

# **UCLA**

## **Posters**

### **Title**

NIMS Laboratory Systems

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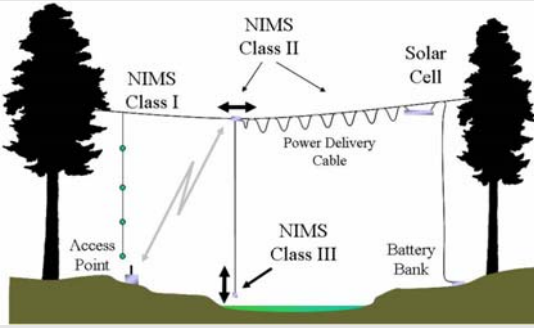
2005

## NIMS Laboratory Systems

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### Introduction: Small scale portable NIMS systems

#### Field NIMS Architecture

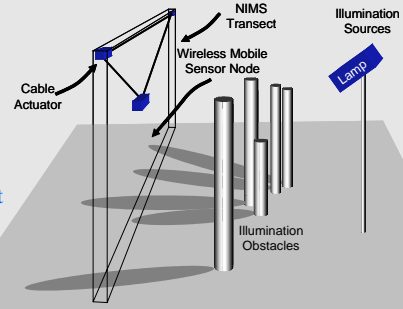


#### NIMS-LS (Laboratory System)

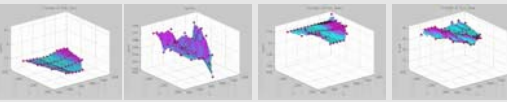
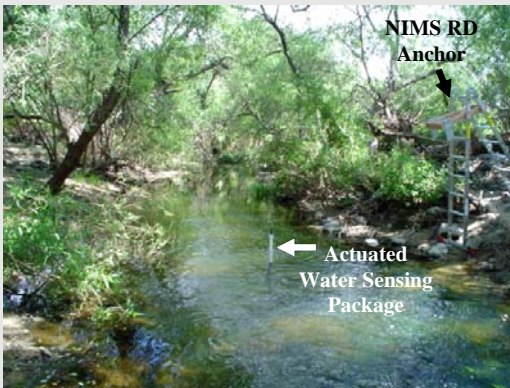
- NIMS LS provides experimental testbed for verification of actuated sensing of environmental phenomena

- NIMS LS System includes emulation of environmental phenomena (example of light distribution in ecosystems)

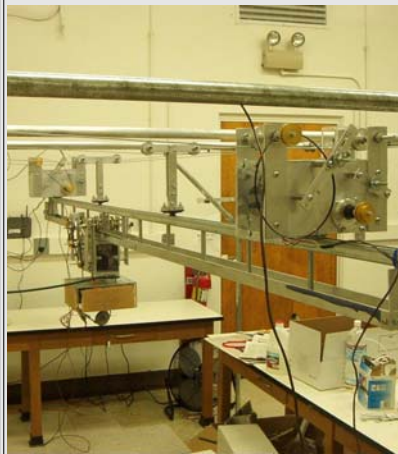
- Static and dynamic phenomena



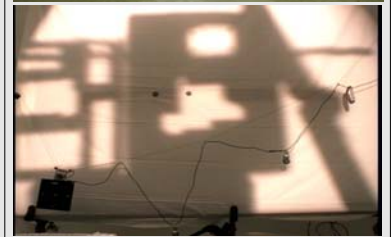
#### NIMS RD (Rapidly Deployable) Water System Sensing and Sampling (Medea Creek, Santa Monica Mountains)



#### NIMS 3D Full Three Degrees of Motion



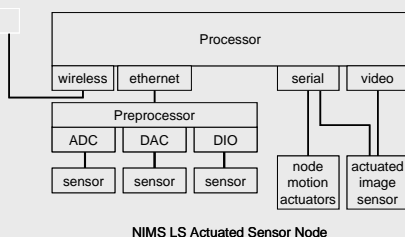
#### NIMSLS Field Generation



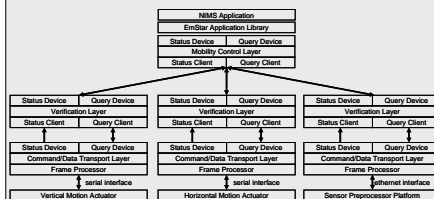
### NIMS Architecture

#### Processor-Preprocessor

- Processor supports signal and image processing, adaptive sampling, task allocation, and statistical computing.
- Preprocessor supports diverse sensing, actuation, energy control interfaces



#### Emstar Runtime Environment



- Modular drivers for actuators and preprocessor accessible sensors
- Common interfaces for static and mobile laboratory and field systems
- Enables hardware-in-the-loop actuator emulation for system testing and algorithm verification

#### Applications

- Adaptive sampling and task allocation algorithm verification
- NIMS LS processor hosts R code statistical computing environment for adaptive sampling research

