An ICTAS Center of Excellence

The Need for Construction Safety Center

Construction. It’s an industry in which safety and health are as necessary as brick, steel, and mortar for success. Productivity, quality, and efficiency are all at stake. The interdisciplinary team of researchers, focusing on construction, recognizes that many challenges and solutions can benefit multiple industries.

This interdisciplinary approach has already produced systems that have been applied successfully across sectors. One such example is a world-class training system for delivery service providers. Many sectors can reap benefits from this interdisciplinary focus. In addition, from a modern supply chain perspective, industry sectors are not mutually exclusive. For example, joist buckling transcends forestry and construction.

Personal protective equipment and training are necessary but often not sufficient measures.

Within this context, what is needed is a truly interdisciplinary and collaborative approach to the research-to-practice life cycle. For the researchers at the Innovation Centers, this means approaching the hierarchy new methods, tools and technologies:

- Augmented and virtual computing
- Behavior and culture change
- Communication systems
- Culture management
- Elimination or substitution strategies
- Engineering controls
- Facility and workplace design
- Management and project systems
- New materials
- New Technologies, sensors and tools
- Personal Protective Technology
- Pervasive computing
- Policies and enforcement
- Procedures and processes
- Surveillance
- Training for vulnerable groups
- Warning design
- Work practice controls

An Interdisciplinary and Hierarchical Approach to Safety

Safety in industry is, unfortunately, a need that reveals itself in stark human images. Too many workers in too many industries lose work time, paychecks, efficiency, and productivity due to accidents. And, further, this translates into losses for employers and, conceivably, consumers down the road.

Researchers and practitioners agree that a hierarchical approach to prevention is the most effective approach. Changing the system design, rather than relying solely on compliance to safety policies, is proactive by seeking to remove the hazardous situation. However, if hierarchical approach is not possible, engineering controls, warnings and administration controls are needed.

“Separating humans from hazards through research and training.”

What are the Centers for Innovation in Occupational Safety and Health?

In 2004, the Center for Innovation in Construction Safety and Health was formed as part of a grant from the National Institute of Occupational Safety and Health (NIOSH).

The center focuses on the research-to-practice life-cycle in the construction industry, with special attention to small companies in residential construction. Accidents, injuries, and fatalities have been significant at this level.

Core and pilot projects in key strategic areas have emerged that have targeted National Occupational Research Agenda and NIOSH objectives.

Mission

The mission of the Center for Innovation in Construction Safety and Health is to facilitate injury, illness, accident and fatality reduction in the construction industry through applied research to practice and training.

Vision

The Center for Innovation in Construction Safety and Health envisions a significant role in large-scale improvement of construction occupational safety and health such that its research to practice processes can be extended to other sectors.
**Key Personnel**

**Leadership Team**
- Richard Burdisso
  - Mechanical Engineering
- Carlos Evia
  - English
- Brian Kleiner
  - Industrial & Systems Engineering
- Thom Mills
  - Building Construction
- Antonio Nieto
  - Mining & Minerals Engineering
- Maury Nussbaum
  - Industrial & Systems Engineering
- Tonya Smith-Jackson
  - Industrial & Systems Engineering
- Tony Songer
  - Civil & Environmental Engineering
- Deborah Young
  - Myers-Lawson School of Construction

**Additional Co-PIs**
- John Casali
  - Industrial & Systems Engineering
- Dan Hindman
  - Wood Science & Forest Products
- Jeff Lancaster
  - Industrial & Systems Engineering
- Mike Madigan
  - Engineering Science & Mechanics
- John Shewchuk
  - Industrial & Systems Engineering

**Additional Pilot Project PIs**
- Mike Agnew
  - Industrial & Systems Engineering
- Chris Fiori
  - Myers-Lawson School of Construction
- Thurmon Lockhart
  - Industrial & Systems Engineering
- Michael O’Brien
  - Building Construction
- Shane Ross
  - Engineering Science & Mechanics
- Walid Thabet
  - Building Construction
- Woodrow Winchester
  - Industrial & Systems Engineering

**Sectors**
- Construction
- Mining
- Manufacturing
- Agriculture, Forestry, & Fishing
- Healthcare
- Logistics, Warehousing, & Transportation
- Services
- Trades
- Other

**Sample Projects**
- Decision support tool for ergonomic design
- Noise and vibration control of hammer drills
- Quantification and solutions to communication and signal detection challenges
- Training needs analysis of single entity and family-owned small businesses
- Falls from joist buckling

**Additional Projects**
- Hand-held information devices
- Slip and fall prevention
- Respiratory disease control
- Pervasive computing
- Noise and asphalt exposure control
- Fatigue management
- Training and visual aids for Hispanic workers

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**A special program in memory and honor of Kevin P. Granata**

The Kevin P. Granata Occupational Safety and Health Pilot Research Program was created in honor of a center researcher and friend to many who was tragically killed on April 16, 2007, along with 31 other students and faculty.

Kevin was a “researcher’s researcher and a scholar’s scholar” and faculty are honored to receive pilot funding in his name.

As part of the expectations of the NIOSH Center for Innovation in Construction Safety and Health and through additional funds, innovative pilot projects are “seeded” to collect initial data that can lead to larger research programs.

Kevin himself was one of the top biomechanics experts in the world. He earned his undergraduate degrees in electrical engineering and physics from Ohio State University. He also earned a master’s degree in physics from Purdue University. After working at Johns Hopkins University, he returned to Ohio State to earn his Ph.D. in biomedical engineering. Before joining Virginia Tech, Kevin was employed by the University of Virginia’s Department of Orthopedic Surgery.