Advancing the Spatially Enabled Smart Campus

MARGARET R. TARAMPI
Junior Research Fellow
SAGE Center for the Study of the Mind
University of California, Santa Barbara
Email: margaret.tarampi@sagecenter.ucsb.edu

The “spatially enabled smart campus” alludes to two complimentary efforts—the spatially enabled society and smart cities. The spatially enabled society refers to advances in the management and organization of people, environments, and economies as a result of making location and spatial information freely available to people and businesses. It is intended that the availability of such information would encourage the development of creative goods and products (Rajabifard, Bins, and Williamson, 2007). The focus is on spatial data infrastructures. Smart cities, on the other hand, is a concept emerging from urban planning and urban design that takes into account six interconnected dimensions—smart mobility, smart environment, smart people, smart economy, smart governance and smart living. It is believed that sustainable economic growth and effective, efficient governance can be achieved by investing in social and environmental capital and infrastructures (Caragliu, Del Bo, and Nijkamp, 2009). The focus is on improving cities by leveraging new technologies. The spatially enabled smart campus, therefore, implies the merging of these two concepts in order to promote the broader goals of fostering creativity and sustainable practices. This would suggest that key players in this venture would likely include cognitive psychologists as well as architects.

While it is a useful exercise to imagine an ideal future smart campus given a blank slate, the reality is that student enrollment is continuously increasing on our current campuses, and existing infrastructure (both the built environment and spatial data infrastructures) cannot be easily cast aside. So how does the idea of a smart campus work with our current standards?

As university communities—students, faculty, and staff—become more diverse, consideration should be given to individual differences in spatial thinking (Hegarty and Waller, 2005; Newcombe and Shipley, in press). Spatial thinking is multifaceted involving the interrelated abilities of understanding space, representation, and reasoning. It is central to everyday decision making, communication, and navigation and is critical to success in the STEM (i.e., science, technology, engineering and mathematics) disciplines (Newcombe and Shipley, in press; Wai, Lubinski, and Benbow, 2009). As new systems and methods for doing things are developed to compliment smart campus initiatives, these systems will only be efficient and effective if they are designed with the cognitive abilities and limitations of the users in mind.

Additionally existing soft and hard infrastructures need to be retrofitted or adapted to meet the growing demands of modern campuses. Given this context (adapting infrastructure v. new infrastructure), how can we still achieve the goal of a spatially enabled smart campus? Is there a way to phase the development of a smart campus that is also “smart” in that functionality or productivity is not lost during any step of the process? Architects and designers are trained to
solve problems given a set of constraints. They deal with the issue of sustainability on a large scale. The role of the architect or designer in the spatially enabled smart campus is through the design of physical infrastructures, which humanize the technology. They create the interface through which people experience the smart campus physically and digitally.

Many stakeholders are clearly involved in advancing the spatially enabled smart campus—political leaders, urban planners, engineers, etc. Each brings different expertise and agendas to the conversation. As someone who is trained as an architect and a cognitive psychologist, I am no different. To realize the spatially enabled smart campus, a holistic approach is necessary, that considers both an integrative and an inclusive approach.

References:
Caragliu, A., C. Del Bo, and P. Nijkamp (2009). Smart cities in Europe. Vrije Universiteit, Faculty of Economics and Business Administration.