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The Future of First Response
Designing a vision for the future

- A battalion chief provides a trapped firefighter with a trail of "breadcrumbs" on her heads-up display that leads to an escape route.
- Paramedics arriving at the scene of a mass casualty incident place stickers on each victim that share patient vital signs to help speed triage.
- Police officers chasing an armed suspect use a camera equipped drone to determine the safest way to approach the suspect.
- Lightweight body armor protects responders against firearms and knives while monitoring the wearer's health status.
- Lightweight turnout gear changes color when exposed to hazardous materials.

Does this sound like science fiction? It's all within the realm of possibility within the next fifteen years, according to Kristin Heist, Director of Product Experience for Continuum Innovation, a global innovation design firm. For over a year, Heist has spearheaded a joint effort of Continuum, Pacific Northwest Laboratory and the Department of Homeland Security's Science and Technology Directorate to define a future vision for first responder tools, clothing, technology, and support systems.

Why This Project?

Heist identifies two major influences on the Future of First Response Project. First is that while technological solutions are available, there was no common vision that could unify the efforts of separate companies. Lacking this vision, companies were often not aware that their existing products could be modified for first responder use, opening new potential markets. This is important because companies are not always willing to invest in research and development for the relatively small first responder market.

A second issue was that many companies viewed the needs of the first responder community as a technological problem. There was little attempt to take a user-centric approach but instead the focus was on the technology.

According to their website at http://www.futureoffirstresponse.net/, "the goal of the project is to bring together key players in the first responder community, industry, and government to define a future vision for the tools, clothing, technology, and support systems first responders will need in 15 years then to develop those

and systems." The expectation is the vision and prototypes developed by project participants will stimulate and focus the efforts of multiple companies towards a common goal.

The Approach

Heist is adamant about the need for a user-centered approach. "This all comes down to people," she says. "The second we step away from that …you're losing touch with what it really is.

The team used an approach that is simple but often neglected by developers: ask the people who are going to use the technology what they need. Consequently, the team spent a considerable amount of time interviewing first responders and observing field operations. The interviewees were not just senior staff but included field personnel as well.

Interviews and focus groups have a place but the goal of the project was to design realistic, usable technology. To do this, the project team developed prototypes and mockups that allowed the program participants to get a feel for what the technology might look like and how it might behave. This allowed for feedback on whether the proposed solution would really work in the field.

The System

One of the intriguing concepts developed under the project is the full integration of first responders through unified communications and a shared situation analysis. The ability to share voice and data with multiple levels would allow for a truly integrated response by responding agencies.

Another key concept is shifting the need to input situational data from the responder to the system. This frees the responder to focus on his

or her primary task without the need to pass information to senior officers or a command center. It allows responders enroute to an incident to be aware of what is happening and to plan both the best approach to the scene and for their initial actions.

The concept of a patient sticker that transmits patient data to both the responders and to supporting physicians has the potential to change how patients are triaged. The system would allow incident commanders to view the overall situation quickly on a command screen and would alert responders to any change in patient status.

One other area that the team considered is that first responders do not operate in a vacuum. Trends in the real world, such as self-driving cars and smart buildings equipped with sensors will have a bearing on the technology being developed for first responder use.

But Is It Real?

Envisioning a future can easily become an exercise in futility. So, the logical question is, "how real is this project?"

Very real according to Heist. The project is based on a real assessment of the needs of first responders. The prototypes have been vetted by the field personnel who will have to use them. While not all the technology is available yet, the project teams believes that everything developed is within the reach of current technology.

Is this truly the future of first response? Time will tell. There's still a lot of work to do but having a vision of what that future could look like, especially one grounded , brings us a lot closer to making it a reality.