

By Demonstration: Catalyzing Change

BY DEMONSTRATION is a two-part exhibit developed for the 2013/2014 Urbanism Architecture Bi-City Biennale (UABB) held in Shenzhen and Hong Kong. The exhibit utilizes two interactive installations as a mechanism for exploring the process and work of Carnegie Mellon University's Urban Design Build Studio (UDBS). Both components of the exhibition developed by the UDBS serve as tools to educate the broader public about the potential of Public Interest Design. The development of the work and biasing of its content were in response to the curatorial statement and theme of the Biennale, The Urban Edge. . .

"In order to evolve and survive, complex systems have to maintain themselves "on the edge of chaos", exhibiting a sufficient level of order and organization to maintain some stability but also enough blurriness, uncertainty and disorder on their edges to enable restructuring and change.

JOHN E. FOLAN

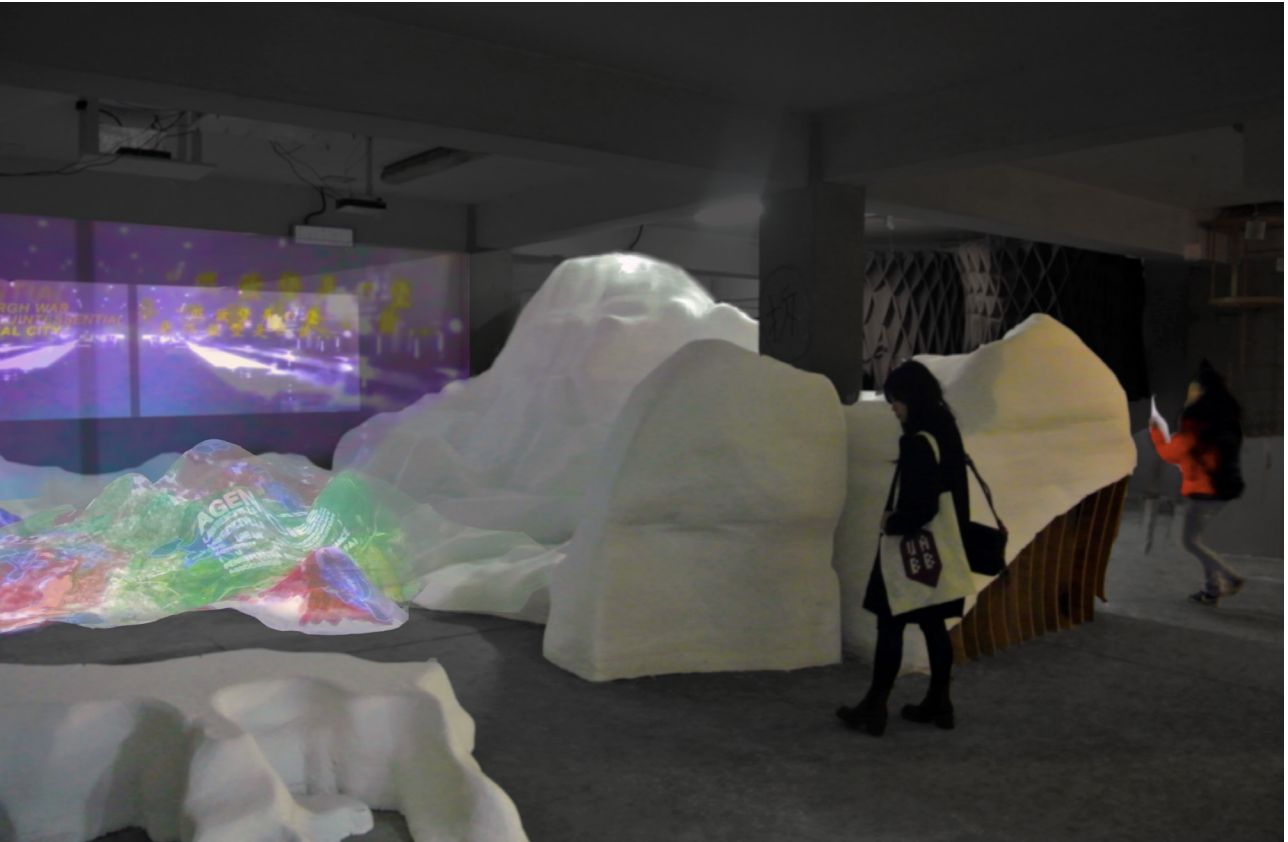
Carnegie Mellon University

Defined as such and seen as the edge between order and disorder, the known and the unknown, the old and the new, tradition and experiment, equilibrium and instability, the ideal and the real, the urban edge is crucial to the survival of the city, the most complex of all human artifacts.

The bi-city biennale this year, both in Hong Kong and in Shenzhen, will be devoted to the exploration of this notion of "edge". Exhibitors will be invited to give their own interpretation of a term that has many layers of possible meanings and implications when it comes to architecture and urbanism: it can be understood literally to define a topological and geographical edge, such as that between land and sea, built form and nature, center and periphery, or metaphorically as in the distinction between civilization and wilderness or as in the popular expressions "cutting edge", "edgy" and "having an edge".

Ever since cities, hundreds of years ago, broke down their walls and sprawled indefinitely to become what some see as one continuous "no-stop city", does it still make sense to refer to the edge? Is there still such a thing as an edge condition? Or is the edge everywhere? Can it even be perceived now as analogous to the center? Or, following our contemporary paradigmatic shift, technologically and culturally, from the material to the immaterial, from atoms to bits, is it rather the newly discovered edge between physical space and digital space? Is it essentially, in the last resort, the sensitive edge of our consciousness, desires, dreams and emotions pressing against the hard pragmatic constraints of daily existence?"

- Excerpt from Curatorial Statement



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RESPONSE

The Installations produced for the Biennale reflectively and projectively explore the work of the Urban Design Build Studio (UDBS) in suggesting a RE_Emergent Utopia. This is an alternative form of utopia; one that originates at the edge - in the marginalized and underutilized sectors of the city. It is predicated on immediate action through the implementation of built intervention. The programs for these interventions are tangibly relevant to needs of local residents and are entirely representative of their empowerment. This RE_Emergent Utopia is not characterized by a singular plan, image, or vision; this utopia forms by aggregation - it is an agglomeration of catalytic projects. The agglomeration is not subversive or dystopic - it is predicated on the reorientation of once viable structures and emerges from collaborative, transparent process - demonstrative of public interest.

The work of the UDBS is firmly tied to its own context - the social and economic conditions of Pittsburgh, Pennsylvania (USA). Process and strategy based, its relevance is intended to be universal. Proposals are systemically generative and biased to reinforce an articulated, primary objective of replicability. Replicability is reliant on careful consideration of tectonics, but is more deeply rooted in neighborhood capacity building through participatory process. BY DEMONSTRATION systemically illustrates the process utilized by the UDBS in public interest design. The installation focuses on the implementation of catalytic demonstration projects and the impact that they have on the immediate and regional context.

The primary physical reference point for considering the work of the UDBS and the re-emergent utopia is a scalar representation of Pittsburgh, PA. The physical form of the terrain is proportionally abstracted in the vertical dimension to characterize the unique geomorphic conditions of the Monongahela river valley with greater clarity;

Figure 1: View of BY DEMONSTRATION Gallery Installation

illustrating the city's existence as a collection of rooms. A series of layered sequential projections activate the terrain. The first layered projection presents the location and scale of a catalytic demonstration project through positioning on the terrain. The second layered projection, illustrates immediate spheres of influence that the project has manifest/conditioned. In the third layered projection, icons and data about the project appear. The icons illustrate challenges addressed and constituencies engaged - both public and private - through participatory processes to facilitate implementation of projects. The fourth set of projections illustrates the adaptive replication of the projects, revealing a phenomenologically viral transformation of the terrain and urban condition. The relevance of the transformations is positioned in the context of time; manipulating perception of corollary time to relevant change over a 100 year span through acceleration and deceleration of projections.

Pittsburgh's challenges with population decline are well documented.¹ The present physical landscape reflects the impact of related disinvestment and the urban decline cycle. The first 50 years of the projection focus on taking the observer from the nadir of economic prosperity and population expansion through the outmigration and disinvestment that has resulted in present condition. During the time frame represented, un-implemented master plans for each of the communities represented, and the city as a whole is revealed. The point of socio-economic stabilization, reached in 2010, sets the table for subsequent projected work in illustrating the significance of the RE_Emergent Utopia and the potential for immediate action as a mechanism for tangible, broad scale change on an accelerated timeline.

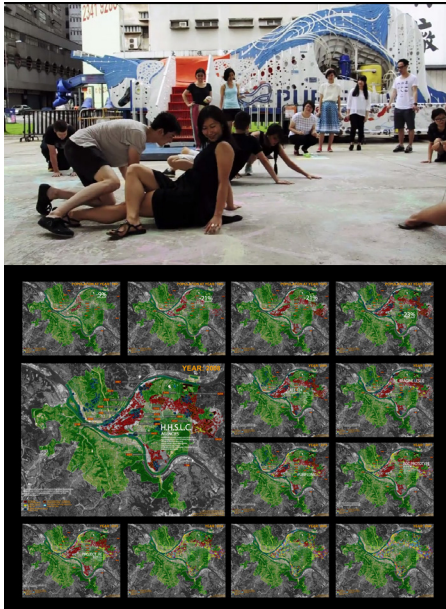
A film presented in triptych creates the atmosphere above the horizon of the constructed terrain. Three related frames, altering in proportion as content evolves, rapidly illustrate how the process utilized by the UDBS in realizing catalytic projects, impacts the data driven information mapped on the terrain below. The relationship of the projections establishes a threaded link between the stages of project development employed in the delivery of UDBS projects. The process components are: 1) Urban Analysis, 2) Analytical Research, 3) Urban Design Framework Development, 4) Opportunity Identification, 5) Objective Identification, 6) Stakeholder Identification, 7) Program Development, 8) Constituent Engagement, 9) Project Funding, 10) Project Design, 11) multi-scale systems development, 12) Construction, 13) Monitoring and Post Occupancy Evaluation, 14) Replication, and 15) Policy Change.

A product of this process is represented by the PURIFLUME. It is the second, and complimentary component of the BY DEMONSTRATION exhibit. Deployed at the East Kowloon Promenade, and made visible through a portal provided in the gallery exhibit enclosure, the PURIFLUME presents as a physical manifestation of concepts presented in the projected content. It is also utilized on site as a backdrop for events focused on catalyzing change in Hong Kong.

The PURIFLUME is a mobile spray park and first generation prototype for a passive closed Loop water filtration system developed in response to environmental threats caused by Combined Sewer Outflow (CSO) and Non Point-Source Pollution problems in Pittsburgh and post industrial cities throughout the American rust belt. Simultaneously benefitting underserved communities with a recreational amenity and transforming zones of neglect, this proof of concept project is being utilized to educate the public about regional water management issues while providing essential data needed to support the administrative adoption of new technology and design strategy in public facilities – to affect Policy Change.

To establish the relevance of these artifacts at the UABB, and to the local condition, a

Figure 3: 06_Caption text, *title text*



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Figure 2: PURIFLUME Installed at East Kowloon Promenade During DEMONSTRATE Pocket Park Event (top), Deployment and Effect Mappings related to PURIFLUME projected on terrain (bottom)

monitor embedded in the constructed/representational terrain identifies the agencies, relationships of agencies, and logistics involved in the approval process of the PURIFLUME. Corollary agencies, relationships, and logistics that would be required to implement the project and affect change in China are identified in parallel. Provided with access to a participatory process, projective vision of a RE_Emergent Utopia, a situated demonstration project, and a localized logistical outline, BY DEMONSTRATION was calibrated to empower and offer individuals an imperative challenge: WHAT WILL THEY DEMONSTRATE?

DEVisING VISCERAL RELEVANCE

The relevance of Hong Kong and Pittsburgh to one another is not apparent. There are vast differences in population and population density. One is predominantly identified as an island, the other land locked and navigated by river. Political systems can represent polar extremes. And, they occupy opposite sides of the globe. One position that is common in Biennale exhibitions is that differences are to be celebrated. That can be risky, particularly when addressing Public Interest Design explored through the lens of Design-Build. The objective in making the content relevant had to be understood viscerally.

As different as Pittsburgh and Hong Kong appear on the surface, they are very similar in physical characteristic. Both are topographic cities – roads are not ordered by human convention, but by what the landscape will allow. Both are mountainous terrains, where communities and neighborhoods are geomorphically separated from one another. Both rely on multiple business/service centers associated with separate/distinct communities. Both are infrastructure heavy – to navigate water, and the mountainous terrain. Evidence of Pittsburgh’s condition is communicated through the following quote:

“The city of Pittsburgh lies unevenly upon unruly land. Communities and neighborhoods are variously defined by hills and demarcated by hollows. Buildings may be two stories on one side and four or five on another. There are a great number and variety of contrivances for scaling, connecting, and otherwise negotiating the terrain, ranging from bridges to tunnels to inclined planes and public steps. Landforms shape topographical space and the city occupies that space with tenacity and verve.”

- Martin Aurand, *The Spectator and the Topographical City*

The staging of the gallery exhibit focused on the fabrication of an experience that would viscerally embed someone in the landscape where UDBS work is executed and make apparent the similarities over differences that exist between the two contexts. The approach and sequence of views through the exhibit is modeled after the experience of entering the city of Pittsburgh through the Fort Pitt Tunnel under Mt. Washington. From the southwest entrance of the tunnel, the hilly mountain obscures any sense of an existence of a city. Inching toward the exit at the northeast end, the edge of the tunnel gradually crescendos, revealing a spectacular view of the Golden Triangle; the confluence of the Allegheny River and the Monongahela River, and the commercial center of the city, which sits on the undulating unglaciated Allegheny Plateau.

Topography in the exhibit is exaggerated to demonstrate the impact of Pittsburgh’s topography on defining neighborhoods in the region. Pittsburgh and the exhibit are formed from the mountains and rivers and the way in which humans experience those elements. Two parameters inform the z-axis manipulation of the geographic form of Pittsburgh: the first-person perspective and experience of the city and the relationship between the built environment and topography of the city. Terrain is

distorted exponentially different rates and expressed through different formal languages. Areas further away from perspective are extruded less intensely in order to model how one experiences viewing of the landscape; those closer more intensely to physically contain the viewer – physically clarifying the diagram of Pittsburgh as a collection of rooms.

THE MESSAGE

The differentiation and characterization of these neighborhoods is important to understand since the same conditions exist in Hong Kong. The physical making of the terrain, not detailed here,² was intended to further enhance an intuitive understanding of relevance – to make the delivery of content borne messages more potent and navigable.

UDBS projects, as is common in public interest design, are predicated on addressing the specific needs of a marginalized community. While situations vary locally, persistently distressed urban neighborhoods often share baseline characteristics. These include history of low or poorly targeted investments from the public and private sectors, poor connectivity with institutions, segregation from economic vitality, high rates of crime, and often - racial or class segregation that severely limits opportunities.

As these issues are interrelated, they must be addressed holistically. The objective in UDBS projects is to help neighborhoods develop the knowledge, skills, relationships, interactions and organizational tools that enable residents, civic leaders, the public sector, the private sector and local organizations to create comprehensive neighborhood revitalization plans. With this explicit objective, the BY DEMONSTRATION Exhibit focused on providing visitors with a set of evidence based tools, best practices, and strategies for building capacity in Public Interest Design.

CAPACITY

The UDBS collaborates with residents to create cross-sector partnerships that 1) enable the implementation of meaningful projects for the communities and 2) build capacity. In the context of UDBS work, capacity is defined as the combination of knowledge, skills, relationships, interactions and organizational resources that enable residents, civic leaders, the public and private sectors and local organizations to transform neighborhoods into places of opportunity. An equitable approach to building strong neighborhoods where residents can succeed requires intentional efforts to build and sustain capacity. The UDBS and partners work in communities to develop a framework of capacities that are essential to creating successful and sustainable neighborhood transformation and empowerment. They are:

- 1) Managing a community process to achieve results,
- 2) Resident engagement,
- 3) Creating accountable partnerships,
- 4) Using Data,
- 5) Designing and Implementing Effective Solutions,
- 6) Economics/Financing,
- 7) Organizational and Leadership Capacity,
- 8) Policy Influence,
- 9) Communications Strategies to Build Public Will

Building neighborhood capacity is important because it helps communities develop, implement and sustain plans that make them successful, vibrant and high-functioning places to live. UDBS projects build from lessons learned in past public interest based initiatives and focus on nine capacities. Each capacity is critical for a different reason, and in combination, they have proven to achieve results.

RESIDENT ENGAGEMENT

Resident engagement is the core element of public interest work. Engaging residents in meaningful relationships as owners, leaders, implementers and experts



Figure 3: construction of terrain in Shenzhen, installation in Hong Kong



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Figure 4: Film Stills from BY DEMONSTRATION exhibit explaining process and tenets in capacity building for Public Interest Design

throughout the project development process means building on where the energy of the community is, allowing residents to use their experiences to define the community’s results agenda and leveraging their relationships with other residents to help engage the community to ensure everyone has a stake in achieving in the desired results.

This is important; Residents are experts about their community. Their well being ultimately depends on the opportunities available in their communities. Engaging all residents – community leaders, multi-generational residents, youth, elders, and those from diverse backgrounds and immigrants – ensures that the community change efforts meet the needs of everyone living in the community. Engaging residents in any of many ways throughout the implementation of community change efforts can build a sense of ownership that empowers residents to advocate for what they need. Engagement builds the interest, knowledge and momentum needed to sustain efforts into the future.

ACCOUNTABLE PARTNERSHIP

Accountability strengthens and improves collaborative processes requiring participation from various members and multiple sectors of the community. Building mutually accountable partnerships with residents, organizations, businesses, leaders and other stakeholders utilizes the knowledge and expertise of the community. When responsibility is shared, it is more likely that the resources necessary to plan, implement strategies will sustain and that results will be feasible.

It is important to recognize that each participating member of a community has skills and experiences that will inform community change efforts. Recognizing those strengths and assigning relevant responsibility, in conjunction with building new strengths increases the level of personal investment made. Intentional collaborative partnerships are an integral part of acquiring resources needed to achieve results. Having a shared stake in identifying resources and outcomes ensures that there is shared accountability for making a neighborhood better. Structuring accountable partnerships with residents is particularly important as they can often best determine the needs of their communities and the potential solutions that will have the greatest impact to their own lives.

DATA

Data is a critical component of the UDBS process. It fosters understanding, clarifies the nature and extent of challenges, then tracks, informs and guides the needs of the community through the implementation process - focusing on results and impacts. Using data helps define how to target the intended results – and for whom – to learn and make on-going adjustments for improvement and accountability.³

The needs of a community may often seem obvious. The anecdotal/observational identification of challenges is critical, but GIS and other data driven systems can provide a more detailed and nuanced picture of the current conditions that individuals, children, youth and families might have knowledge of or recognize. Data can clarify demographic variables, demonstrating how different populations in the community have fared or are impacted. Gathering data and distilling it in a visual language those residents understand and find useful aids in articulating the needs of the community and identifying potential solutions.

DESIGNING AND IMPLEMENTING EFFECTIVE SOLUTIONS

Once local data has been analyzed to refine the understanding of resident needs, design and implementation strategies can be developed. In challenged communities

high risk must be avoided in favor of limited risk. Evidence based design and precedent are fundamental in developing solutions. Beyond the physical manifestation of a structure or structures, the programs for the projects address intangibles like increased opportunity, formal service, information supports and deliberate protective and promotive factors that help ensure residents thrive. These factors must be regionally specific and well suited to the community's context if there is any likelihood of achieving better results.

Understanding precedent and evidence based design research about effective, successfully implemented solutions that remain flexible to match the individual needs and cultures of families and residents holds real promise of creating better life outcomes in the neighborhood and community. This approach supports creativity through proven, data-driven innovation over raw invention in developing new solutions.

ECONOMICS

Broad-based, comprehensive community change requires a coordinated approach. There is a range of potential funding streams to consider. Depending on the form of project, they can be grant based or finance based. Some projects are more suited to one-time single investment; others require multi-year and/or diversity financing approaches. To be successful, the approach should focus on leveraging, co-investing, and redeploying current funds to support services and infrastructure that will have the greatest impact and sustainability. Communities often find themselves chasing whatever funding sources are available instead of creating plans to identify new resources. Leveraging resources creatively through financing and partnerships in combination with grants reinforces accountability in the delivery of a project.

The capacity to calculate the costs of achieving better results, map current resources available, develop financing strategies and identify a mix of funding and other resources while developing future oriented solutions is critical to projecting neighborhood sustainability. There is often a tendency in public interest design for the effort to be monocularly focused on the project at hand, which often translates to innovation and impact only lasting as long as an initial funding stream is available. Communities that begin planning for financial sustainability and link their investments to the results they want to achieve from the first day forward are most likely to weather changes or a loss of financing without a loss of momentum.

ORGANIZATION AND LEADERSHIP

Organizational and leadership capacity as fundamental to success in public interest design work is most likely self-explanatory. They are core components that help guide, govern, track and maintain the efforts that effect substantive and lasting change. The development and support of those who are already leaders, those who are emerging as leaders, and those who have yet to step forward is necessary for transition and transformation. Individuals and organizations that maintain credibility within their circles of influence and the community are poised to be drivers of necessary change. And, they come from diverse socio-economic, ethnic, geographic and racial backgrounds – they are cross-sections of the residential population. There are numerous, diverse avenues for residents to become involved and to become leaders. Resident leadership, including youth, is crucial to any authentic effort to improve results for persistently distressed neighborhoods.

POLICY

Public policies are the laws, regulations and rules governmental bodies, such as legislatures and public agencies, enact or adopt. When these policies, in whole or in

part, impede outcomes for individuals, children or families using influence becomes a critical capacity for addressing these barriers. The ability to influence how policy is developed, implemented or changed plays a major role in improving outcomes for children, families and communities.

While communities can make great strides in achieving desired results on their own, work often occurs in a complex environment that is created in part by public policies. Sometimes, these policies can have unintended outcomes and hinder a community's efforts to bring about significant, sustainable change. These challenges should be carefully considered when defining results and implementing strategies that target results. By developing partnerships with system leaders, policymakers and their staff and other stakeholders, policy can be influenced in ways that either directly enhance the desired results or at least improve the ability to pursue them.

COMMUNICATIONS STRATEGIES TO BUILD PUBLIC WILL

Communications are the messages and tools a community disseminates to inform and influence broader audiences, including political leaders, partner organizations and residents. Effective communication utilizes data about the community, its needs and the progress it is making to motivate audiences, build public will and garner political support for an initiative.

Generating broad public support and influencing policies and practices is critical to a community's success. Change efforts will involve many stakeholders, who are involved in various stages of the process and to varying degrees. Effective communications not only keeps the momentum going, but also ensures that all members of the community are aware of, engaged in, and have deep understanding of efforts. Strong communications can also help to use the results agenda build both public and political support among community stakeholders, political leaders, individuals, and potential financial supporters who reside outside the community and may be needed to broader/larger scale change.

RECURSION

The UDBS projects represented in the BY DEMONSTRATION Biennale exhibit to illustrate capacity building, and the impact of public interest work in near term time frames are the Hamnett Homestead Sustainable Living Center (HHSLC), CAFÉ 524, RE_IMAGINE LESLIE, PURIFLUME, P_PATCH, RE_VAMP, Six Percent Place, Action UPtown, RE_VIEW, BGC Residential Prototype and the 60K HOUSE. Information relating to the nine points, and levels of success in fulfilling the capacity framework are expressed in mappings through intensities and scale of influence. The mappings and data sets are being maintained as living documents, contributing to the information that has influenced the development of previous work. Solutions to aggregate urban issues, as positioned in the projective mapping content will remain to be seen. Utopia is too strong a word, but potential exists for re-emergence. If it is fulfilled as projected, that is suggestive of a positive urban future. If not, the mappings serve as tools in a recursive process – one to which university affiliated design build entities are situated well in helping with.

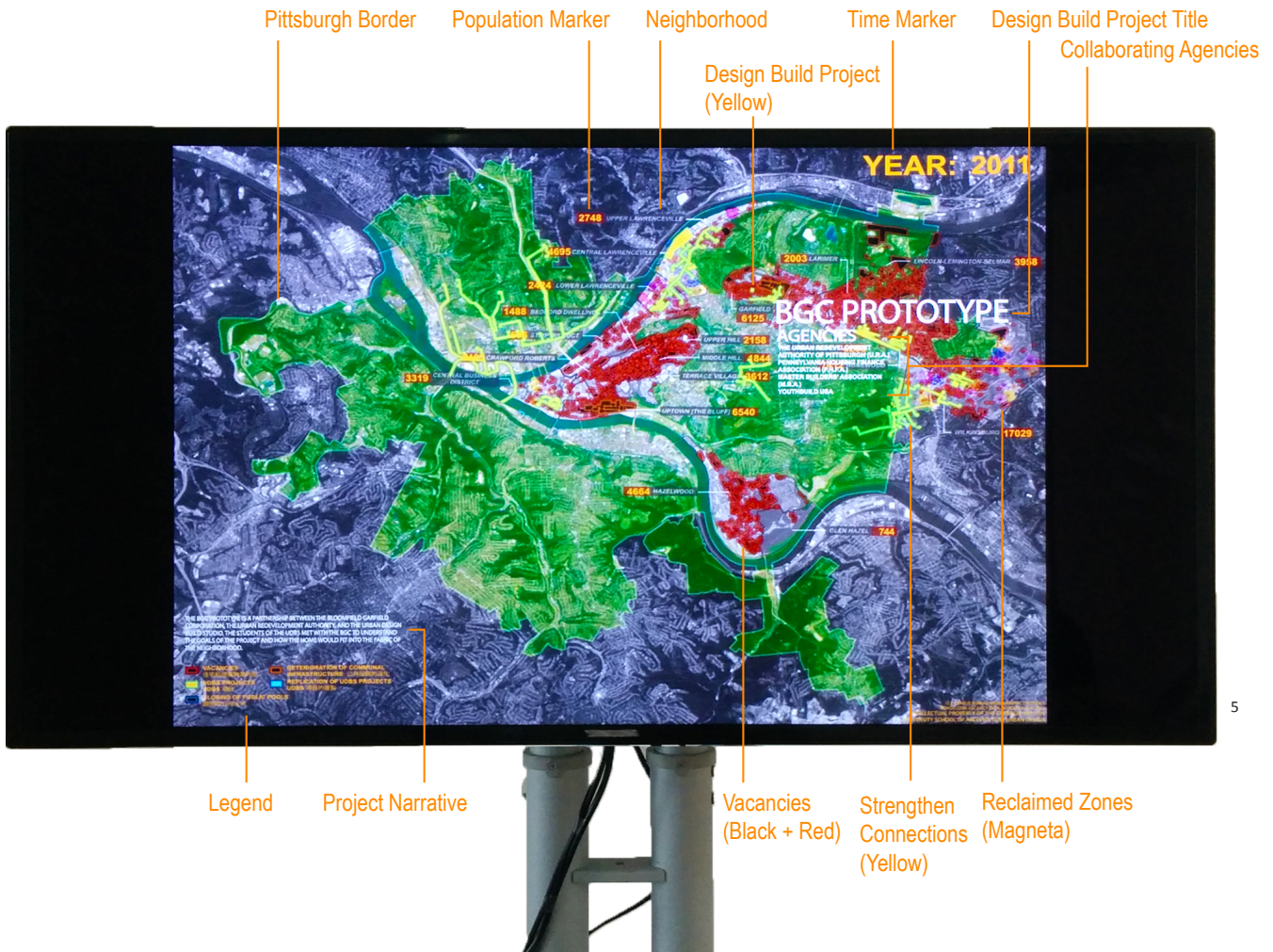


Figure 5: Diagram explaining the modeling of Public Interest Design and impact by project. This series of projections/films remains a living document for the evaluation of project success and failure.

ENDNOTES

1. The demographic changes in Pittsburgh have been documented throughout literature and research on Shrinking Cities. Most reliable research on the topic has been published by the Rand Corporation and the Economist.
2. The terrain was modeled and developed utilizing Rhino and Grasshopper software. The final versions were utilized to create MasterCam and RhinoCam files to facilitate milling of the terrain. The terrain was built as a modular system in Shenzhen and transported to the site in Hong Kong for final installation.
3. Refer to value of data in Kresge Foundation Report November 6, 2008