Making the Business Case for the “Smart” Campus: Using Geo-spatial Data and VGI to Support Transformational Leadership

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Context

The historical evolution of the American university has always been shaped by high minded ideals of knowledge acquisition for its own sake, balanced with pragmatic concerns about acquiring practical and marketable skills. At present, over 21 million students are enrolled to attend one of over 4500 institutions of higher learning in the United States. Most of them are in pursuit of academic credentials that can lead to gainful employment. Yet, the higher education system is severely challenged by declining public investment, soaring costs related to employees’ retirement and health benefits, and escalating student debt. As the nation’s universities and colleges experience a crisis-induced transformation, it seems prudent to make a business case for just about any issue that we want our campus leaders to focus their attention.

In this position paper, I intend to make three linked arguments – first, that addressing the issues of sustainability and human-induced climate change is one of the most dominant challenges of our time; second, that our colleges and universities are collectively well positioned to address these challenges by using their physical settings and sites for pragmatic interventions in addition to their more conventional contributions in the areas of research and teaching; third, that the potential of the use of geospatial technologies to facilitate innovative decision-making about sustainability and climate change at the campus level remains largely untapped. I will conclude by describing some opportunities for institutional collaboration and action around these issues where the engagement of industry and community partners can make a meaningful contribution. In my presentation, I will discuss the specific case of Portland, Oregon.

Why Sustainability, Why Now?

The impacts of rapid population growth and human-induced climate change have made addressing sustainability one of the more pressing and challenging issues of our time. In the literature and in accepted best practice, addressing sustainability often means considering the triple bottom line—balancing economic, social, and environmental considerations to assure smooth operations within an organization. For institutions of higher learning, championing the sustainability agenda appropriately includes addressing the educational and research mission as well. Beyond the philosophical and moral imperatives to consider sustainability, the threat of human-induced climate change impacts on our cities and communities challenges leaders across
all sectors to work on practical and measurable interventions. In a recent study of 1000 CEOs across the world that included 27 industry sectors in 103 countries, 29% of CEOs regarded climate change as one of the most important sustainability challenges for the success of their businesses while a full 67% of respondents indicated that business was “not doing enough” to address global sustainability challenges (Accenture, 2013). One of the main points made by the business sector is that there is a need to address the issue of scale—to understand the magnitude of problems, to respond appropriately, and to move from incremental achievements towards “a new global architecture” to balance the complexity of the challenges. Other concerns raised by the business sector include the need for intelligent infrastructure that supports collaborative decision making and supports a serious multi-directional dialog with a variety of stakeholders. Enlightened business leaders recognize that they need to engage government regulators, policymakers, industry peers, consumers, NGOs, investors, shareholders, employees, and labor unions to achieve sustainability goals and address climate change and associated challenges.

What is the Role of the University in Promoting a Sustainability Agenda?

Universities and colleges have always been centers of innovative thinking. The American model of the land grant/extension service program developed in the late 19th and early 20th century firmly established the ideal of extending the knowledge and expertise present within the academy in service of the region. While the traditional extension programs had many positive benefits such as providing expertise and guidance to improve farming practices, they also created a hierarchical relationship that sometimes devalued local knowledge and experience. Yet, the land grant/extension service model, supported through government funding fundamentally changed rural America. More recently, the student protests and activism of the 1960s helped foster university-based design/planning centers that focused on addressing community concerns. These efforts, largely urban, developed innovative models of community outreach and engagement to harness resources available within the university to respond to the needs of the neighborhood surrounding the university. The community-university partnership model, also supported with federal funding, has helped to shape urban America. In the 21st century, there is an urgent need for universities and colleges to provide expertise, experience, and guidance to address sustainability related challenges. Both models of university-based engagement with communities can be usefully deployed to address sustainability challenges and in fact many universities are doing exactly that. However, sustainability related activities and investments in universities and colleges are largely uncoordinated. The physical configuration of a typical American university campus with multiple physical locations and an increasingly emergent online presence further compounds this problem. As our populations become concentrated in urban areas, urban serving universities, in particular, have to directly confront these challenges through direct services provision, training, and capacity building. Universities can also serve as test beds for innovative ideas that are backed by “good” science and make the science accessible to support individual and community empowerment. Lastly, the technological
and data infrastructure now allow for citizen science efforts in the area of addressing
sustainability challenges that offer great promise to support a distributed and decentralized
approach to problem solving.

**Campus Sustainability – Modeling and Embedding Best Practices**

According to Ferdig (2007), “sustainability leadership reflects an emerging consciousness among
people who are choosing to live their lives and lead their organizations in ways that account for
their impact on the earth, society, and the health of local and global economies.” (p. 26). In the
context of the American university setting, the university is made up of at least three distinct
interest groups, administration/staff, faculty, and students. Thus, leadership on a university
campus to address sustainability challenges almost always requires conversations and processes
of work flows that are agreed upon through consensus before any actions can occur. Thus
advocacy becomes an integral element of leadership on university campuses. In addition,
university and campus leaders cannot use a narrow interpretation of sustainability in
energy/environmental terms alone and must consider social sustainability as well. There are
many successful models that support best practices in addressing sustainability challenges.

The American College and University President’s Climate Commitment (ACUPCC) is an
alliance of college and university presidents who have voluntarily chosen to use their positions of
leadership to create comprehensive climate action plans using collaborative and transparent
processes within their own institutions. The goal is to achieve climate neutrality (net zero) in
specific campus operations, promoting education, research, and development of specific
solutions to address climate change challenges and to publicly report on their progress. At the
end of 2012, 677 universities have signed the ACUPCC commitment directly and indirectly
engaging over 6 million students. 1583 GHG inventories and 465 climate action plans have been
submitted and these plans can be evaluated and monitored by the public. The ACUPCC
engages all sectors of the higher education spectrum from public to private, from community
colleges to research intensive universities, and in all 50 states.

The Sustainability Tracking, Assessment, and Rating System (STARS) developed by the
American Association of Sustainability in Higher Education (AASHE) is a reporting framework
designed by higher education professionals for higher education institutions to measure and
manage their sustainability performance. STARS is designed to:

- Provide a framework for understanding sustainability in all sectors of higher education;
- Enable meaningful comparisons over time and across institutions using a common set of
  measurements developed with broad participation from the campus sustainability community;
- Create incentives for continual improvement toward sustainability;
- Facilitate information sharing about higher education sustainability practices and performance;
- Build a stronger, more diverse campus sustainability community

(Source: [https://stars.aashe.org/pages/engage/stars-overview.html](https://stars.aashe.org/pages/engage/stars-overview.html))
In addition to these comprehensive efforts, there are many individual efforts ongoing at several university campuses. In my presentation I will discuss the ongoing work of the Urban Sustainability Extension Service at Hunter College and the work of the Institute for Sustainable Solutions at Portland State University. If the participants at this meeting are in agreement with my view that what can get measured can get managed— in other words, that assessments and tracking are incredibly useful to support the cause of sustainability, then the ACUPCC’s efforts and the STARS assessments must be applauded and supported by our GIScience community and our expertise and experience must be linked within these reporting efforts.

How can Geo-spatial Data and VGI Support These Efforts?
The ACUPCC Climate Action Plans and the STARS rating systems both track different activities that occur on a university campus. In STARS, there is a focus on Academics; Engagement (campus and public); Operations (including building management, grounds, dining, energy, purchasing, water, waste, and transportation); and Planning and Administration. Similarly the ACUPCC plans focus on investments in research, curriculum/teaching, and community engagement in addition to measuring the impacts of new construction, transportation, and other campus operations like purchasing. Both these systems are simplified to make reporting and data collection less onerous. Yet, they focus on a static approach to data collection, measuring information in specific reporting time intervals. In addition, both these efforts seem particularly void of spatial thinking and reasoning.

I believe it would be an interesting challenge to explore how the ICT and visualization experts assembled at the Spatial Campus meeting can engage with efforts from the higher education community to develop a more robust data collection schema into the data collection efforts. Engaging citizens (students, faculty, employees and administrators) as participants in the data collection can be a big data challenge and an opportunity. It will be intriguing to explore how the static data collection protocols can be transformed to be a more time-sensitive data collection and analysis effort. It would be reasonable to expect that protocols be established to support open source data tools used and that a transparent data infrastructure is adopted. In addition, there will be a great need to support data and information literacy across the university and facilitate protocols for data ownership and ethical data sharing including providing opt-out options for people/groups who can choose “not to be sensed” (Rockefeller Foundation, 2013).

Selected References


Perry, D and W. Wiewel (Eds.) 2011. The University as Urban Developer: Case Studies and Analysis. New York: M.E. Sharpe, Inc. in cooperation with the Lincoln Institute of Land Policy.