

## METRANS SEMINAR SERIES

**Prof. Mary Kathryn Thompson**

### ***A Design Thinking Approach to Transportation Research***

#### **ABSTRACT:**

Transit In the Essential Tension, Thomas Kuhn argues that the “transformation of the classical sciences during the Scientific Revolution is more accurately ascribed to new ways of looking at old phenomena than to a series of unanticipated experimental discoveries.” Modern design research can be described in much the same way. Design researchers employ a vast array of tools, theories, methodologies, and thought processes (sometimes referred to as “design thinking”) to better understand the artifacts that pervade the built environment and the processes by which successful artifacts are or could be created. New and improved ways of doing things are usually precipitated by new ways of thinking about them.

This talk will describe two examples of a design thinking approach to transportation research. First, a new method of interchange / intersection selection based on the potential impact of the coupling within the system will be presented. The second example makes use of the distinction between “functional” and “physical” thinking to reexamine existing and future transportation paradigms such as taxis and personal rapid transit (PRT) systems.

Finally, an alternative concept for a smart--- grid compatible robotic future transportation network will be presented that was developed with an emphasis on new functionality rather than on the development of new physical mechanisms.

**SPEAKER BIO:** Mary Kathryn Thompson, Ph.D. from MIT, is an Associate Professor at KAIST Department of Civil and Environmental Engineering in South Korea. She is engaged in design research at the boundary, both within engineering and beyond, and is actively working on the development and application of formal design theories to civil, environmental, and urban engineering. She is also interested in non--- traditional applications of the finite element method, especially for surface phenomena such as fluid sealing, thermal and electrical contact resistance, friction and wear. Kate is the Director of the KAIST Freshman Design Program, which earned her both the KAIST Grand Prize for Creative Teaching and the Republic of Korea Ministry of Education, Science and Technology Award for Innovation in Engineering Education in 2009. She also received the Grand Prize at the 2009 International Conference on Axiomatic Design Theory for her paper on the synthesis of formal design theories for traffic intersections.



**DATE**            Thur. Oct. 27<sup>th</sup>

**TIME**             1:00-3:00 pm

**LOCATION**        RGL  
                      Room 103

**RSVP\***          Shawn Gong,  
                      TGong@usc.edu  
                      by noon,  
                      Wed. Oct. 26<sup>th</sup>

*\*Lunch will be provided for RSVPs.*