



Netted Sensors Community 2005 Workshop

Applications and Scalability Session

David P. Allen
23 October 2005



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Non-DoD Applications

- Manufacturing
- Smart Buildings
- Smart Highways
- Entertainment
- Environmental Monitoring
- Agriculture and Livestock
- Aviation
- Security



Intelligent Sensor Networks for Manufacturing Control Applications



Making Wines Finer with Wireless Sensor Networks

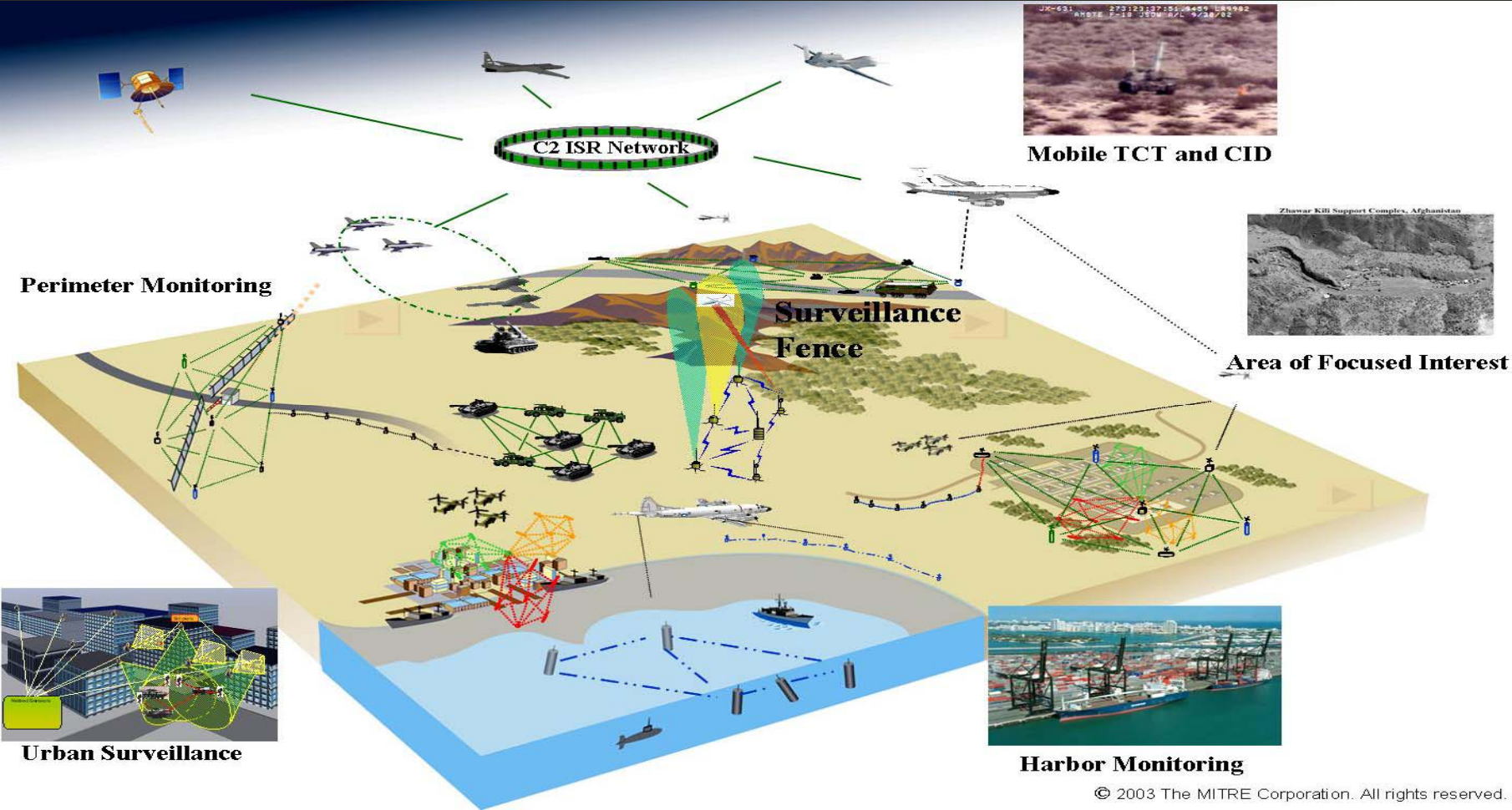


Structure and Earthquake Monitoring





DoD Applications



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Agenda

0835 - 1025 Applications and Scalability (AS)

0835 - 0840 Session Introduction - Mr. Dave Allen (MITRE)

Major James Hunsicker (DIA) and Mr. David Pitcher (MITRE)

0840 - 0910 "Self-Organizing Wireless Network (SOWN) Project"

Dr. Anish Arora (Ohio State University)

0910 - 0930 "*Lessons from an "Extreme Scale" Expedition*"

Dr. Derek Morris (US Army CERDEC)

0930 - 0950 "Networked Sensors - An Army Perspective on Future Capabilities"

Dr. Raja Suresh (General Dynamics)

0950 - 1010 "*From Netted Sensors to Swarming Sensors - The Path Forward*"

1010 - 1025 Round Table Discussions / Speaker Questions and Answers



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Issues and Challenges

- **Communications**

- An urban environment is nothing like a flat open desert environment
- How to develop system that will work efficiently in multiple environments with a large number of sensors

- **Power**

- For small, unattended sensors, would like long mission life to keep emplacers out of harms way
- How to develop small, lightweight power sources that will last for extended periods of time without operator intervention
 - Especially important when systems scale to large numbers





Session Question

**Does the application determine
the number of sensors?**

OR

**Do the number of sensors
determine the application?**



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Major James Hunsicker

- **USAF Major assigned to the Defense Intelligence Agency**
- **Currently stationed at USSOCOM PEO-IIS/R&S where he is the Deputy Program Manager for Special Operations Tactical Video System / Reconnaissance Surveillance Target Acquisition**



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Mr. David Pitcher

- **B.S. Degree, Oceanography, U. of Michigan, 1976**
- **20 years of experience in the design and systems engineering of complex software, communications and instrumentation systems, including underwater remote sensing systems, unattended ground sensors, EO/IR and radar reconnaissance systems, and tagging, tracking and locating systems**
 - Lead Sensor Engineer with over 15 years of systems engineering / acquisition experience with the DoD and Intelligence Community
 - Lead Engineer for 5 years at the United States Special Operations Command (USSOCOM) in Tampa, FL



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Dr. Anish Arora

- **Professor of Computer Science and Engineering at the Ohio State University**
- **Research focuses on fault tolerance, security, and timeliness of distributed and networked systems, with special emphasis on sensor networked systems**
- **Research is presently supported by DARPA, NSF, and Microsoft Research Embedded Systems Program**
- **Led the 2004 design and development of Project ExScal (for extreme scale)**



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Dr. Derek Morris

- **PhD in Computer Science from Stevens Institute of Technology**
- **Currently a member of the Sensor Networks Team, Space and Terrestrial Division (STCD) of the Communications-Electronics Research Development and Engineering Center (CERDEC) at Fort Monmouth where he is investigating energy aware approaches for unattended sensor networks**
- **Previously he has served as a Professor of Computer Science at both Rutgers University and Stevens Institute of Technology as well as the Chair of the Software Engineering Department at Monmouth University**



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Dr. Raja Suresh

- **Earned his B.Sc (Honors) in Physics from Bangalore University, the B.E. in Electrical Engineering from the Indian institute of Science, and the M.S. and Ph.D. degrees in Electrical Engineering from the University of Minnesota**
- **Started as a Senior Research Engineer at the Honeywell Systems & Research Center in 1979 and rose to being a Program Manager**
- **Has been with General Dynamics Advanced Information Systems since 1996, where he is currently the Director of Technology and CTO for Reconnaissance & Surveillance Solutions**



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