TECH-CART

Tactically **E**mpowering **C**ommunity **H**ubs via **C**ollaborative **A**pplication **R**equested **T**railers

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As populations increase across the globe, there has been a dramatic increase in the growth of unplanned cities and the many significant problems that arise as a result. TECH-CART presents a solution to combat some of these problems by proposing the development of a *Temporary Urbanism* in the city of Lima, Peru. Lima is a city with a wide range of *socio-economic diversity* and presents a terrific example of the scope of problems that accompany the growing density of urban spaces. TECH-CART delivers real solutions in a response to real needs by creating a responsive and adaptive urban environment that can integrate different functions into a coherent system. It emphasizes an unbounded landscape rather than an over-coded delimited environment. TECH-CART will revolutionize how the city of Lima is served.

Instead of focusing on what urban design is or should be, the focus of this project is on how decisions yield desired outcomes and on the processes that are followed. To address the rapid growth of unplanned areas in cities like Lima, this approach involves focusing on ways to empower people to become active participants in improving their living conditions. Rather than offering a top-down solution, TECH-CART will empower people by offering a bottom-up method of delivering a variety of relevant, need-based services. These services require input, participation and feedback from the community regarding the types of services offered, as well as the quality of service provided. Through the use of technology, residents of a community have the power to choose which services are offered, and have the opportunity to evaluate the services. Furthermore, the services provide job opportunities in the ever-growing field of technology which will contribute to the stimulation and growth of the community. TECH-CART will bring the members of a community together through the development of services that require group participation, as well as basic services like health-care and education which are individualized but certainly necessary to improve the living conditions of any community.

Lima has a rapidly growing population of the lower economic classes, and this is largely evident on the periphery of the city. The evidence includes consistent requests for higher quality but affordable health-care, increased levels of education for all population groups, better access to the Internet as well as increased technological advances, and more frequent neighborhood-level social activities. Unemployment and underemployment are also serious problems plaguing Lima. TECH-CART will create new jobs as it provides access to services.

This proposal primarily addresses the informal neighborhoods that have grown exponentially since the 1940's. These neighborhoods have the greatest lack of resources when compared to the rest of Lima. Economic and social development of these areas can be stimulated with flexible programs that provide structured activities, The Tech Cart menu of services addresses a wide range of needs that can enrich the everyday quality of life for the residents who participate in the Tech Cart system.

TECH-CART mobile units will generate spaces for people to gather and receive services that have been requested based on community needs. The proposed services are based on research about informal neighborhoods conducted by many scholars (such as Angela Bayer, Robert Gilman, Amy Tsui, Michelle Hindin) over the past few decades. The TECH-CART concept and initial menu of service arose from this research and our recent field studies in Lima. The menu consists of a communal kitchen, a healthcare clinic, a cyber library, and an entertainment hub. These amenities would allow the informal communities to grow and achieve greater potential. Growth is enabled through feedback received from participants. This feedback will be analyzed to offer a greater diversity of services in the future as needs and aspirations in the neighborhoods change. This system empowers people through freedom of choice and promotes a bottom-up dynamic.

Recent research indicates there is rapid, significant rise in cell phone usage in Lima. Based on this fact, the system is designed to allow each neighborhood community leader to request a specific mobile program via phone or app. These requested mobile units will be delivered and placed in a designated location in the neighborhood for people to easily use for a specified amount of time. During this time, the TECH-CART unit will gather information in order to provide feedback to the system regarding neighborhood participation and participant evaluation of the program. This will provide data for determining if the specific unit is effective or not and will help the program analyze how to provide higher quality services in the future as requests for the mobile units continue in that neighborhood.

Lima's geography and the dynamic growth pattern of informal settlements demands small units that are capable of navigating densely populated areas. In these areas, there is a wide variety of street widths. Some streets are only wide enough for a single vehicle, therefore the prototype mobile units have been limited to a width of 5 feet. By creating units that can navigate all sizes of streets, more participants can be involved in the program.

Art in public places is highly valued in the neighborhood where TECH-CART would operate. A practical way to involve community members in the production phase of TECH-CART is to enlist their help in the exterior design and decoration of the mobile units. This will further encourage community involvement in the project. It will also reinforce the notion that these units exist to serve the the community, and, hopefully, foster greater acceptance by the community.

TECH-CART mobile units will be equipped with solar voltaic panels to supplement (or provide totally) the energy required to fuel them. Considering that the average daily global horizontal radiation levels in Lima range between 880 BTU/sq.ft/day (June) all the way up to 1809 BTU/sq.ft/day (January) we can rely on solar power to provide a significant portion of the energy required to operate TECH-CART.

A World Bank 5-year (2017-2021) - $100 million project, which aims to "strengthen the Science, Technology, and Innovation (STI) System in Peru in order to improve research skills and firm-

level innovation" appears to be a viable option for the financial support of TECH-CART. According to the background information provided in this project's call for proposals: "Peru's economy is one of the fastest growing among nations in Latin American and the Caribbean. It grew at an average rate of 6.4 percent per year during the last decade. However, large income and productivity gaps still exist in relation to high-income countries. Its output per worker is still only 25% of the United States, 35% of Mexico, and 36% of Chile."

The call for proposals also states that to sustain growth:

"Peru needs to spur productivity, and that firms' productivity growth depends on their ability to effectively innovate. In order to become more competitive and increase productivity across the country, Peruvian firms need to invest in high-return innovation."

Additionally, the call for proposals asserts that:

"Firms in Peru operate in isolation, often compete in low-margin strategic segments, and need to improve their strategic focus. Furthermore, most of them are not connected to research institutions, so they don't benefit from the knowledge gained and associated technology transfers."

TECH-CART will yield a product that stimulates multiple worthwhile research opportunities for assessing technological advancement, economic development, and socio-political change.

TECH-CART is well-suited for this World Bank project because of its innovative information technology system, which implements a feedback loop, allowing users to evaluate their experiences through computer or mobile phone applications. The use of the system to track user statistics will support continual evolution of TECH-CART programs and services, maximizing the potential for high-returns on investment. Compatibility between TECH-CART and the World Bank would be welcomed in Lima and help the city foster success regarding the STI System initiative.

TECH-CART is a temporary urban construct that affords a progressive platform for participation, A physical intervention in the space of everyday life. it is also a tool to analyze a community's unique values, needs, and aspirations. The data gathered by the TECH-CART system will lead to a more holistic process of urban development where all areas of action - morphological, perceptual, social, visual and functional - are considered together.