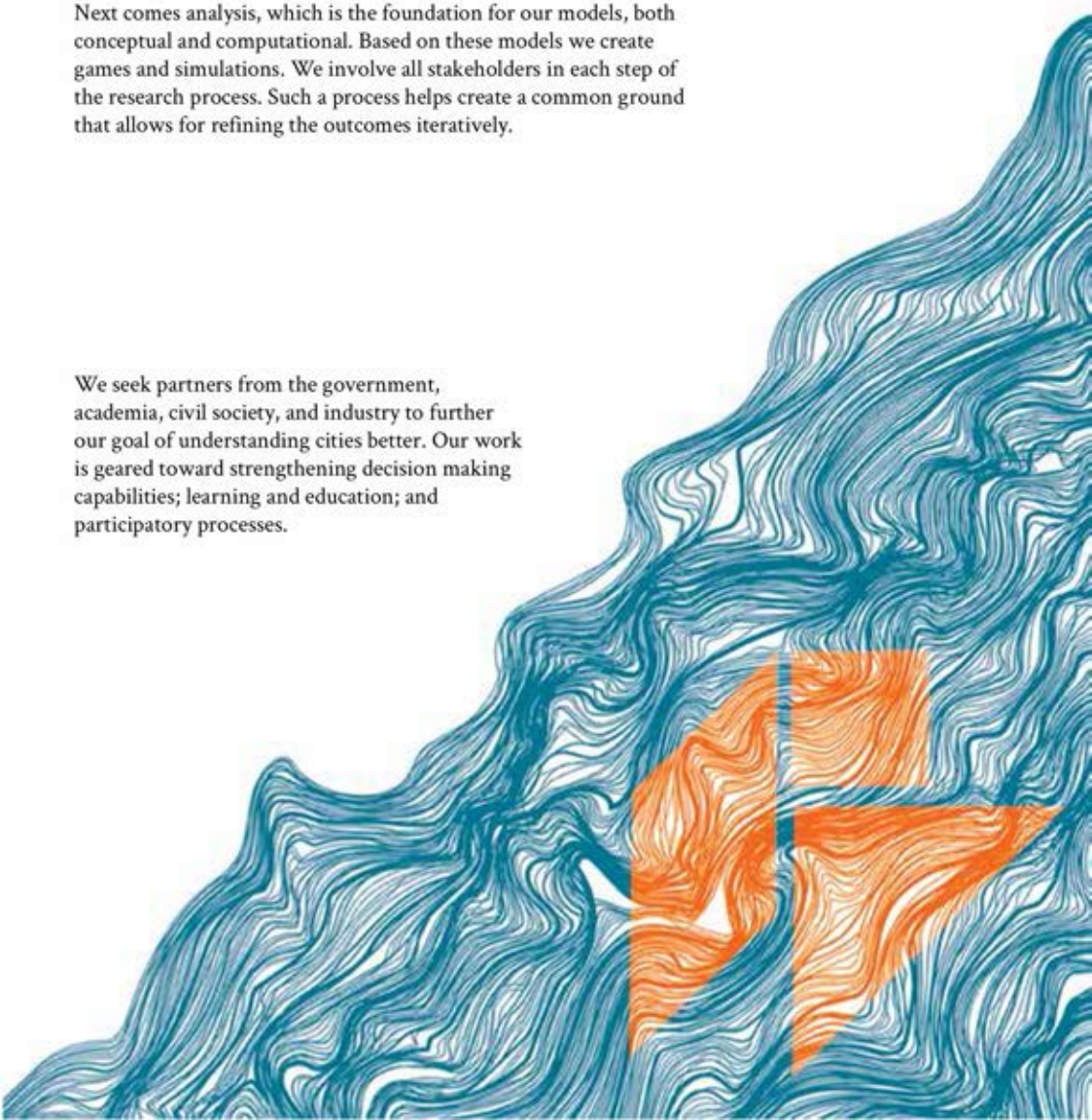
HOW DO WE GO ABOUT IT?

'Field of view' is a term used in photography, art, and gaming literature to describe the observer's perspective or the world that is visible to the observer. As our work involves bringing together different perspectives to enable a dialogue, our goal is to foster spaces where different fields of view can come together and find a common ground.

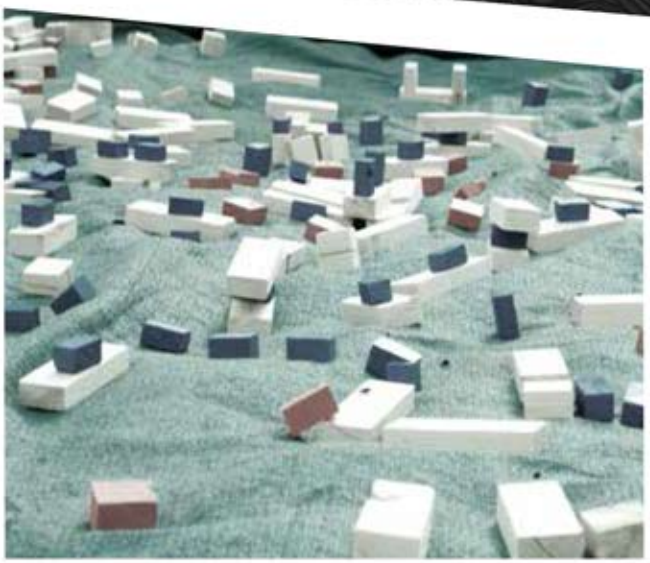
APPROACH

We follow a research methodology that allows for different disciplines and perspectives to have a meaningful dialogue. We begin by defining the research problem, which could be considered the most- argued phase of any effort that involves different perspectives. Following that, we undertake both desk and field research, involving a combination of different research methods. Next comes analysis, which is the foundation for our models, both conceptual and computational. Based on these models we create games and simulations. We involve all stakeholders in each step of the research process. Such a process helps create a common ground that allows for refining the outcomes iteratively.

We seek partners from the government, academia, civil society, and industry to further our goal of understanding cities better. Our work is geared toward strengthening decision making capabilities; learning and education; and participatory processes.



GAMES



"Games can be defined as experi(m)ent(i)al, rule-based, interactive environments, where players learn by taking actions and by experiencing their effects through feedback mechanisms that are deliberately built into & around the game. Gaming is based on the assumption that the individual & social learning that emerges in the game can be transferred to the world outside the game."

A definition from a 2009 article in Simulation & Gaming by Igor Mayer

Be it 'Go' with its deceptively simple rules governing smooth ovals across a chequered board or hopscotch that enlivens school yards and streets, games are integral to any community's cultural heritage. Game play involves and invokes memories of fun, friendship and sometimes failure too.

Strategising, winning, plotting or just pulling a slingshot to launch an angry bird at a doomed pig, what we do in a game comes naturally to us because games are a safe and comforting metaphor of life itself.

It was but natural that this immersive power of games was harnessed to serve a variety of objectives from war games to train soldiers to games to understand policy implications. Not only do games provide an inexpensive way of mimicking real life situations, they also allow us to experience the implications of our decisions, learn from those experiences and contemplate on possible futures.

David Kolb, and American educational theorist, popularised the idea of experiential learning. Kolb's model of experiential learning consisted of four elements: concrete experience, observation and reflection, the formation of abstract concepts and testing in new situations. This is a cyclic process where learning can begin at any one of the four stages.

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Games have been widely used to understand "wicked problems", and to explore ways to tackle them. Planning and designing cities with all the stakeholders is one such problem; a simple turn based table-top game can help us design cities better. City Planning Games, first proposed by Dr. Juval Portugali in his book Self-Organization and the City, have been widely used as participatory tools for city planning.

The immersive power of games have been leveraged for training personnel. For example, we are developing a game for the Institute for Plasma Research, Gandhinagar to train their tokamac operators in using a robotic arm for remote operation of the tokamak.

Games provide a space to understand the implications our actions, which make them a powerful analysis tool for policies. Policy games can be used to interactively collect inputs from the citizenry. Budget games can be used as a medium to increase awareness about national budgets and the influence of subsidies over deficit. The Indian Energy Game, developed by researchers at Fields of View, is another such game where the participants get to design the energy mixture for the country by playing the roles of the different ministries responsible for energy policy in India.

Games provide a space for reflection, collaboration and learning. Our goal is to understand and explore different ways in which games can be used to enhance the following capabilities: decision making, learning and education and participatory processes, in the areas of urban systems.

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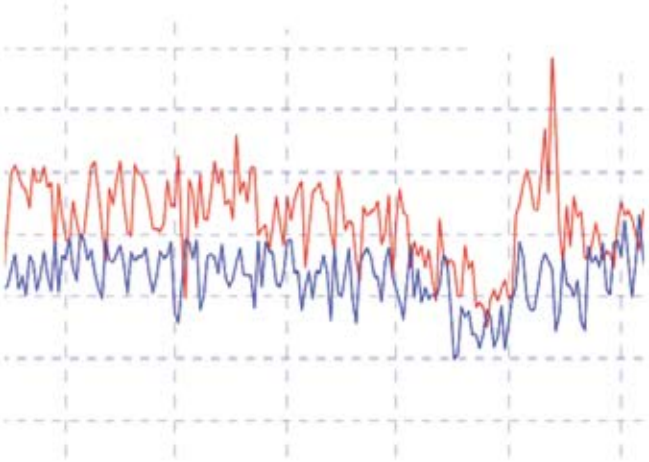
SIMULATIONS



"Remember that all models are wrong; the practical question is how wrong do they have to be to not be useful."

- George Box

Models are representations of real world concepts. A model can represent simple but powerful ideas, such as the Equations of Motion; or a model could represent complex phenomenon such as socio-economic activities of residents in a city. Simulations are based on models and mimic real world processes over time. Models and simulations can be designed to address problems on the scale of a city, or problems on the scale of atoms.

Modelling and simulation have been used extensively for prediction. Joshua Epstein provides uses for modelling other than prediction, in his article "Why Model?". At Fields of View, we use modelling and simulation as exploratory tools to understand socio-technical systems.

As an example, consider route planning for a public transportation systems in cities. Public transportation affects people from all walks of life. Presence of public transportation routes may spur growth in different parts of the city, adding to economic growth. It may also affect housing demand and prices. It may even spur people to service last mile passengers, thus creating a whole new market. The relationship between the passengers, the administrative institutions, the available resources and their delivey mechanisms has to be taken into account to plan a public transportation route. Through modelling and simulation, we explore the dyamics of interactions between the various sub-systems.

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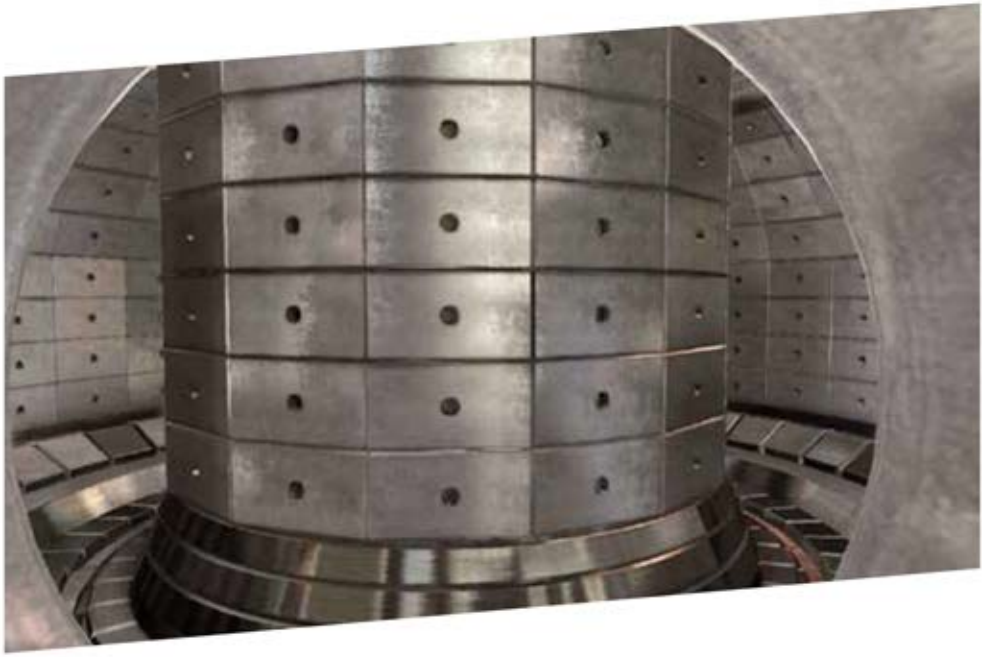

At Fields of View, we are using to exploratory models and simulations to:

a) Identify potential resource saving strategies for cities.

b) Derive and test standards for GIS data interoperability during emergency and disaster management.

c) Understand the evolution of slums in Bangalore and how slums contribute to the growth of the city.

d) Investigate how low cost changes to traffic junctions improve traffic conditions.

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CITY GAME

A turn-based multi-player game to explore urban form and preferences.

OBJECTIVE

The City Game is designed to explore urban form and elicit a group/individual's preferences about their city. Participants play in turns and react to each others' actions, and in doing so create a dynamic that is absent in traditional participation/feedback processes. The game allows for experiments with various design alternatives. Players can experiment with different policies and rules, observe various patterns that emerge and contrast different emerging scenarios.

Intended Audience
General Public, Urban Planners, Architects, Real estate developers

Keywords
Urban systems, Games, Visualisation, Self-Organisation

Type
table-top

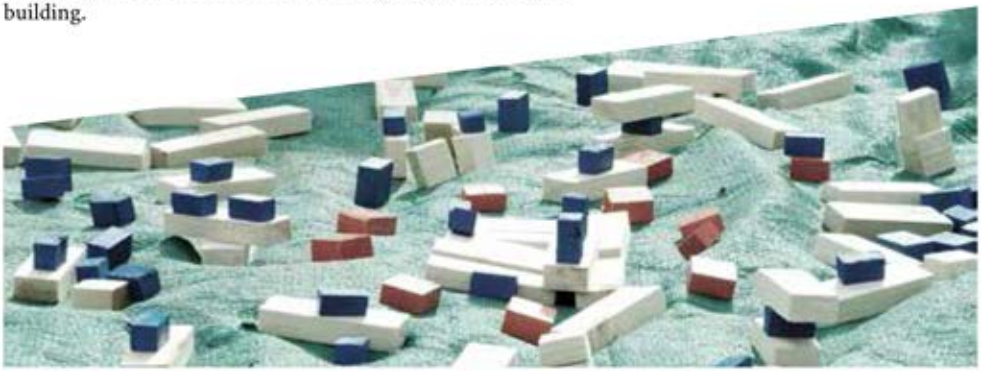
Duration
45min-1.5hour

No.of people
10-30 people

GAME PLAY

It is played in small groups where participants take turns to play and design an urban space in a mock setting. They can witness the evolution of the city and negotiate with each other to resolve conflicts.

Participants build structures in turns and witness the evolution of the city visually in real-time. We have multiple variants of the City Game. In one of the variants, the participants are given one simple rule: they have to inform the rest of the group, what they are building.



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RESULTS FROM A GAME SESSION

ROUND 1

ROUND 2

ROUND 3

ROUND 4

ROUND 5

FINAL ROUND

Acknowledgement

City Game was conceptualised and designed by Dr. Juval Portugali, Tel Aviv University. We wish to acknowledge that a portion of this work was carried out by members of the Next Generation Infrastructures Laboratory at the Center for Study of Science, Technology and Policy. This work was funded by Jamsetji Tata Trust and the Next Generation Infrastructure Foundation.

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CONVERS(T)ATION

To increase reporting of sexual harassment of women in public spaces, and ensure institutional linkages for the data to be used.

OBJECTIVE

While newspapers debate over women's safety, can we think of designing options to enhance a sense of safety of women in public spaces, without compromising their freedom?

It is this question we explored in a cross-cultural design collaboration between two teams, one in Bangalore and the other in Amsterdam, comprising students of both Indian and Dutch nationalities. The focus of the team in Bangalore was to address under-reporting of sexual harassment of women in public spaces.

Intended Audience
Women's rights organisations, public service providers, and the public at large

Keywords
Women's safety, design

APPROACH

A combination of the methodology followed at mediaLAB Amsterdam and Fields of View, involving framing the problem, field visits, discussions and interviews with experts, designing the device, and user tests.

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OUTPUT

- Prototype of an electronic panel,
- Convers[t]ation, for informally reporting cases of sexual harassment.
- A white paper on the institutional support required for the panel.

Acknowledgements
Shakun Mohini, Vimochana; Sandhya Rao, Hengasara Hakkina Sangha; Laxmi Murthy, journalist

Collaborations
The project was a collaboration between mediaLAB Amsterdam, IIIT-B, and Fields of View.

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MULTIAGENT SIMULATIONS FOR INTEROPERABILITY DURING DISASTER MANAGEMENT

A gaming and simulation framework for designing, testing and validating SOPs for disaster management.

OBJECTIVE

This project uses a gaming and simulation framework for designing, testing and validating Standard Operating Procedures (SOPs) for disaster management which adhere to the local institutional support frameworks, and are process and semantically inter-operable.

We use a gaming and computerized simulation methods in conjunction with each other for participatory design of interoperable standards for disaster management. Gaming methods provide a platform for experiential learning for the participants, and for validation of SOPs through what-if scenarios. Computerized simulations help test the efficacy of the shared vocabularies which is used by agencies involved in disaster management.

Intended Audience
Policy Makers

Keywords
SOP, policy, PIEMAC, shared vocabulary

APPROACH

To test Standard Operating Protocols and their operation during disaster management, we use games to collect data about messaging constructs – how do agencies communicate with each other? We then build a shared vocabulary for communication that the agencies can use for semantic interoperability. A shared vocabulary informs participants about who they can communicate with, what their message constructs ought to be, and what file format of communication they could use, among other things. Using the computerized simulations, we test the shared vocabularies under different disaster scenarios.

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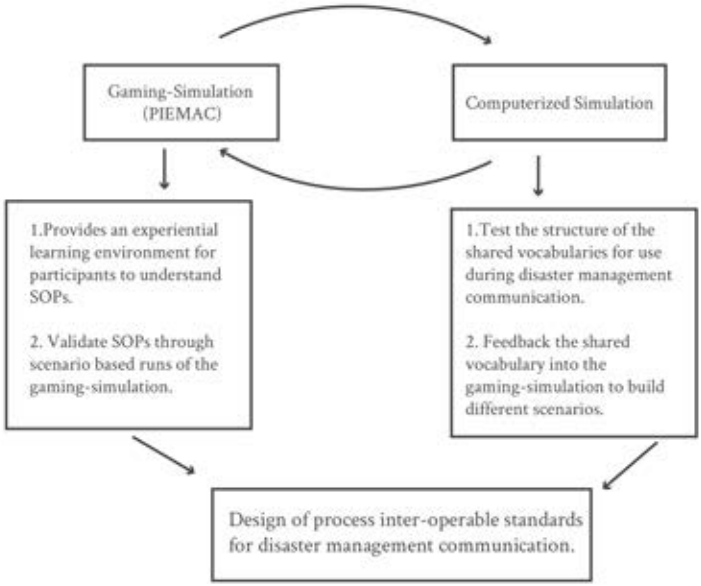

CASE STUDY

We developed a simulation tool to test the effect of use of shared vocabularies on communication during disaster management. The shared vocabularies were built using messages from sessions of the PIEMAC game. The computerized simulation developed was used to test the efficacy of this shared vocabulary under different disaster scenarios, and the simulation results were analysed to provide recommendations for effectively designing the shared vocabularies.

OUTPUT

This effort utilises PIEMAC as a crucial component in the framework, as a game for data collection. Two key outputs are the simulation itself, and recommendations for the Standard Operating Procedures.

Acknowledgements
This project was funded by the Natural Resources Data Management System, Department of Science and Technology.

Collaborations
DST, IIITB

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ELECTRICITY MARKET SIMULATION GAME

A game developed to help the audience understand the short-term and long-term dynamics of electricity and carbon markets.

OBJECTIVE

Electricity markets are influenced by transactions in the market, policy decisions, evolving institutions, unstable fuel prices, availability of fuel and advances in technology.

The limited options for storing electricity contributes to the market volatility.
These varying characteristics make it difficult to analyse and understand the behaviour of electricity markets.
The primary objectives of the game are:

1. To teach the dynamics of electricity markets.
2. To analyse and understand the impact of various policies in such a system.

GAME-PLAY

In the game, players represent a company with different power generation technologies. Players decide on investing in a new power plant, dismantling or trading of an existing power plant, and bid in a power exchange. An electricity board regulator has the power to introduce and modify market policies.

The game proceeds in rounds, where a round simulates a full business cycle. In these rounds, we can introduce or modify various policies (such as turning on carbon market etc.). This allows players to understand and analyse the impact of their decisions, the effects of various policies, etc.

Intended Audience
Students, Market Analysts, Policy makers, Researchers and Companies in the Power Sector

Keywords
Complexity, Bidding

Type
Web-based

Duration
1-2 hours

No. of people
Minimum of two teams with any number of players. No limit on maximum number of players

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OBSERVATION

Throughout multiple sessions, we observe that the gaming simulations help players understand the consequences (market response) of their investment strategies. They can test and observe effects of simple strategies such as marginal cost bidding, etc.

The players also experience the effects of incomplete information on future developments and the flux in the global fuel market. The players learn how to make trade-offs between short-term profits and long term market share.

OUTPUT

- Gaming-simulation platform.
- Implications of changes in the regulatory framework on the investment strategies.

Acknowledgements

This work was carried out in collaboration with Dr.ir. L.J. de Vries, and Dr. ir. Emile J.L. Chappin from Technology and Policy Management, TU Delft, Netherlands .

Collaborations

Technology and Policy Management, TU Delft, Netherlands.

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INDIAN ENERGY GAME

A multi-player game designed as an educational tool to help participants understand the complexity of designing energy policy in India.

OBJECTIVE

India needs an energy policy that addresses the decreasing coal reserves, increasing demand, technological challenges and environmental issues. Comprehending problems which arise in such complex socio-technical systems is non-trivial. The Indian Energy Game has been designed to understand the following:
a) The challenges faced by different agencies in meeting targets
b) The decision making process and negotiations between the agencies.

GAME PLAY

The participants are allowed to experience the consequences of environmental, social, technological and geopolitical factors.

They assume roles of different ministries in the Indian Government that build energy capacity in the country. These Ministries are responsible for controlling the fuel sources that different generation techniques use.

The game is played in two rounds; in the first round the participants need to design an energy mixture for India's 12th Five-Year plan and in the second round they design an energy mixture for India's 13th Five-Year plan. Constraints such as social costs, environmental costs, fuel shortages, national security and technology barriers to name a few, shape the players' decisions.

Intended Audience
General Public, Energy Policy Planners.

Keywords
Multi-party negotiation, Conflict resolution, Energy Policy, Planning.

Type
Paper-based/ table-top

Duration
1hour-1.5hour

No.of people
6-12 people

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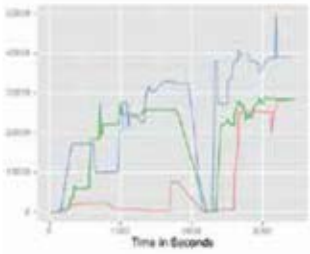
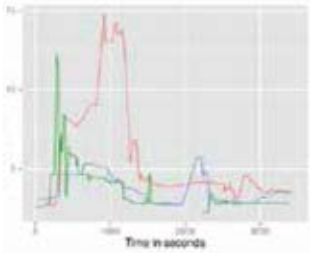


CO_2 emissions in million tonnes



Cost of Generation on Rs/kWh

OBSERVATION

During the course of the game, the participants experience the various environmental, societal, geopolitical and economic constraints faced by the decision makers while planning for energy policy in India.

This helps players understand the constraints faced by policy makers, the importance of cooperation and the dynamics of negotiation & information sharing. We observed in multiple sessions of the game that the teams do not share information in the first round of the game and face the consequences of the same. This eventually results in the teams sharing amongst themselves in the second round!

To give another example, we observed in multiple sessions of the game that the participants seem to understand that large hydroelectric projects, although inexpensive, displace a lot of people and have severe environmental costs.

Acknowledgement

We wish to acknowledge that a portion of this work was carried out by members of the Next Generation Infrastructures Laboratory at the Center for Study of Science, Technology and Policy. This work was funded by Jamsetji Tata Trust and the Next Generation Infrastructure Foundation.

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GAMING SIMULATION BASED TRAINING FOR SST

A simulation developed to train the users of a tokamak in its remote operation,using a robotic arm.

INTRODUCTION

Researchers at Institute for Plasma Research (IPR) are developing the Steady State Superconducting Tokamak (SST) to conduct various experiments on plasma matter. In order to perform maintenance operations for the tokamak, the machine has to be brought to a state where it can be operated on by personnel safely.

This involves shutting down the entire machine for it to cool to a manageable temperature, breaking the vacuum of the plasma chamber and (sometimes) waiting for radiation to reduce. This lengthy procedure is followed by an equally time-consuming process to bring it back into an operating state.

Remote operations for maintenance will reduce the maintenance delays, and allow for longer experiments.

Intended Audience
Operators of the tokamaks

Keywords
SST, training

Type
Virtual Game

Number of players
Single player/ operator

OBJECTIVE

A robotic arm is being designed for performing such remote maintenance operations for SST. We have developed a gaming simulation in order to aid the designers in eliciting requirements for their design, as well as helping train operators to perform maintenance operations.We have done this using an immersive virtual environment completely modelled after the SST.

Equipment and processes in hazardous and highly specialised environments, which require human input, can be designed, developed and tested using such immersive gaming simulations.

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GAME PLAY

The interior of the SST is lined with graphite tiles. The player can either be a maintenance operator or a supervisor involved in the design and specifications of the real robotic arm.

The player assumes the role of an SST operator performing maintenance operations through the course of the game, and learns to use the robotic arm to identify and replace damaged tiles. The game is designed in accordance with 4 Component Instructional Design (4C/ID) approach to developing training systems.

It incorporates various levels of difficulty to train operators and monitor their progress as they develop their skill. It also helps supervisors to identify key specifications for the real robotic arm based on the progress of their operators, and on their own experience with the system.

Acknowledgements:
This work is funded by the Board of Research in Fusion Science and Technology (BRFST) and the work is being carried out in collaboration with the Institute for Plasma Research, Gandhinagar.

Collaboration:
Institute for Plasma Research

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PIEMAC

A gaming simulation designed to understand information flow, identify loopholes, and understand the evolution of communication protocols within organisations.

OBJECTIVE

Information flow in organisations shapes the way an organisation functions, the efficiency with which individuals can act, and the way the organisation plans its future. However, providing relevant information at the right time to the right people is often a challenge. Personal and informal networks play a vital role in shaping the flow of information. Such information flow is usually based on organisational standard operating protocols (SOPs). The primary objectives of this game are:
a) To identify loopholes and bottlenecks in these protocols, especially when such protocols have been adopted from elsewhere.
b) To study how protocols evolve within an organisation.

GAME-PLAY

The roles in the game are based on the various roles in the organisation under investigation. The game begins with the game facilitator handing out to the participants, the game scenario, role description, responsibilities and the set of actions available to them during the game. The participants communicate with each other using hand-written messages to address the issue presented in the game scenario. The players are informed about the various constraints during the course of the game through real-time feedback from the facilitator.

Inteded Audience
Agencies involved in Disaster Management, HR Groups, policy-making bodies and other such organisations where information flow involves multi-party coordination and collaboration.

Keywords
Multi-party co-ordination and collaboration, Information Flow, Protocols, SOPs

Type
Paper-based, table-top

Duration
45min- 1hour

No. of people
Depending on the target organisation

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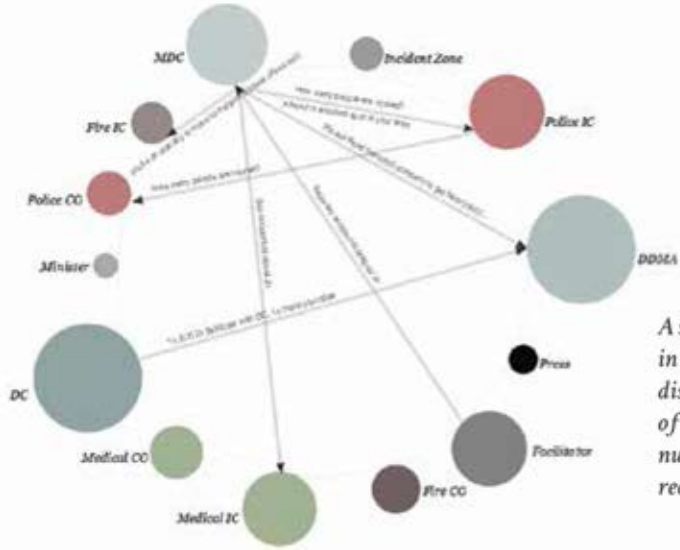
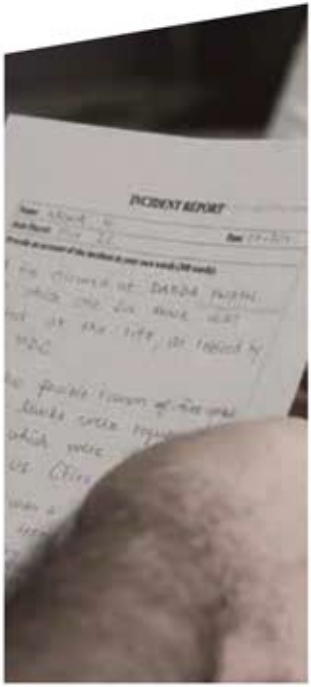


A snapshot of message exchange in an instance of PIEMAC for disaster management. The size of the bubble indicates the number of messages sent and received during the game.

OBSERVATION



Questions such as how the content of a message changes as it "flows" through an organisation (ChineseWhispers!), or the effect of spurious messages on information flow etc. can be answered using this game. In one instance of the game, it was seen that the protocol proved stable even when multiple spurious and misleading messages were introduced into the system.

Organisations inevitably evolve methods of communication to suit the people in the organisation. Such methods, when formalised, can become (secondary) protocols of information flow within the organisation. Through multiple runs of the game, it is possible to evolve such protocols, formalise and test them.

Acknowledgements

We wish to acknowledge that a portion of this work was carried out by members of the Next Generation Infrastructures Laboratory at the Center for Study of Science, Technology and Policy. This work was funded by the Center for Artificial Intelligence and Robitics, Jamsetji Tata Trust and the Next Generation Infrastructure Foundation.

Collaborations

Department of Science and Technology

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₹UBBISH! / KAASU KASA

A game to address some of the challenges faced by Dry Waste Collection Centres DWCCs and help strengthen the infrastructure for waste management in the city

INTRODUCTION

Recently, Bangalore adopted a decentralized approach to address its waste crisis with Dry Waste Collection Centers (DWCCs) being setup in every ward. How can we address some of the challenges faced by DWCCs and help strengthen the infrastructure for waste management in the city? It is this question we explored in Kubbish!, a cross-cultural design collaboration between Bangalore and Amsterdam.

Intended Audience
Residential Welfare Associations, Bulk generators of waste, Policymakers, Students.

Keywords
Solid Waste Management

Type
Bi-lingual board game

Duration
1.5-2 hours

No. of people
Minimum of 4, maximum of 6 people

OBJECTIVE

Some of the challenges faced by DWCCs include apathy of citizens toward dealing with waste and a lack of knowledge about the new decentralised system for waste management. Our objective was to address knowledge gaps and questions of attitude and behavior to promote understanding of the waste management system at both the micro and macro levels.

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APPROACH

A combination of the methodology followed at Fields of View and mediaLAB Amsterdam, involving framing the problem in consultation with stakeholders, field visits, discussions and interviews with experts, game design, and user tests.

OUTPUT

A bi-lingual board game for 4-6 players.

Acknowledgements
Nalini Shekar and the team at Hasirudala

Collaborations
The project was a collaboration between mediaLAB Amsterdam, IIIT-B, and Fields of View.

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SMART CAMPUS SIMULATION

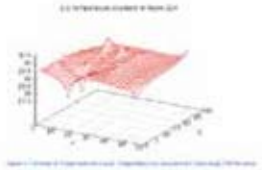
A simulation based tool to understand energy consumption patterns and behaviour cost reduction in large campuses.

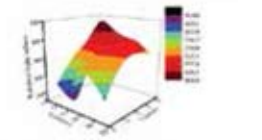
OBJECTIVE

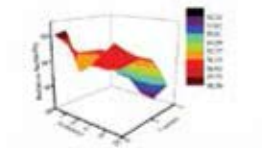
We conceptualised and campus as a socio-technical system and use design theory to look at adaptive approaches to improve energy utilisation. This work also explored approaches to convey the need to change energy usage patterns to address the issue of the campus's carbon footprint. Just as energy usage behaviour assumes energy to be ubiquitous, we planned to understand the use of technology to achieve responsible energy consumption ubiquitously as well.

Intended Audience
Campus administration, Energy researchers, Architects

Keywords
Energy-consumption, Adaptive, agent-based simulations, Socio-technical system, Sensor Deployment







APPROACH

In order to model the socio-technical aspects of the campus, we collected data about the physical dimensions, the energy meter readings from its buildings, a catalogue of all the devices with their locations, campus operational policy, user behaviour and their preferences. We used IIIT - Bangalore as a case study.

We used FoV's Phoenix simulation platform to implement an agent based model for the campus along with additional information such as population, the current billing and tariffs, etc,. Using this model we create different scenarios of operations for the campus such as:

- How does the energy usage behaviour change with staggered work hours and changing course structures?
- What is the cost-benefit of deploying a new technology, for example, an adaptive sensor based device control, on the campus?
- How can we raise awareness about issues of climate change and energy responsible consumption with a dynamic campus population?

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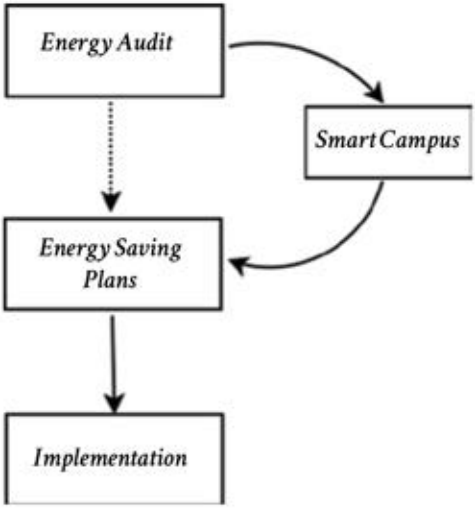
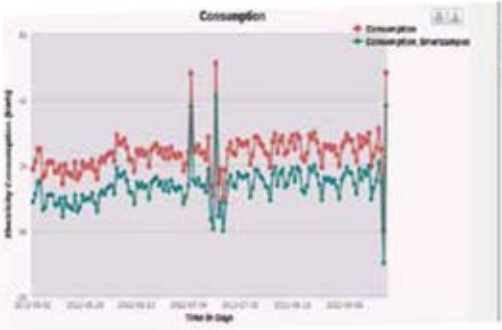


OUTPUT

- A multi-agent simulation tool for a smart energy campus.
- A specification for the sensors for long term deployment.
- A range of possible energy saving options based on different policies and scenarios.
- Research articles.



Acknowledgements

This research was funded and carried out in collaboration with CEEMS Lab, International Institute of Information Technology, Bangalore.

Publications

Harsha Krishna, Onkar Hoysala, Murali Krishna G., Bharath M. Palavalli and Eswaran Subrahmanian. (2014). Modelling technology, policy and behaviour to manage electricity consumption. Proceedings of the IEEE Region 10 Humanitarian Technology Conference, Chennai.

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MAP MY CITY

A participatory exercise developed as part of the ACCCRN initiative to help cities identify and define climate challenges they face.

OBJECTIVE

The excercise was developed to help cities identify and define climate challenges they face in the course of their daily operations in their respective geographic areas and to identify possible resilient strategies for future weather extremes.

It allows participants to learn about risks of climate extremes on routine operations in their local urban context. It is also designed to impress upon them the need to identify strategies to build resilience in their local municipalities. Participants also get an overview of the operations of different departments and identify gaps, similarities, and possible avenues for cooperation.

Intended Audience
Civil engineers, Urban practitioners who work with utilities infrastructure such as water supply distribution, sanitation, and solid waste management.

Keywords
Extreme climate event, resilience, civic infrastructure, basic utilities, cities, municipalities

Type
Table-top game in a workshop format

Number of people
3 groups

GAME PLAY

The session is conducted with participants who have experience in urban planning and management, municipal operations, urban services or have operational knowledge of the domain. Participants fulfil the role of their chosen city agency (at municipality level) and are required to identify routine problems the agency faces.

Participants are then provided a mock scenario of problems they would face due to extreme weather, based on their geographical context. They are then required to define a strategy to tackle the problem using their current resources.

Participants map strengths and weaknesses of their departments and discuss it with others. The exercise concludes with the participants identifying short, medium and long term goals for their individual departments and identifying possible avenues for collaborations among different departments for implementing their plans.

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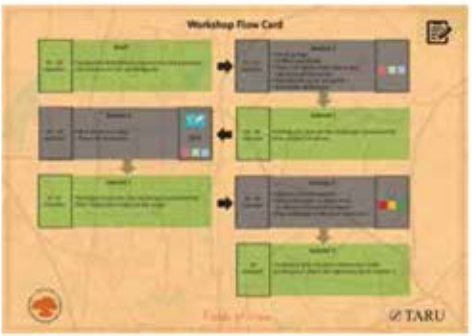

OUTPUT

At the end of each exercise the participants collectively:

- Generate the list of challenges that each of them face during their daily operations,
- Generate the list of all the resources that are at their disposal,
- Collectively prioritise the order in which they will tackle the challenges which allows them to leverage each other's capabilities and resources.
- Identify resources that they would like to have.

Collaborations

This work was funded by and carried out in collaboration with TARU Leading Edge, Gurgaon.

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URBAN POVERTY

A study to understand the contribution of the urban poor to the economy and functioning of the city.

OBJECTIVE

It focused primarily on the linkages between shelter, mobility, and livelihoods in urban slums. The relationship between living conditions of the slum residents in terms of their basic requirements, their potential for economic and social mobility, and the infrastructural and institutional facilities available to them are the focus of the study.

The study examines the difference between their current economic condition and their aspirational needs and the strategies adopted to cope with the difference. The study will assess the policy and the social implications of this analysis on our understanding of urban poverty and the evolution of slums.

Intended Audience
Slum residents, activists and civil society, policy makers, and academia

Keywords
Urban poverty, slums, livelihoods, mobility, shelter, social mobility, living wages

APPROACH

The study uses empirical data from The Bangalore Urban Poverty Survey, which was a survey of 1107 households in 36 slums in Bangalore conducted in 2010. With the help of key informants and activists working in the areas, a random stratified sampling framework was created for all 36 slums.

A quantiative survey instrument covering topics such as the demographic and economic profile of the household, the composition and livelihoods of individuals in the household, and their access to infrastructural facilities such as water and santiation was administered in the 36 slums. These survey instruments were administered by eight women who were recruited from the slums.

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In addition to this quantitative data, qualitative data in the form of case studies were also collected on topic areas such as homelessness in the context of slums, the informal economy within the slums, and professions in the slums such as street vendors. The study combines both qualitative and quantative data to understand the linkages between shelter, mobility, and livelihoods of slum residents

OUTPUT

- A report titled "Conceptualising Living Wages in Bangalore" used the framework of the living wages to examine the economic and social lives of the urban poor.
- A simulation to map evolution of slums in rapidly urbanising cities.
- A simulation to investigate the sustainable livelihood options for slum residents.

Acknowledgements

The Poverty Study was partly funded by the Jamshetji Tata Trust and the Next Generation Infrastructure Foundation. The Poverty Study was conducted with the primary help of Mr. Issac Arul Selva, Mr. Issac Amruthraj and Mr. Vinay Sreenivasa. The report on Living Wages was carried out in collaboration with the International Institute of Information Technology, Bangalore, and was funded by the University of Amsterdam.

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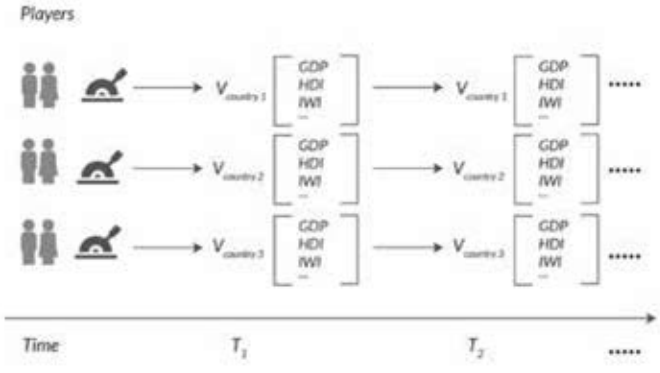
LEVERS OF CHANGE

A journey towards sustainability.

OBJECTIVE

At the Rio+20 Summit in 2012, a trio of organizations under the UN umbrella released an Inclusive Wealth Report. The report spoke about an 'Inclusive Wealth Index' (IWI) to measure a nation's development. Indicators already in use to understand development and progress such as GDP (Gross Domestic Product) and HDI (Human Development Index) do not consider environmental issues and its subsequent impact on our future.

The IWI is a way to acknowledge and articulate the interconnectedness of the economy, environment, and human well-being. A few decades from now, perhaps sooner, we will be talking about the IWI rather than the GDP as a way to measure development. But that requires different kinds of audience, including students, policymakers, politicians, educators, economists, and other such groups to understand the IWI and how it differs from and complements other indices.



Intended Audience
Students, educators, economists.

Keywords
Inclusive wealth, computer supported game, GDP, HDI, learning, economics

Type
Computer Supported Game

No.of people
Upto 20 players

GAME PLAY

Players prepare budgets using their judgements based on the national economic indices that are provided. This would include the IWI as well along with some of standard development indicators. The players will determine a course fiscal budget plan along with basic monetary policy based on the information provided to them by the indicators. The players will be free to follow the information afforded to them by any of the economic indicators to determine their policies.

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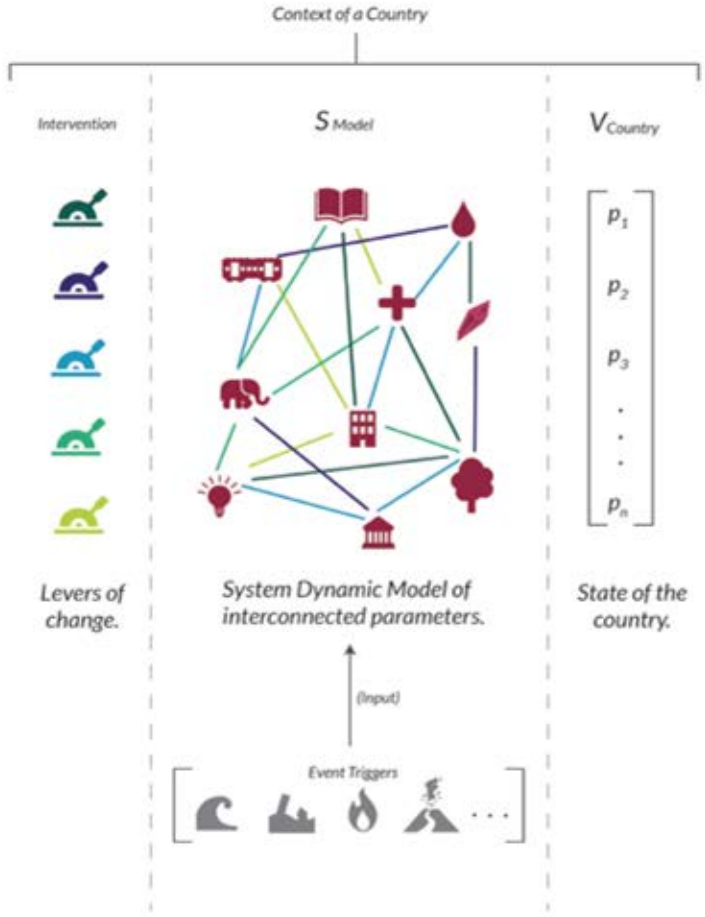

LEARNING OUTCOME

The following are the learning objectives for the players:

- The components that are used to calculate the IWI and how it compares other development indices such as GDP, HDI, etc.
- Indices are aggregated from a country's national statistics. Players learn how changes in national policies can alter different indices and what advantages does the IWI offer in understanding these changes.
- To encourage players to develop a futures orientation and apply the same to shape real life sustainable economic policies.

Acknowledgement
This research is funded and being carried out in collaboration with UNESCO MGIEP.

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JOINT ROAD FORWARD

A project that uses gaming and computerized simulations to study planning for mobility infrastructure and policy.

INTRODUCTION

The Joint Road Forward is a multi-year project aimed at developing gaming and simulation methods to better design mobility infrastructure and policies, leveraging different forms of relevant data, and participatory methods.

The research project is a collaboration between academia and industry in India and the Netherlands, with a goal to learn from both contexts. We will use mobility data mining methods to build specific mobility models, which form the base for the gaming and simulation platform.

Intended Audience
Policy makers, Transportation Industry, Academia

Keywords
Mobility, infrastructure, policy.

Collaborations
IIIT-B, TU Delft, KTH Royal Institute of Technology

APPROACH

Our approach leverages both gaming and computerized simulations, built and validated using data from Indian and Dutch contexts. Computerized simulations offer a space for experimentation at scales of cities, and gaming simulations provide the ability to use participatory approaches enabling multiple stakeholder engagement.

The goal of the project is to explore the role of transport infrastructure and mobility on the daily lives of people. Using gaming and simulations we intend to explore this in local cultural contexts of India and the Netherlands.

OUTPUT

Gaming and computerized simulations.

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