Digital Power

By Peter M. Curtis

Peter Curtis is the president of Power Management Concepts, LLC, in Bethpage, NY, and an associate professor at New York Institute of Technology.

Tools for the Next Generation

The old tools will give way too

. . . and likewise all the parts of the system must be constructed with reference to all other parts, since in one sense, all the parts form one machine—Thomas Edison

As you sit comfortably in your home or office computing; texting; emailing; Tweeting; Skyping; blogging; and downloading books, music, online banking, and online educational courses, millions of servers/storage devices are processing and saving enormous amounts of information from health care to homeland security and all industries in between.

It's now evident that intelligent computing has become the new electricity, which will take us from our industrialized days to the digital and intelligent computing future. Some have described this intelligent computing as "utility computing." Computing has already transformed our society just as electricity changed an agrarian society to an industrial society. The evolution of the digital society has sped up our lives significantly; today, cascading events unfold so rapidly that we need to incorporate new decision-making tools that integrate information from many data source inputs based

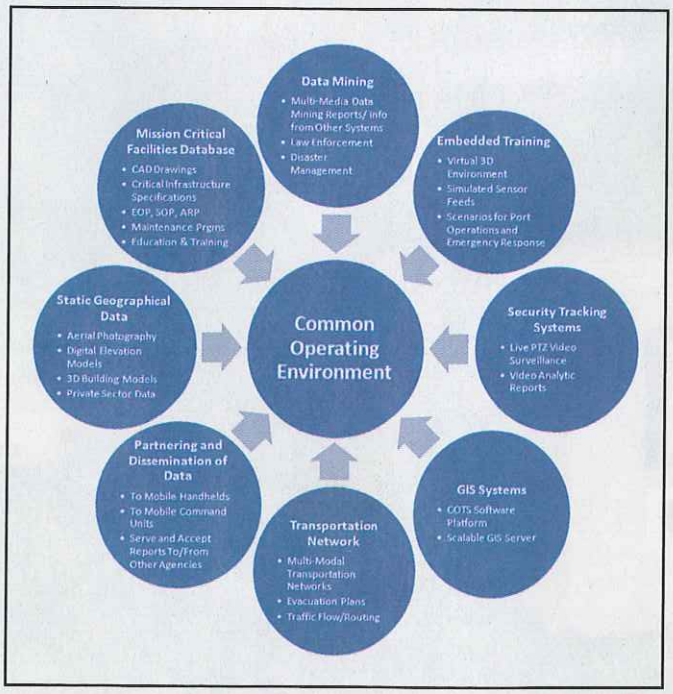

Figure 1. Common operating environment must support all the functions required by emergency responders

Mission CRITICAL

Data center and emergency backup solutions

upon what we need to manage from a normal day to a critical event.

There must be a sense of urgency when collecting and disseminating information about a critical event as it unfolds, like police communications and security intelligence during the Times Square car-bombing attempt.

The advance of society has created events that were unheard of years ago. For example, chips are embedded in most devices manufactured today, which in some cases makes us vulnerable to cascading events because of our dependence on technology and the "just in time" environment we have created.

Nowadays, a critical event takes out virtually all digital systems being deployed for global security in both private and public sectors. We also are aware that it is imperative that the next generation of tools incorporates visualization, document sharing, information securing, and knowledge leveraging, all while facilitating education.

What I'm describing is a common operating environment (COE) for homeland security, emergency-preparedness, rapid-response, and mission-critical operations that addresses the variety and scale of emergency events that we face.

How do we leverage and integrate existing legacy systems that use cameras, sensors, or other monitoring equipment intelligently to create a COE for an emergency? How do we make better use of existing knowledge that can accelerate the decision-making process so that first responders can have all the facts and information available?

Answering these questions will help us develop the next generation of tools needed to successfully protect, maintain, and sustain our critical infrastructure and key resources. An intelligent solution that leverages the common ubiquitous elements of digital communications, computer graphics, and "videos of everything," will deliver an interactive virtual picture of what's going on, augmenting reality with additional knowledge in a way that's second nature to current and future generations.

Deploying an interactive COE that presents a visual landscape that makes collective sense out of all the information available in a typical command center significantly improves first responders' ability to manage an incident efficiently, effectively, and quickly by sharing actionable information among local, state, and federal responders for enhanced situational awareness. Extending this capability beyond the command center through a mobile technology platform would provide local incident commands the ability to deploy COE for field use by the individual first responder, providing direct access to a common view of an unfolding emergency event. The goal here is to enhance the COE with elements such as communication path optimization, data fusion, and cyber layers.

Correlating disparate data sets and legacy systems in a COE will provide additional data sources for emergency response situations, including imagery warehouses, deployed surveillance and tracking systems, access to city-wide street, parcel databases, and mission critical infrastructures, thus adding another level of intelligence to an incident response. The goal is to provide a pervasive capability to gather accurate and timely information, correlate diverse information sources, and make this collective knowledge securely available wherever it is needed on any digital device. Distributed intelligence is necessary to battle growing and adaptive threats or simply for continuity of operations in the exploding complexity of this digital world (see figure 1).

In mission-critical and homeland-security environments, viewing and controlling disparate data sources and critical assets can allow managers to mitigate infrastructure failures, thereby ensuring full operational readiness, and to dispatch mobile assets to appropriate locations for emergency response. Integrating a wide array of information sources, sharing that information among facilities, agencies, and regions, and correlating the data into a single portal, while allowing information to be securely exchanged between COE operators, supports information sharing and enhances all COE data views by providing more useful information and therefore a more complete view of any situation.

In mission-critical facility environments, a robust COE can integrate new and legacy monitoring systems, such as BMS as well as data center alerts, alarms, and reports into one common customizable view, giving data center managers a dashboard of information they can use to make informed decisions. The facility's overall reliability improves operational readiness. Imagine seeing real-time displays of UPS loads, airflow and temperatures, data center rack temperatures, generator run logs, system capacity, and live security cameras for all your data centers globally. All information being available in one common view that can provide historic data trending and allow data center managers to make better asset decisions on any operational issue as well as the moves-adds and change process. These are the tools of the next generation that will keep our digital society operating smoothly and efficiently.

We can no longer dismiss the importance of organized continuous information feeds as critical events unfold; the timeliness and accuracy of information enables response and the deployment of assets where they're needed most. Years ago having updated procedures (SOP, EAP, and ARP) available was considered important but was often looked at as being trite and meaningless in comparison to the day-to-day operational activities and the necessary capital improvements. When a critical event occurred, it did expose the importance of having updated information such as the proper drawings or procedures. The payback was immediate and continuous … and our systems hummed on.

It doesn't matter if it's a critical event, natural disaster, manmade problem, or a critical infrastructure issue; the one thing we do know is that we have to be prepared to manage through an event and we can only succeed if we have the tools for the next generation and part of that toolbox is the common operating environment. ■