



## Speakers

### SPATIALLY ENABLED SMART PLACES



**Introduction by:**  
**Werner Kuhn**

Ph.D., University of Münster, Germany  
Professor, Department of Geography  
Director, Center for Spatial Studies  
University of California, Santa Barbara (UCSB)

**Werner Kuhn** holds the Jack and Laura Dangermond Endowed Chair and is a professor in the Department of Geography at the University of California, Santa Barbara (UCSB). He is also the director of the Center for Spatial Studies at UCSB. His main research and teaching goal is to enable transdisciplinary research through spatial information and computing. Before joining UCSB in 2013, Kuhn was a professor of Geoinformatics at the University of Münster, Germany, where he led MUSIL, an interdisciplinary semantic interoperability research lab ([musil.uni-muenster.de](http://musil.uni-muenster.de)). He holds a doctorate from ETH Zurich in Survey Engineering and was a post-doctoral researcher with the National Center for Geographic Information and Analysis (1989–1991) as well as with the Vienna University of Technology (1991–1996). He is co-founder of the COSIT Conference Series (since 1993) and of the Vespucci Initiative ([vespucci.org](http://vespucci.org)), since 2003.



**Speaker**  
**Alexander Stepanov**

Ph.D., University of Massachusetts Amherst  
GIS Architect, A & F Administrative Systems  
Adjunct Faculty, Department of Environmental Conservation  
University of Massachusetts Amherst

**Alexander Stepanov** is a GIS Architect in A & F Administrative Systems and an Adjunct Faculty with the Department of Environmental Conservation at the University of Massachusetts, Amherst. He also teaches “Geodatabase Architecture” course in the GIS Program at Johns Hopkins University. Stepanov is leading the design and implementation of the Enterprise GIS for the UMass Amherst. His work involves system architecture design, maintenance of ArcGIS Servers and SDE central data warehouse, as well as development of new workflows and web applications. Stepanov has a B.S. in Computer Science from St. Petersburg State Technical University, Russia. He received an M.S. in Regional Planning and a Ph.D. in Operations Research from UMass, Amherst. Stepanov’s research interests include integration of Operations Research methods and GIS for decision support, large scale evacuation and emergency event modeling, data interoperability, spatial databases, and data modeling. In his work Stepanov uses innovative ways to integrate GIS/BIM/CAD and 3D modeling. He is actively involved in the GIS

community, is a regular presenter at the GIS conferences, and is a member of a Leadership Team, ESRI Facilities User Group. Stepanov has been working with the GIS technology for over a decade. With a rapid rate of technological development, his mission is to bring industry experience and best practices into the classroom.

### **Stepanov, Abstract:**

#### **Spatially Enabled Smart Campus: Coupling GIS and Operations Research**

Alexander Stepanov and Niels La Cour

**T**he topic of “Smart Planet,” “Smart Cities,” and “Smart Campus” has been getting significant attention from the public, geo-spatial researchers, and practitioners.

The adjective “Smart” in this context may have many meanings. One of them is to make more efficient and informed decisions about actions and tasks within complex urban/campus environments, taking into account that existing/available resources (monetary, human, etc.) are limited. The famous WWII motto “to do more with less” is very appropriate.

Campus is a complex spatial system that includes facilities, open space, transportation, infrastructure sub-systems, where educational, research, student-living and business operations processes occur and interact. Due to their complexity, the subsystems are managed separately and require a great deal of specialization. As a result, information and data of such sub-systems are not necessarily explicitly connected to other subsystems.

Making campus-wide decisions and analysis requires an ability to bring all this disjointed and siloed information on physical systems and social processes together efficiently and effectively. In our view, GIS is an enabling framework to integrate and assemble necessary datasets using location as the key. GIS also provides an interface to advanced analytical models and operations research/optimization tools.

In this presentation I will discuss a GIS approach and supporting Extract-Transform-Load (ETL) workflows to form a base platform and framework for a Campus wide Decision Support System, which facilitates integration with analytical tools and methods from Operations Research (3rd party scientific libraries and open source tools).



#### **Speaker**

#### **Jon Jablonski**

M.A., University of Oregon  
Map and Imagery Laboratory  
Davidson Library  
University of California, Santa Barbara

**Jon Jablonski** is a librarian and geographer. He is the head of the Map & Imagery Laboratory at the UCSB Library. At UCSB, and previously at the University of Oregon, the map libraries serve as a spatial data center for campus. The physical collections of maps and photographs are controlled and organized through a variety of information systems. Ultimately these are arranged twice spatially: first as to how the materials relate to the surface of the earth; second as a large mass of physical and digital objects that must be managed as artifacts. In his research, Jablonski studies how people form Information Places—informal, ad hoc grounds for information seeking and transfer. He is currently attempting to insert these ideas into the implementation of a large new library building. Most

specifically, he observes how mobile communications technologies allow more independent travel among Chinese youth, ultimately leading to more personal freedom and political friction.

### **Jablonski, Abstract:**

#### **Sound Map: A Library Engagement with Research and Educational Spatial Science**

**T**he University of California, Santa Barbara Library's Map & Imagery Laboratory (MIL) has a long history of conducting research projects with faculty from across campus. With all new leadership and a major renovation underway, the Library is re-emerging as a research hub for projects involving semantic web technologies, research data curation, and SmartCampus initiatives. As part of these efforts, MIL is re-assuming its role as an active research partner.

This summer, MIL and the Center for Spatial Studies will collaborate on a project that will combine wayfinding analysis of the current Davidson Library with sensor technology to create a new, updated in real time, map of the Library.

The wayfinding analysis will have subjects (library users) navigating the building while research assistants "mark up" their paths using PeopleWatcher, an iPad app developed at Northumbria University and presented at the 2013 International Spatial Cognition Summer Institute. The resulting data will be used to build a Space Syntax model of the facility to identify areas of the Library that present navigation difficulties to users, and a new set of building maps will be developed to overcome these challenges.

The new maps will be overlaid with a data feed pulled from a set of sensors deployed around the Library that monitor ambient noise levels. This "heat map" will be created with cloud data analysis provided by Valarm—a venture of UCSB alum Edward Pultar presented at the 2013 December "Advancing the Spatially Enabled Smart Campus" specialist meeting.

The goal of the project is twofold: (1) We will produce a map of the existing library based on empirical data in which the end-users themselves identify the most important parts of the Library building; (2) the new "heat map" of ambient sound levels in the library will help our users to avoid the worst of our construction noise as well as choose their preferred study environment.