

**2010 Homeland Security S&T Summit
South Central Region
LIVE INTERACTIVE WEBCAST
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**"S&T in the South Central Region: Lab Perspective"
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Before we begin I just want to thank everybody for attending. As you are well aware there were some logistical challenge is getting through New Mexico through the airport's especially under adverse weather conditions having spent the first 25 years of my life in the District of Columbia I am well aware of the effects of the 3 inches of snow in that committee so we really appreciate it. It does burn something that I would like to highlight -- bring something that I would like to highlight with disasters. If you bring the amount of snow and put it in some communities it would be considered an economic boom. So would that is kind of pipe leading the undercurrent of a lot of what I am going to be talking about. It is where the communities in the systems depend on in relation to the hazard said. So briefly about Los Alamos National Laboratory we are one of the National Security science laboratories in be developed and applied science technology to ensure the safety and security and reliability of the U.S. nuclear deterrent. That is a long-term mission and is very important to the country. We equally have a lot of research and development as Greg mentioned and Mike mentioned this morning and solving the marsh and national security challenges. We now sit in a directory that is really focused on global security in its mission statement is to provide early identification, creative maturation and timely delivery to the most urgent and technically challenging security issues facing our nation. And one of the key elements of that is that we deliver science that matters to the American people. That is true for all of our programs. The way that we execute that is that we have a very diverse work force. There is a total of 2000 people. I will not be talking about all of those people in this 20 minute time people will be how leading some of them and we have a very big poster session organized that highlights the people across the discipline. We have people from engineering, physics, life sciences, math and computer science in chemistry from across the country. Approximately 2000 are Ph.D.es so we have aviary high energy Technical Staff focus on national-security issues -- a very high energy Technical Staff.

So when I talk about making science matter, is that we need to be able to understand and use large datasets Tim referred to a communication protocols and a lot of the capability is there and we need to know how to get the right information to the right people at the right time. We do this to wind things that have been mentioned all morning. A typical emergency management requirement, planning. This, mitigation response and recovery and also increasing situational awareness the gear on the right-side of this particular chart is really showing that organizational structure and how we think about knowledge and knowledge management. On the bottom up across the

country there is a lot of research and development on assets that collect information, whether it be imagery, cross signals, plaintext from multiple and various data sources be we develop technology that processes that into data. That is using him down a keen intelligence, measurements, we then mind those data to start to develop evidence, indicators of situations and from there we start generating what we refer to as knowledge. We are really calling in on different threats, situations and behaviors. And from that we did a lot of our programs go to that end state where it is actual knowledge so we are providing to policy-makers and decision makers knowledge that they can act on based on our side and recommendations -- science base recommendations.

An example of what we have is called E-SOS and some of this is done for DHS, a Paramount is being done for DoD and is also used in some of our internal processes. Essentially what we're talking about is generating clapper tip Web site. Information portals that people can go to. This year is information services and awareness tools, geographic awareness tools, and some of the programs that worked in. Geographic awareness is always a very important subject to the office of the infrastructure production and DHS. Those tools are connecting to a lot of open source information. The notion is that there is a vast plan a fee of information that is publicly available that we should be accessing and to develop that actionable knowledge that we are trying to generate. One of the things that we're trying to generate knowledge on is reducing threats of weapons of mass destruction and terrorism. So we have detonation detection, lightning steadies' comet imagery analysis, securing nuclear materials throughout the globe and U.S. interests around the world and advances in nuclear detection technology, active and passive techniques, and as Greg mentioned we have a lot of work in terms of liquid explosives and explosive devices.

Greg mentioned Mag-viz and I encourage everyone to go to the tour. It is pretty exciting in terms of detecting liquid explosives.

Sorry, technology is taking over me. We also have a fair amount of in radiological and nuclear countermeasures. A great deal is for DNDO and we work for systems architectures, acquisition algorithms, testing and evaluation, support equipment at the Nevada test site, transformational and recent research and development in terms of passive and active detection and technologies including passenger fleet vehicles in inspection and ship based interrogation and forensics and attribution. The bio portfolio that we have at the laboratory is pretty broad, indeed. A lot of this work is in collaboration and things that we collaborate with them. It has been a strong collaboration and one that we hope will continue into the foreseeable future. We have a lot of work in biological forensics and attribution such as the bye a watch program and -- biowatch program and modeling and systems analysis so optimization on the location of sensors, how do we effectively develop those systems so that they can integrate so that they can be used to support not only SNT but also infrastructure Protection and other agencies and the federal government. Detection and surveillance technologies and broad scale risk assessment the portfolio as Greg mentioned that I am most familiar with its infrastructure protection. We do a lot of this work for the national protection programs in the office of infrastructure Protection. So the risk development and

modeling branch in HITRAC are where a lot of our projects are Center and we do it visualization -- we are providing it to them on almost a daily basis when we come to one of these nationally significant events like hurricanes or earthquakes. We activate 24/7 and we have people around the clock and that was true with Katrina and the California wildfires. One of the things about the laboratory been involved is that we have some of the poster is especially with a balding technology for understanding National hazards we are able to reach out to those capabilities that are funded by different organizations and applied them to help create actionable information. We have had some significant work within science and technology appeared I will mention a few of those programs. Working with [Indiscernible] Adam Lee is on the Web -- who is hopefully on the Web and also with the Office of Health Affairs and implications for the U.S. economy and infrastructure Protection. One of the approaches that I mentioned, too that we take is all hazards. So we're looking obviously at the weapons of mass defect per Pallia space in terms of what are the risk due to critical -- poor police space in terms of water it the risk to critical infrastructure. So we rely on the best models in the country. Some of the laws are to develop at the centers of excellence. It is a mixture of models and we are applying the best one to the mixture at hand in the time scale within homeland's security. And that can be as short as always or as long as six months to one year. So we really touching on the full breath across the country. We have tools for improvised a nuclear device, dispersion, wild fire, and whenever researchers was held up because of the snow -- one of our researchers was held up because of the snow. Does not so much further in the actual technology in terms of this simulation but is the connection between the systems to infrastructure Systems to communities of concern so that we can help in terms of planning response and mitigation. One of the hallmarks of what we do in this process is complex systems analysis. This is a large-scale high-resolution system relative to a lot of questions, DHS in particular appears to we have to not only be able to understand the physical system and natural system but held that couples into engineered Systems and economic systems. When I mentioned the snowstorm that is very important which is a happen relative to the systems that are there? Some of those are very low provision when you look at a lot of those that are managed locally but when you start looking at energy systems the was obviously our regional to national and dams and if you have a failure. So it is understanding the coupling at multiple skills and resolutions. Additionally there is a social technical system problem here in that is a big part of the research that we do. When we look at our focal response to snowstorms one of the challenges that we have is that when our lab closes there is about 11,000 people here. As most a few noticed our roads are primarily two main highways. We have excellent snow removal at the laboratory and in the state but when you put 11,000 people on the inroads that creates a lot of back up. It is the Human response to the physical system as it is being affected by the natural system. So buying mentioned the goal for the risk developing moderate modeling branch is to improve consequences of disruption and with the people that are served by these infrastructure programs. We look at a comprehensive review of U.S. infrastructure and its response to destructions and to his relief operation tested and driven the air tasking os on the delete bases with studies that can be two hours to two years -- on a daily basis with studies that can be two hours to two years.

This was a project that was here for two years and then transferred to NISAC. It was funded by DHHSNT. In this particular case it is a model of all seven infrastructures in the scene simulation environment. So in summary, we are striving to solve the most challenging National global security issues and applying the best science whether its developed here or in the private sector or in academia through collaboration speed we're continuing to develop the capabilities to understand national hazards, border protection issues and relative to things like H1N1 and what happens when you close those borders. And always in line with community Brazilians could we have broad experience in terms of cutting edge capabilities and also in terms of our staff and its interdisciplinary nature. We are trying to provide our customers with dependable results of the highest integrity that benefits the nation. And that is all I have.