Fire control tracking
system aboard
USS Seawolf.

Information
Superiority
in the Pacific Fleet

By ARCHIE R. CLEMINS

Throughout this century the Navy has pioneered the development and use of technology to achieve the impossible. Ideas that once seemed radical—such as carrier aviation, nuclear powered submarines, and amphibious warfare—became realities. As the century draws to a close the Navy must continue to push the envelope to accomplish its mission. Its most effective tools in this effort will be information sharing and technology.

In the last fifty years communications have evolved from flags and flashing lights to secure radios to e-mail. The information revolution has created new technologies and opportunities which alter the way information is acquired and used to again make the impossible reality. Continuing its role as an innovator, the Navy initiated a program known as "Information Technology for the 21st Century" (IT–21) to shape warfighting capabilities, support systems, and information processing. In fact, information sharing—knowledge sharing—already dominates the relationship of the Navy with the Army, Marines, Air Force, and allies.

Employing IT–21 technology, Pacific Fleet is examining afloat and ashore force structure, capabilities, and methods of operation in anticipation

Admiral Archie R. Clemins, USN, is commander in chief, U.S. Pacific Fleet, and has served at sea in both ballistic missile and attack submarines.

of reduced force levels and declining budgets. This means we must place greater importance on joint operations with the other services and allies. We must seek a capability greater than the sum of the parts. In fact, we must find efficiencies and force-multiplyers to remain engaged with nations in the Asia-Pacific. IT–21 technology achieves

staying common with industry is the best way to remain on the cutting edge of technology

all this by offering an efficient, effective, and easily integrated system.

Unlike ground forces which measure force levels by the number of people in uniform, the Navy evaluates its force level by the capability of ships, submarines, and aircraft and how many of those platforms can be operated by its people. In the future fewer sailors will operate more capable systems that perform more missions.

The Armed Forces are pursuing initiatives that will increase our capabilities tremendously. Revolutionary ideas are being examined, including new systems like the smart ship and joint strike fighter and concepts such

as outsourcing, Reserve contributory support, and acquisition reform.

The engine that propels these concepts is sharing information through the best technology. IT–21 ensures that and follows seven precepts to achieve its goals.

■ If the boss doesn't use it don't buy it! IT systems must be used by those in command; otherwise they won't be used at all. Bosses must lead implementation of new technology lest they hold their organizations back. Likewise, designers and purchasers must ensure that leadership is completely sold on plans for information management before precious dollars are spent.

■ Integrate tactical and tactical support areas. With IT–21 one system allows units to merge tactical business (sharing operational pictures, browsing intelligence products, and collaborative planning) with tactical support (logistics, personnel, training, medical, and supply). We must fight and run ships from a single PC-based system. That technology exists. Separate workstations and networks for tactical and nontactical uses are unreliable, burdensome, unnecessary, and costly.

■ Stay common with industry when acquiring new technology because of time, money, and ease. Industry standards are developed at a pace the military can't match. And by capitalizing on commercially produced hardware and software, considerable R&D costs can be avoided. Staying common

with industry also saves greatly on training and troubleshooting. With "help" buttons, vendor web sites, books, and training videos, industry products come with extensive support. And our people are more familiar with it. While it may take an expert weeks to learn a complex operating system, the youngest sailor can understand and navigate Windows systems. In short, staying common with industry is the best way to remain on the cutting edge of technology while providing a user friendly system.

■ Drive everything to a single PC. All our applications must be connected to a Windows NT-based PC in a client-server environment using off-the-shelf software. The one exception is when it is necessary to use a higher level operating system and workstation. Such instances are becoming rare. Going to a single PC doesn't mean abandoning established information systems. On the contrary, efforts toward one command and control system are needed to force integration. But driving users of these systems to PCs empowers the warfighter as never before with an array of detection, targeting, operational, and logistics information from joint sources and satellites delivered to a single point.

■ Use commercial off-the-shelf (COTS) products for almost everything. With commercial technology, there is little that can't be done with a good office suite and e-mail package running in a client-server environment. Additionally, COTS guarantees interoperability with the commercial sector, which will be increasingly critical as we outsource some support functions. Not only must we use COTS; we must change the way it is purchased. Antiquated acquisition procedures—with long lag times, reams of paperwork, and needless life cycle management—must go. We must not look at computers as physical property but as consumables.

■ Have seamless transition from shore to sea. A ship in San Diego, connected via fiber-optics on a pier to the metropolitan area network, must get underway and switch to satellite so that it is completely transparent to the user. The process must be as seamless as switching from shore to ship power and as easy as roaming on a cellular telephone as the ship moves around the world. Likewise, marines embarked on Navy amphibious ships must be able to plug and play with laptops in a ship's "green" spaces when they come aboard and continue communicating seamlessly ashore. The Marine Corps concept, *Operational Maneuver from the Sea*, states that the capability exists to make the concept truly operational.

■ We cannot allow stovepipes to develop within C⁴I architecture. We must buy icons, not hardware. Money is wasted by

U.S. Navy (Timothy C. Ward)

Transmitting report, Kernel Blitz '97.

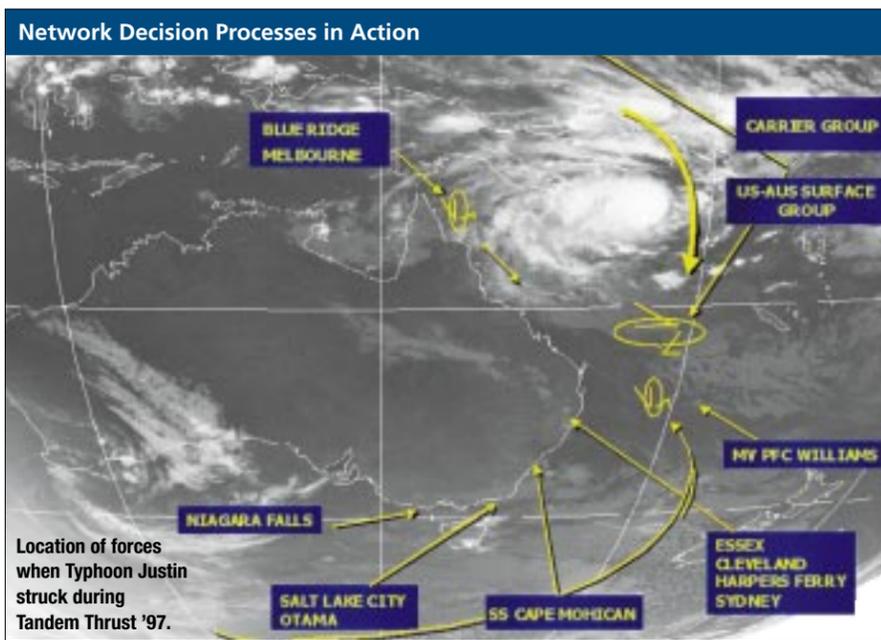1st Marine Division, Combat Camera (Charles Grow)

Network Decision Processes in Action

Location of forces when Typhoon Justin struck during Tandem Thrust '97.

developing stovepipe communications for one segment or another of the military to talk to itself. Though well-intentioned, this has created a labyrinth of protocols, software, and hardware that fills ship spaces, burdens users and technicians, and prevents us from staying on the cutting edge of emerging technologies.

The object of IT–21 is to link U.S. forces and eventually allies in an asynchronous transfer mode network to enable voice, video, and data transmissions from a single desktop PC. Without this ability the Navy will waste precious resources, time, and effort.

Pacific Fleet maintains a strong, capable forward deployed force in the western Pacific and provides two-thirds of the battle groups in the Arabian Gulf. With 194 ships, 1,600 aircraft, and skilled sailors, marines, and civilians operating them, the challenge for Pacific Fleet is developing new ways to acquire and use information to accomplish missions efficiently and effectively at each level of command. IT–21 gives it that ability.

IT–21 is not just a theory; it works. Commander, Third Fleet, in San Diego implemented it in his role as director for the Navy's battle lab, developing systems and field testing them to prove capabilities. With its relative proximity to other Navy labs, universities, and industry, Third Fleet can test almost any system and quickly provide feedback. One test area, Fleet Battle Experiment ALFA (FBE–A), first implemented and tested many experimental systems in March 1997.

FBE–A explored the potential of littoral warfare, including the ring of fire concept designed at the Johns Hopkins Applied Physics Lab. In the past specific units have been tasked to provide fire support to ground units. Using laptop computers and satellite links during the ring of fire test, marines ashore sent information right to the battle group commander, who then directed shipboard missiles or ordnance from the most effective unit. Shipboard weapons were dedicated to targets rather than the entire ship, giving the commander more capability to employ his forces. Web pages and e-mail were used to rapidly and routinely transmit information and knowledge—classified and unclassified, tactical and tactical support. This dramatically increased the speed of command and compressed the time required for coordinating events.

Also during FBE–A, an Air Force joint surveillance target attack radar system (JSTARS) aircraft transmitted real-time pictures of hostile land forces to the command ship, *USS Coronado*. In this test of transmitting such data directly to a ship, the joint operations center onboard quickly relayed information to ground troops, aircraft, and ships for appropriate action. This proved that littoral command posts of the future can use this method to direct campaigns.

Proving the viability of IT–21 in operations, FBE–A quickly revealed

both the strengths and weaknesses of the technology and its application. Such on-scene evaluations permit instantaneous refinement and reconsideration depending on the level of suc-

Tandem Thrust architecture enabled horizontal dissemination of information while allowing hierarchical decisionmaking

cess. The challenge remains to ensure that these capabilities are disseminated to Pacific Fleet forces that deploy to the western Pacific and Arabian Gulf. The ultimate goal is to have such capabilities in all units regardless of fleet.

The Forward Deployed Naval Force (FDNF), which is based in Japan and centered around *USS Independence* battle group and *USS Belleau Wood* amphibious readiness group, contributes to stability in Asia and serves as a quick response "911" team in a crisis. Always present and often used, these forces were available on short notice during recent tensions in Korea and the Taiwan Straits. A week closer to Asia than ships steaming from the west coast, the Seventh Fleet FDNF immediately projected naval capability in both situations.

Aside from crises, the commander of Seventh Fleet is a joint task force commander and the primary Navy implementor of cooperative engagement with regional allies. With responsibility for introducing proven IT–21 technology and concepts to FDNF, he demonstrates the capabilities with bilateral partners in the region.

In March 1997 Seventh Fleet employed IT–21 operationally during Tandem Thrust '97 in Australia. Conducted immediately after FBE–A, the exercise included a combined U.S.-Australian force in a mock invasion of northeast Australia. Web technology and satellites allowed seamless communications among all forces. Tandem Thrust architecture enabled horizontal dissemination of information while allowing the commander to preserve hierarchical decisionmaking. The extensive information exchange between units was increased enormously by using web technology.

For example, meteorologists posted daily or even hourly updates on the Tandem Thrust '97 web page gathered from a range of U.S. and Australian military and commercial sources to keep all the participants informed about Typhoon Justin. Rather than sending e-mail or reams of message traffic, the web provided the latest weather. With this information, exercise planners were able to adjust schedules to work around the typhoon and complete all events on time.

Subordinate commands and specialty areas followed this model and posted information on the Tandem Thrust home page. This resulted in a virtual command center, with critical information available at the touch of a key which enhanced the scope of the exercise.

Putting such an exercise on line encouraged leaders to utilize IT–21 technology to its fullest. Lessons learned from the daily use of network technology enabled Tandem Thrust '97 participants to develop and then refine processes on the strategic, operational, and tactical levels.

Throughout FBE–A, Tandem Thrust '97, and the recent Pacific Joint Forces Exercise 97–2, Pacific Fleet operationally tested information technology and its applications. IT–21 empowers us to redesign the processes used by warfighters which makes them better informed and enables them to operate jointly and be more responsive when needed. This technology permits Pacific Fleet and the entire Navy to work more closely with the Army, Marines, Air Force, and allied forces.

IT–21 is not an end in itself; it is a means of changing processes. Once a critical mass is achieved it saves resources that more than pay for the technology. More importantly, it provides more capability. By leveraging information technology to reengineer the way we do business, we avoid significant costs as we meet new challenges. These efforts will increase our capabilities and the opportunities for

Pacific Fleet to improve joint operations while fulfilling the Pacific Command strategy of cooperative engagement with the nations of the Asia-Pacific region.

To foster stability in this critical region, Pacific Fleet must lead in technology, and precious resources must not be squandered. Information sharing is changing rapidly, and we have seen the Navy completely alter its outlook on information technology over the last two decades. We have moved from link-11 teletypes and rudimentary weapons control computers to website information management on commercially available Pentium processors.

Some may say that using IT–21 capability is the realm of the impossible, but it is clearly the way ahead. The Chairman has articulated a warfighting vision for the future in *Joint Vision 2010*. The bases of battlefield dominance are dominant maneuver, precision engagement, full dimensional protection, and focused logistics. But they assume that we will have information superiority. IT–21 is the Navy plan for obtaining that information superiority and Pacific Fleet is employing it to lead the way into the next century. **JFQ**

PHOTO CAPTIONS

apjfq44960touch
U.S. Navy (John E. Gay)
Fire control tracking system aboard *USS Seawolf*.

apjfq41531flash
U.S. Navy (Timothy C. Ward)
[none]

970628–M–9368G–005
1ˢᵗ Marine Division, Combat Camera (Charles Grow)
Transmitting surf report, Kernel Blitz-97.

apjfq45770oki
U.S. Navy (R.F. Poliandro)
Landing craft entering well deck of *USS Fort McHenry*.

PULL QUOTES

staying common with industry is the best way to remain on the cutting edge of technology [PAGE 2]

Tandem Thrust architecture enabled horizontal dissemination of information while allowing hierarchical decisionmaking [PAGE 5]

FIGURE
Network Decision Processes in Action
Location of services participating in Tandem Thrust '97 when Typhoon Justin struck Australia.

[See digital file TYPHOON]