

NATIONAL INSTITUTE FOR URBAN SEARCH & RESCUE

WHO ARE WE?

The National Institute for Urban Search and Rescue (NIUSR) is a non-profit organization dedicated to finding improved ways of saving lives in times of disaster, both caused by Mother Nature and by man.

NIUSR accepts the challenges of today by assisting in the transfer of military technology into advances in Civilian Readiness for Crisis Response.

NIUSR is an educational organization--a "think tank." We are self-funded. We sell nothing but give our products freely to those who have the responsibility to use them. We buy nothing except office supplies. We pay no salaries. We contract for financial oversight, for Conference and Media Services. All our personnel and executives work pro bono. The costs of the development of systems and applications which we design and engineer are borne by the Institute and the companies and organizations represented on our Boards and Advisory Panels. The fielding of these efforts is borne by our partners and the responsible agency affected.

Our organization was incorporated in 1977 and restructured in 1981. It is designed as a horizontal corporation. It is conducted by consensus, with great latitude given to representatives who select a leadership role in the program management of the various sectors of effort that are mutually decided for each fiscal year. We give our people "permission to fail." The organization is supportive of change in all areas. We recognize that change is not necessarily without risks and potential downsides. We remain persistent and positive as we consider both the technologic impact and the cultural resistance to the new and un-experienced nature of change.

Our motto for the Institute is **"Press On!"** and that is what we do. It is what we give our people permission to do -- to press their passions to implementation. To experience both the joy of success and the temporary frustrations of delays. To know they have non-judgmental support in their efforts to attain their goals. Our overarching goal is to permit those in harm's way to expect a greater chance of safety in their lifesaving roles.

What Do We Do?

We continue to work on the leading edge of strategic planning for the future in emergency response. We find ways to fill the gaps in national systems that we recognize as our society and culture hurtle rapidly into the next millennium.

What do we mean by "the future"? We mean in the next 30 years, and perhaps the next 50 years. We do not mean the next quarterly program review, nor the next quarter's "bottom line." Watching the next quarter's bottom line did not help the buggy-whip company's future profits after Henry Ford built the Model A.

Someone needs to watch the strategic future and perhaps suggest a new product, system or focus. We find that the combination of the best of the

known with the riskier path of the new, can be a serendipitous mix for long-range success.

Today's challenges are huge.

The continuing 30-year lag in interlinking emergency communications among first responders, their leaders and their governing bodies is a train wreck racing to disaster. Now September 11th is all too clear in our minds. But we knew this dangerous shortfall long before that massacre. America is prone to lessons re-experienced rather than lessons learned. (Think: Columbine High School, Pam Am 880, Hurricane Andrew, and Northridge Earthquake.)

There are too few civilian trained multi-agency decision makers on-scene in the early, critical stages of large-scale emergencies. We believe this is the result of the huge increase in the number and variety of large-scale events in the past 10 years. (Think: the ocean boat race off Australia in the Tasman Sea. Think: the power outages during previous summer's heat waves in this country's larger cities.) Luckily this last summer had unusually cool temperatures and we skated. Mother Nature was good to us. However, anyone who thinks Mother Nature is a kindly soul is in denial. Add to all this the additional risks poised by the threats of terrorist activity.

Contrast the comparative lack of self-sufficiency in our urban population with that of the Canadians during their 3-month power outage in some parts of Montreal and Quebec during the height of their winter. And the even more astonishing sight of the self-evacuation of entire generations of families with all their worldly goods (and grandmothers) in wheelbarrows of the Albanians during Kosovo and the civilians in Afghanistan.

NIUSR assists in the transfer of technology from federal labs and the military into the realm of domestic first responders and emergency managers. This is an effort that is gaining interest from Congressional representatives and the national press. We will all benefit from their effort. Among our partners are the Marine Corps Warfighting Lab, the Medical component of the 3rd Fleet, U.S. Navy Pacific, and the U.S. Coast Guard, and the International Committee on Search and Rescue.

In addition, we have recently established a cadre of 50 organizations, industries and agencies for heightened involvement in solving the methods to pursue in facing these new problems, both strategically and tactically. It is the [National Consortium for Readiness in Emergencies \(N-CORE\)](#). It is sheltered under the NIUSR umbrella as part of our parent Non-Profit Corporation.

What is Today's Focus?

[NIUSR accepts today's challenge by transferring military technology into advances for Civilian Readiness for Crisis Response.](#)

1. Interlinking Communications – eXtreme Information Infrastructure (XII)

The Institute has had as its centerpiece of effort the establishment of a National Crisis Information Architecture, permitting all involved in the crisis

response, to plug into an interlinking, open system The latest demonstration of a small slice of XII was demonstrated on March 12, 2002 in cooperation Using a federation of existing networks and off-the-shelf technology; DERIS is able to create the required connectivity between different agencies that must share information and situation awareness during a crisis

In this demonstration we connected San Diego County, Los Angeles City and County, Chicago and Arlington, VA into the multi-agency, multi-mega cities response to a mock Terrorist event. Once logged into the DERIS portal, they could access resource information, share information as it happens, and collaborate with each other in real time, either through video, voice, e-mail, or other web-based services. The March 12th demonstration showed how secure access to weather and other maps, imagery, technical HAZMAT information and other documents, on-scene video, digital photography and other information resources can speed response to save lives and property. Just as importantly, it showed how agencies representing local, state and federal law enforcement, emergency response and public safety can cooperate and share information by breaking social, organizational, and technical barriers. One critical key to the success of DERIS is its ability to fit into the existing protocols of the emergency management community.

2. **Decision Making Under Stress Simulation Training:**

The second leg is the development and fielding of the training to augment the day-to-day rapid tactical response ability of the nation's first responders. While tactical training in primary missions is uniformly provided and at a very high level, crisis management has escalated to multi-agency, multi-jurisdiction levels.

Adapted from the U.S. Marine Corps Warfighting Labs "Decision Making Under Stress" simulation training program, this strategic training has been given to troops preparing for duty in Kosovo and Afghanistan, and will be given up through the flag level of the Marine Corps.

The NIUSR strategic training program is focused on the multi-agency command personnel of all levels. At the higher levels of such commands, the decision making is often escalated to the top administrative and funding levels of each organization. Often these persons are many years from their days in the mud and blood of response. In these occasions, it is found that stress levels are much higher than those of field commanders. Such unaccustomed stress has been documented as possibly clouding or delaying effective decision-making.

Essential to such a Decision Support Training program is a knowledge based Information management system. NIUSR has [developed the ROSE Knowledge Management System](#). The ROSE Comprehensive Knowledge Management System consists of the following pieces:

- 1 It has an integrated redundant, bundled network.
- 2 It is an open system with multiple levels of security,
- 3 It has a quick Portal that collects data from stakeholders
- 4 It has a top of the line Imagery System and Bandwidth
- 5 Intelligent Information Management Facility that provides near real-time situation awareness and decision support.
- 6 It has a Directory (the Internet version of your telephone book

7 It has a 'smart' hub where data is mapped to an information structure that provides context and allows intelligent software agents to automatically reason about events and collaboratively develop alternative courses of action.

8 And it has a robust retrieval system that can handle 1000s of dissimilar requests simultaneously.

9 It then distributes the requested information to the users over the integrated open network.

In the complex decision making process for multi-jurisdiction crisis events of today, knowledge management for decision support is essential to the tempo of the response. Extended operations are the friend of death. It is not yet clearly understood that Knowledge Management is a skill that is supported by technology. It is not, in itself, a technology. Knowledge management represents a dramatic enough change in thinking that anything short of a clear mandate from the top will fail to bring it about. To put it another way, such change must have commitment and leadership at the highest level of each organization and agency.

3. Community Preparedness Program:

"Take a hand in your own survival" has been a focus of the Institute since its conception. This third program focus is our Community Preparedness Program, a vital piece of the original Vision 2010 of the Institute. Presently our focus is on linking the CERT programs and the Neighborhood Watch programs together. The focus will be with the youth groups already present in the Community such as the Boy Scouts, Girl Scouts, and others.

Until FEMA focused its resources on the area of Sustainable Cities and "Project Impact," we had not succeeded in gaining public support for self-preparedness. Even the California Earthquake Preparedness Program had faltered in the face of four years without a damaging earthquake in the late '90s. Now with the emphasis and funding for at least two impact cities in each state, mitigation and preparedness have been resurrected.

The International CERT Society and North American Emergency Management supports our present Community Preparedness efforts. One of their useful efforts is their home page on the Web, coordinating information from many of the local community efforts around the country

4. Military Medical Technology Transfer

The fourth program focus is the transfer of advanced methods of technology from military research into trauma treatment and transport of casualties in war. These advances have a direct correlation with trauma in the urban environment from both natural and man-made disasters. The impetus for this effort is the naval medical component of the 3rd U.S. Fleet and Balboa Naval Hospital in San Diego. This effort continues at the present with an active effort on going.

What Have We Done?

In 1992, after completing the concept, training and employment of the [Heavy Urban Rescue Teams](#), we legally turned the program over to FEMA for national support and funding. Since then, the NIUSR has made its centerpiece of effort the establishment of National Crisis Information

Architecture. This network could permit all involved in the response, to plug into an interlinking, open system. This Web-based system is designed to accept any widely distributed COTS software, regardless of code chosen.

It is based on a redundant virtual network, operated in a sophisticated system of routers, with a future series of levels of security. It operates on any platform. It functions with one pool of storage for all requests, handling many dissimilar queries for different information at one time without human intervention. It must function in near-real time. It is backed-up with redundant paths and routers and servers. This effort is on-going for a prototype system to be turned over to the governmental agency responsible for providing a national domestic backbone for strategic and tactical response for lifesaving regardless of the cause of the need for such response. Among it's various names have been Aurora, XII and DERIS. It is now the basic building block of the [NIUSR Knowledge Management system, the ROSE](#) (as in a Rose by any name smells as sweet).

The guiding principal of NIUSR has always been "from the bottom up" in establishing the response hexarchy for lifesaving. It has been to represent the needs of the first responders before the federal government. All emergencies start at some location, at land or sea, or in the air. Information from that point escalates to the required level of responsibility, response, and funding. Too often that top layer is too removed from the reality of the emergency to give proper support. Communications technology can now place that information from the scene immediately in the hands of the responsible level.

Originally our effort was in response to the earthquake threat. After we had turned the Urban Rescue program over to FEMA, we found that the Urban Task Forces were unable to successfully communicate as an integral part of the newly recognized multi-agency, multi-function response that their tactics required of them. A combination of agency cultures, disparate frequencies, conflicting strategies and goals, and a lack of coordinated planning were causing both the efficiency and effectiveness this elite resource to be degraded. Such difficulties could be expected in their various deployments to foreign countries, but certainly not in our own communities.

Since then, much of our efforts have focused on linking the levels of response organizations into a knowledge based communications system. This will permit federal, local and state entities to respond more quickly, effectively and efficiently to the heightened risks of weapons of mass destruction, as well as bio-terrorism.

This key program and focus has had many names since its conception, Aurora, XII, DERIS. It is now a focal component [of the ROSE Knowledge Management System](#).

Where Did We Start?

By combining the best of the old with the reach of the new, we have developed several successful lifesaving systems over the past 25 years. Now, many are so ingrained in today's emergency response that their beginnings have been lost. Only a few remember the similar struggles and confusion that the Institute again experiences today in its new efforts for "better mousetraps."

As examples we will list several of the programs that we have successfully engineered. The persons who led these efforts are so varied that they defy description. They came from all fields; all levels of station and responsibility; all types of personalities. They shared courage, persistence, passion, knowledge, and intelligence. They shared the joy of effort and the exultation of the successful achievement of their goal. They are our Eagles of our past, showing the way for today's Eagles.

When Viet Nam ended, helicopters became available as a useful tool to save time in the search for lost persons. At that time, they were used to move searchers rapidly into the areas of highest probability with the greatest chance of quickly finding the person. The most experienced climber, for example would be lifted to the top of the mountain by chopper and the party would search down the mountain, covering more territory more quickly than is climbing the arduous steep and tiring terrain.

That did not turn out to be a successful tactic since the route for a person, down-climbing, is not the same as for a person in rough terrain climbing upwards. We proposed a different strategy for the use of the helicopters. In addition to their being used as a transportation platform, we suggested that they be used as a search platform. Until this time that use had not been successful since a 360-degree circle to search from the point last seen by a helicopter was possible but had not proven successful. Therefore, we combined it with our second effort at changing ground search and rescue.

With the assistance of the El Cajon Station, San Diego County Border Patrol, the time-tested technique of following a person's footsteps to their location was revived for use in finding lost children. Ultimately, with wide training of rescue personnel, this technique was extended to the search for missing adults as well.

The additional speed of the helicopter was employed to search ahead of the trackers once the tracking team established a direction of travel. As a backup to the possibility that the route of travel could dramatically change, the trackers would continue at the much slower pace of step-by-step tracking. Rarely did the chase go beyond night fall with the helicopter search proving the quick and often lifesaving answer to the difficult and exhausting work of originally establishing the lost child's or adult's line of travel. An outgrowth of that program was the effort undertaken by a spin-off of the tracking program. This group, known as "Hug-A-Tree," has for 15 years taught 5th grade children, all over the United States, to sit down and not move when they realize they are lost. It has gained wide acceptance to can be found on the Internet today.

The addition, the use of dogs especially trained in searching for humans was added to the accepted tactics for finding lost persons. The training of these dogs, usually police dogs, was very different the previous use of hunting dogs which were usually bloodhounds. Although huge arguments continue to abound in the dog world as to which dog and which training is the 'best', the widespread use of trained search dogs in both mountain rescue and urban rescue is accepted today.

Up to this time, ground search and rescue had not been supported as a recognized function of the U.S. Air Force, the Executive Agent for search and rescue on land. As strange as it may seem today, people were expected to

not get lost in their natural habitat (land). Rescues were acknowledged to be deserving if at sea ([the U.S. Coast Guard](#)) or from aircraft failures ([the U.S. Air Force](#)). The U.S. Army was and remains the Executive Agent for assistance in disasters, but not rescue. With the outstanding assistance of the Interagency Committee on Search and Rescue, that ruling was changed and the Air Force accepted the responsibility, when requested, to coordinate land rescue.

In the early days of the outstanding cooperation of the Air Force in its new role of response to ground support requests, another ruling became a barrier to efficient support of rescue personnel. Requests to transport rescuers to inaccessible sites were quickly accepted. Upon successful search, transportation of the rescued person was agreed and accomplished if the terrain demanded it. However, the rescue team was required to walk out on its own. Distance of terrain was not considered a valid reason since the recovery team was not "technically" in need of rescue! We also got that changed so long ago no one even remembers those olden days.

Then, in 1992, we arrived at the point that we were able, after nine years of effort, to turn a fully engineered Urban Heavy Rescue Program over to FEMA. In light of the newly recognized possibility of catastrophic earthquakes, this new capability for first responders had become essential. FEMA has added equipment and training, and further extended the capabilities, training and numbers of the Urban Task Forces in the following years. Now with the ROSE Knowledge Management System we are on the threshold of an even greater contribution to lifesaving in the United States.

What Brings Success?

Success is people--dedicated, courageous, and intelligent, with passion! There is nothing like the joy and glory of hard work for a subject that is one's passion. This is the ethic of the NIUSR. It is also the basis for all volunteer efforts in the United States. Volunteerism is one of our treasured national ethics. Traditionally, whether it is the community symphony, the garden club, the Boy Scouts or the military reserve, we volunteer.

Our volunteers are what make our expectations come true. No funded "think tank" could afford the hourly billing of those who graciously dedicate their expertise, through the Institute, for the greater good of the people of our nation.

Who are Our People?

The National institute for Urban Search & Rescue has five voting officers. In addition to our officers, the 50-person leadership of [our Board of Directors](#) was invited to join our progressive efforts. Our Institute has no membership; no voting powers, but functions as a group within the format of mutual consensus. In the 25 years in which we have functioned as the National Institute for Urban Search and Rescue, we have had only one topic upon which we could not come to consensus.

To this group we have added [our Alexanders](#), a group of people under 30 years of age. This group brings the freshness of new ideas, new concepts

and new ways of looking at situations and opportunities. Combined with the experience and hard earned wisdom of the core group, we have a winning combination.

Now we have added [the N-CORE](#), a sub-set of the parent organization, consisting of government, non-government, industry and military groups. This cadre is addressing the particular new risks and the readiness of our national state and local responders to cope with this new challenge.

Within the Institute, these 150 people are known as "[the Eagles](#)." Long ago we adopted the theme: "Eagles do not flock. You find them one at a time." That is what we do. When someone with passion and courage as well as intelligence crosses our paths--that is our new worker.

In addition to this Joint Board, we have [a 2250 person Advisory Panel](#). They communicate with us, finding information, reporting on scene emergencies, and supporting our efforts, both with passion and with funding.

We are often asked why anyone, or any company, organization or agency would undertake such monumental challenges, as well as the attendant risks? Moreover, without money? We feel it is because of the passion each holds in their breast -- whatever it may be -- that has been frustrated by one of the many systems that impede change. A better mousetrap is not always a welcome commodity, either today or in the past. --In NIUSR it is not only welcome! It is sought!

The Myth of "No Money"

Another question we are often asked is how we develop these programs for beneficial change without money.

In today's culture the only acceptable excuse for NOT doing what you know you should do, is "NO MONEY."

There is lots of money, and it is spent every year--much of it in the wrong, traditional places. It continues to be spent where legacy systems and the line items already exist in last year's budget. It is like buying more buggy whips because it is a line item, but you have gas-powered vehicles. Now, folks can understand how foolish that is--but update it to today's budget and it is not funny! (Incidentally, does your personnel department have a job description for hiring an information technology staff? Probably, now after 9/11?) Add to that the state's (not including federal) expenditures of hundreds of millions for their share of Response to Natural Disasters. Now those amounts add up to real money!

The problem is not a lack of money. It is reluctance to change, to give up what is known and which is thought to still be "safe" but--in reality--is perilous in these changing times. It is our old cultures, typified by, "That's not the way we do it here!" This is the greatest sticking point to the adoption of new technology to enable the saving of more lives, more property and more infrastructure

CONCLUSION –

We end with a parable.

My father, a man of both experience and wisdom, had this answer when I queried him in my teens, "How do I get people to do what I want?" His answer was: "You can't. They will never do what YOU want! Find those people who want to do what you want to accomplish; who share the same goals. Give them their head. Pat them on the back, and get someone else to do what they cannot."

In today's words we in NIUSR "empower people." And yes, through hard work, faith and persistence the Institute will continue to find the dedication of individuals, agencies and organizations to invent, engineer, architect and provide systems to enhance the quality and safety of life for the American people--with your help. Or, as we say, [Press On!](#)

~ Lois Clark McCoy

email niusr@ix.netcom.com

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