



Overview of CREATE

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DHS Centers of Excellence Summit

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CREATE - Background

- USC was selected as the first DHS university center in a competition of 72 universities
- Started operations in March of 2004
- Focus on risk and economic analysis
- \$4 million per year for three years, extendable after review
- Nine other centers have been awarded
- Four more centers in the next two years

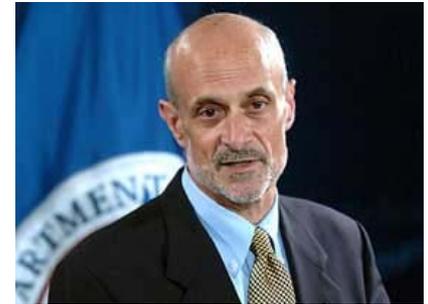


CREATE's Mission

**“Advancing risk and economic science
to improve our Nation’s decisions
to counter terrorism”**

Why Risk Analysis?

“ What we do have to do is identify and prioritize risks -- understanding the threat, the vulnerability and the consequence. And then we have to apply our resources in a cost-effective manner, using discipline and common sense in order to minimize the risk without imposing undue cost on our communities and our families. “



To achieve this, we need to

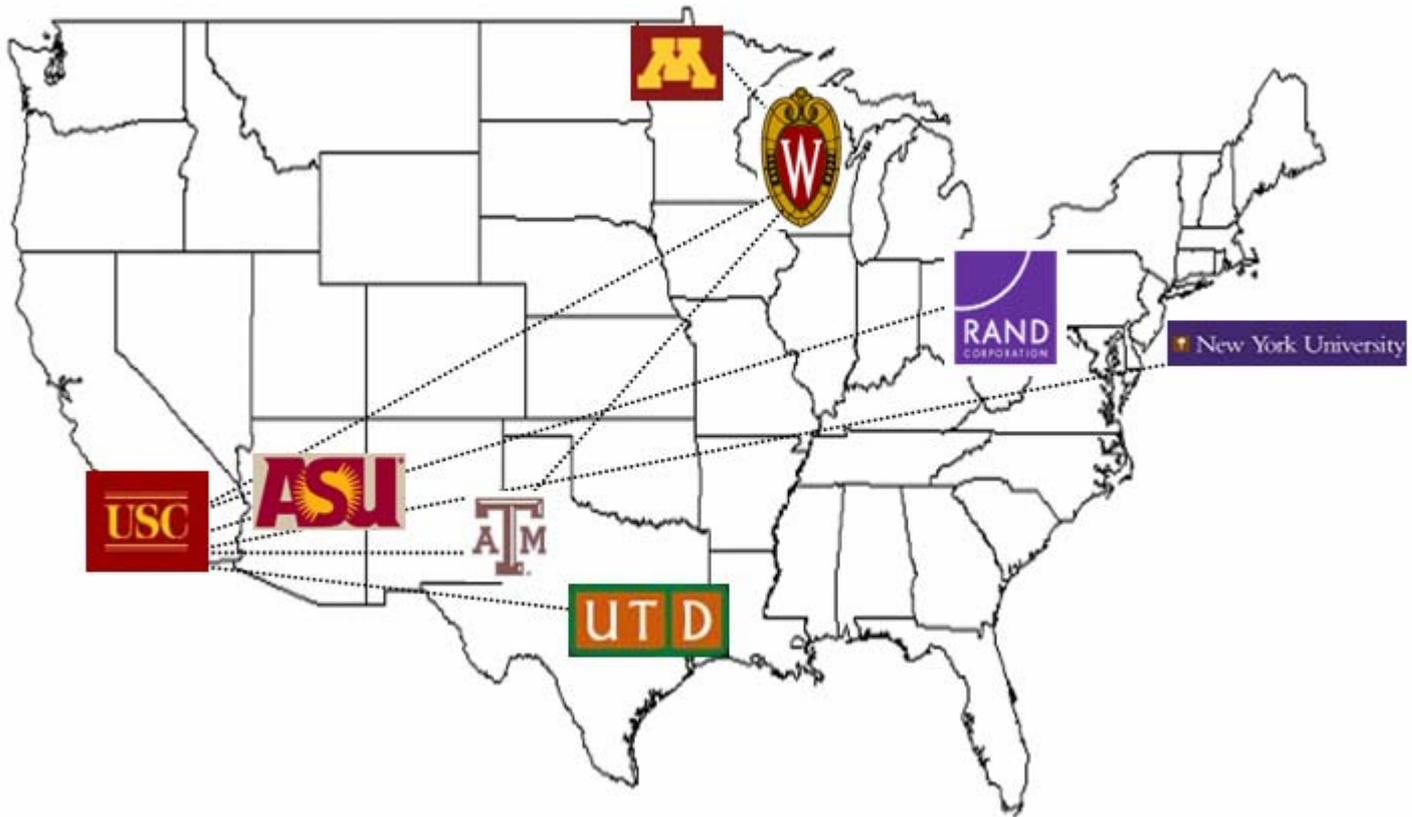
- Develop terrorist attack scenarios, assess their relative likelihood
- Assess the probability of success, given an attack
- Assess consequences, given a successful attack
- Assess the cost and risk reduction effectiveness of counter- terrorism policies

Why Economic Analysis?

- **Our economy is a major terrorist target**
 - *“If their economy is destroyed, they will be busy with their own affairs rather than enslaving the weak peoples. It is very important to concentrate on hitting the US economy through all possible means.”*
 - *“The young men (of the jihad) need to seek out the nodes of the American economy and strike the enemy’s nodes.”*
- **Small local terrorist attacks can have large national economic impacts**



CREATE is a National Center



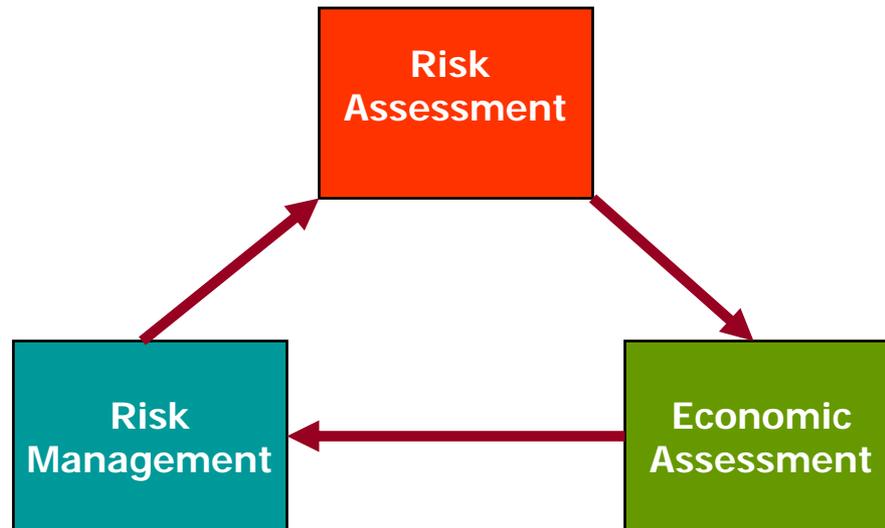
CREATE is an Interdisciplinary Center

- **Social Science**
 - Economics
 - Psychology
 - Political Science
 - Public Policy and Planning
- **Engineering**
 - Industrial and Systems Engineering
 - Electrical Engineering
 - Civil Engineering
- **Computer Science**

CREATE Researchers

- **34 faculty members**
 - 23 Professors, 3 Associate Professors, 3 Assistant Professors
 - 5 adjunct, research professors, etc.
- **20 Other Researchers**
 - 4 Postdoctoral Research Associates
 - 16 research scientists, computer scientists, etc.
- **Committees and Testimony**
 - 18 major DHS related committees (National Academies or similar)
 - Testimony before the House HS Committee
- **Other Quality Indicators**
 - Seven researchers with 1,000+ citations (ISI Web of Science)
 - One member of the NAS, two of the NAE

CREATE Research Framework



Matrix Structure of CREATE Research

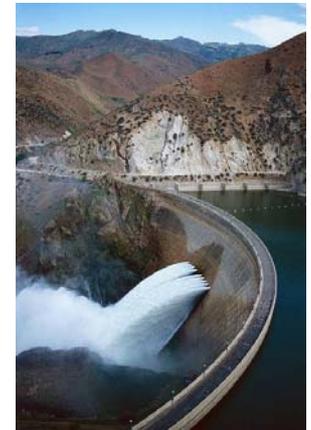
	<i>DHS/S&T Divisions</i>					
<i>CREATE Modeling & Analysis</i>	Explosives	Chem/Bio	Command/Control/Interop.	Borders/Maritime	Human Factors	Infrastr./Geophys.
Risk Assessment						
Economic Assessment						
Risk Management						

CREATE Models

- **Risk Assessment**
 - Probabilistic Risk Analysis
 - Game Theory
 - Models of Motivation, Capability and Intent
- **Economic Assessment**
 - Advanced Input-Output Models
 - Computable Generalized Equilibrium Models
 - Models of Behavioral Responses and Resilience
- **Risk Management**
 - Dynamic, Adaptive Decision Analysis
 - Optimal Resource Allocation Models
 - Emergency Planning Models

CREATE Applications

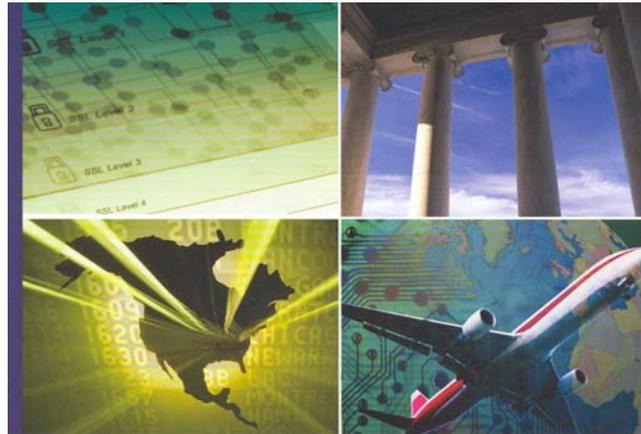
- **Explosives**
 - MANPADS countermeasures analysis
 - Economic impact analysis of selected explosives attacks
- **Command, Control and Interoperability**
 - Emergency planning models
- **Chem/Bio**
 - Expert elicitation of the risks of biological attacks
 - Economic impacts of bioterrorism
- **Borders and Maritime**
 - CBP Tabletop exercises
 - ICE training
- **Human Factors**
 - Project risk analysis of radiological attacks
 - Analysis of motivation and intent of terrorists
- **Infrastructure Protection**
 - Dirty bomb attacks on sea ports
 - Allocating BZPP funds in California



CREATE Education

- **Students and Post-docs**
 - 50+ research assistants (more than half are Ph.D. students)
 - Six post-doctoral scholars
- **Degrees**
 - New Masters Degree in Systems Safety and Security
 - New Certificate in Systems Safety and Security
 - New Aviation Security program
- **Visitors Program**
 - Five DHS scholars
 - Seven summer visitors from minority serving institutions
 - Increased emphasis on collaborations with HBCUs
- **Internship Program**

Master of Science Degree in Systems Safety and Security



Online Graduate Engineering Degrees

*The Master of Science in System Safety & Security
[a degree in Homeland Security] [MSSYSS]*

Program Goals The USC Master of Science in System Safety and Security [MSSYSS] program is designed to train leaders in industry and government to develop and evaluate systems that protect against natural disasters, accidents, and attacks by terrorists or criminals, and to identify the most economically effective means to improve the nation's security. As a program participant, you will choose an area of concentration from either Systems or Cybersecurity to complete the MSSYSS degree. Both the Master of Science and Graduate Certificate are interdisciplinary, combining courses from the USC School of Policy, Planning and Development and the USC Viterbi School of Engineering.

The program is aligned with the research agenda of the newly created Center for Risk and Economic Analysis of Terrorism Events [CREATE], funded by the United States Department of Homeland Security [DHS]. The MSSYSS program is designed to serve the educational needs of DHS and other federal, state and local agencies, as well as contractors serving government agencies. All courses required to earn this degree are available via the Distance Education Network [DEN].

USC Viterbi
School of Engineering

DISTANCE EDUCATION NETWORK [DEN]

Summer Visitors 2005



Summer Visitors 2006



Emerging Themes

- **Terrorism risk analysis is difficult**
 - Too many possible attack scenarios
 - Adversaries seek vulnerabilities and high impact
 - Probabilities of threats and attacks shift
- **Some risk analysis tasks are easier**
 - Screening can significantly reduce attack scenarios
 - Relative probabilities can be assessed
 - A terrorist attack is a multistage project
- **Decision Focus Helps**
 - Many variables do not matter
 - Few proposed countermeasures are cost-effective