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CHANGING TECHNOLOGY

This morning at 5:10 a.m., the automatic sprinklers at my house turned on. Six minutes later the system's Zone 1 turned off and Zone 2 turned on. The sprinkler system continued to operate without my input or awareness; one hour later my lawn was watered and the system shut itself off. Meanwhile I was busy checking e-mail and my day's schedule on my BlackBerry and carrying on a conversation with a member of the Program Executive Office, Missiles and Space, two thousand miles away. A few minutes later I was able to use my home computer and check on a new bank account that I had set up for my son and transfer money instantaneously from a bank in Virginia to a bank in Texas. After setting my Ti-Vo to record a television program for later in the day, I hopped into my hybrid car and drove to work – getting 48 miles to the gallon. In short, technology made my morning activities simple, productive, and allowed me to use my time and resources more efficiently.

In comparison my father's morning routine of a few decades ago was not nearly as varied or productive. At that time if he wanted to water the lawn, he would have had to drag out a hose and continue

to monitor the time and move the sprinkler around the yard accordingly. He could not have read his work related correspondence in near real-time at home, but would have had to wait until he arrived at the office. Likewise, he would have had to

wait until the bank opened before he could inquire about an account, as well as wait several days for funds to transfer between banks after he had arranged to wire the money for a fee. Technology has changed the way I live from the way my father did.

Americans' lives today are different than their parents' lives in part due to technology. Of course technological advances have always impacted and changed how succeeding generations of people have lived from their ancestors. What is different about today is the pace of the technological evolution. Machines and systems we take for granted today did not exist 15 years ago. Personal computers, online banking, BlackBerries, e-mail, cell phones, ATM machines, and the ubiquitous network that links them all are making our lives more productive, more convenient, and some would argue more stressful. Whether for good or bad, technology is rapidly changing the way we live and the pace of change will continue to accelerate.

Technology, which is defined as, "the practical application of knowledge especially in a particular area" and "a capability given by the practical application of

knowledge,” is not just changing individual lives; it is also impacting our businesses and institutions, to include our Army. Information networks, computing power, advanced sensors, satellite communications, smart- weapons, as well as precision navigation and targeting technologies are rapidly changing the Army. The Army is spending billions of dollars to develop weapons, radios, and vehicles that incorporate the latest technology in the effort to maintain and enhance combat power. These new technologies are enhancing the Army’s capabilities but have far-reaching impacts that go beyond merely the fielding of a new piece of equipment. The Army does not employ or fight equipment; rather the Army employs and fights combat units, whether it is a squad, platoon or division. The introduction of increasingly technological advanced equipment means that the Army must evaluate and subsequently change doctrine, training, education and leadership, as well as organizational structures, in order that its units are fully prepared to utilize and win with these new capabilities. Technology must be integrated into the Army in a holistic manner in order to maximize its effectiveness.

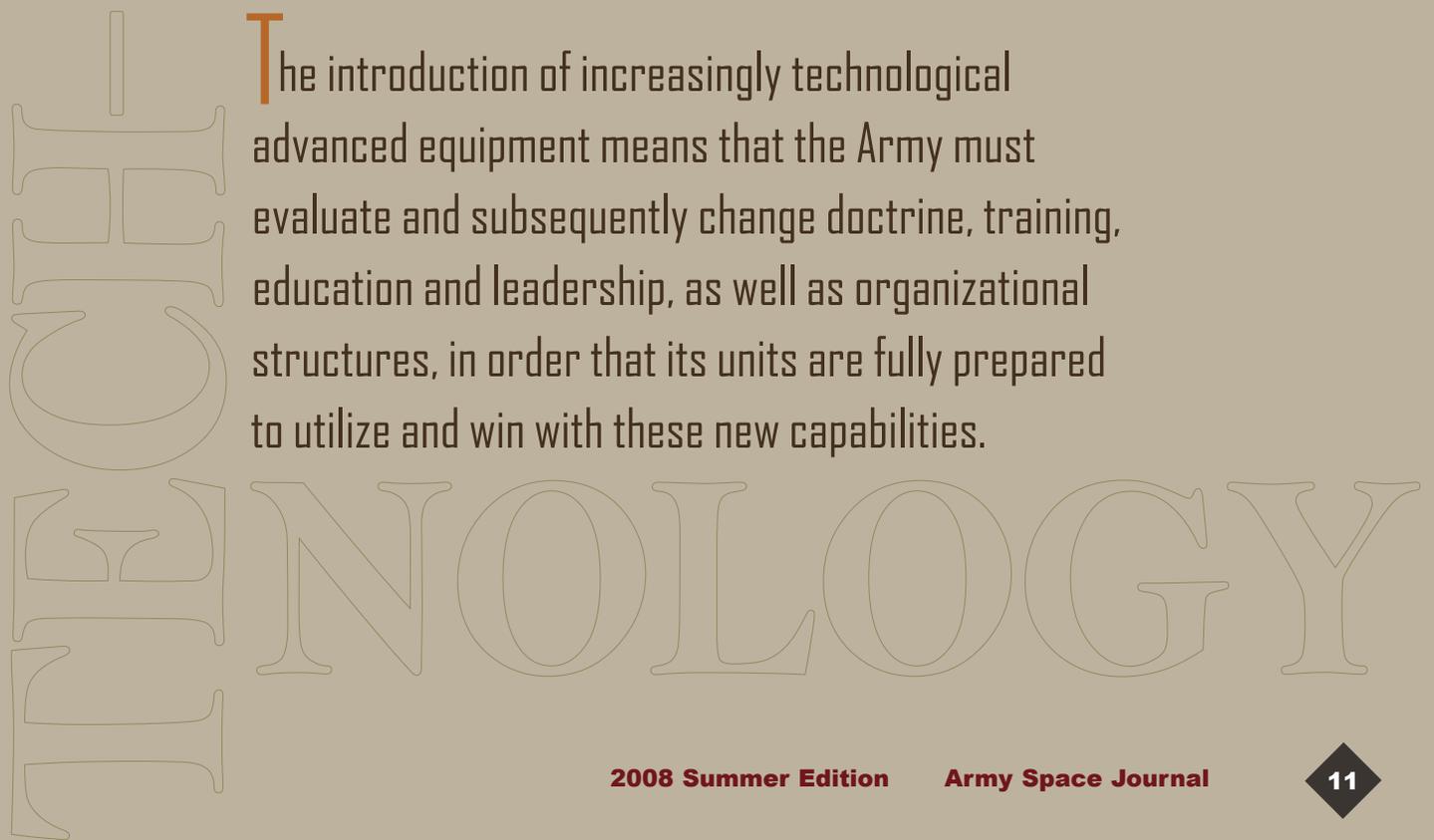
U.S. Army Space and Missile Defense Command/Army Forces Strategic Command is at the leading edge of technology development and integration in the Army. Over the past decade, the Army, led in part by SMDC/ARSTRAT,

has pushed Space capabilities to forward deployed Soldiers at the tactical level. Space-based and enabled capabilities such as satellite communications, missile warning, precision navigation and targeting, Joint Blue Force tracking, and hyper-spectral imagery are increasingly available to, and are enhancing the combat power and effectiveness of, the Army’s brigades, battalions and other tactical formations. SMDC/ARSTRAT has played a pivotal role in identifying operational capability gaps that can be addressed by Space and subsequently developing solutions to fill those gaps.

Today SMDC/ARSTRAT is working on a number of efforts to mature new technologies and integrate them into the Army’s future Space and missile defense forces. The Space and Missile Defense Battle Lab is actively working to define and develop High Altitude capabilities that could one day provide persistent Intelligence, Surveillance and Reconnaissance, beyond line-of-site communications and enhanced missile warning to Soldiers deployed on future battlefields. This effort will entail much more than developing the high altitude platform. To make this proposed capability a reality, SMDC/ARSTRAT will have to develop the operational concepts and architectures, as well as eventually design the organizational force structure and supporting training. At the same time, SMDC/ARSTRAT is actively working with U.S. Strategic Command and other Services

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calling Army Space Command to get their hands on them. Eventually the Command provided 800 SLGRs to deployed units and orchestrated the urgent purchase of 10,000 off-the-shelf commercial GPS receivers which were then allocated across the deploying forces by the Deputy Commander, 18th Airborne Corps.

Someone had an idea, others saw potential for the capability and were willing to take it on and test it out to determine whether or not it had “tangible benefits for the warfighter.” FA40s can be the “point men and women” spotting, advocating, and testing that technological something that may become the next advance that will enable warriors like the SLGR did.

Conclusion

Technological advances can make our lives easier and enable the success of our missions. Think of global ballistic missile defense sensor integration, fusion of blue force tracking data from multiple systems into a common operating picture, portable phones shrunk from 5 pound boxes to light-weight pocket-sized cell phones with classified capabilities, computer drives with gigabytes of storage Space; and systems that are more user-friendly such as e-mail and intranet collaborations, just to name a few. None of us want to return to the days of horse-drawn artillery or laminated maps in our cockpits.

As we embrace these advances and recognize that all technology has its limitations, we remember that it is a tool for us to use and is no substitute for human decision making abilities. Too, we need to understand the limitations so that we don't oversell what today's technology can do. And someday as we keep looking at new ideas and inventions, we may discover the solution for that limitation and it will significantly benefit our warriors. 

to develop the concepts and technologies to support Operationally Responsive Space. Presently Space systems' development and acquisition is a painfully slow process that often takes a decade or more from initiation to an operational system on orbit. The current processes are slow to the point of being unresponsive to the nation's rapidly evolving military operational needs. The Operationally Responsive Space concept is a fundamental change in thinking about how to best use and exploit Space technology for military operations. The goal of the Operationally Responsive Space project is to rapidly develop and deploy Space capabilities in a timely manner so that operational commanders' requirements will be met. Furthermore, SMDC/ARSTRAT is working within the Army and Joint Space Community to develop new capabilities for Theater Missile Warning, Battle Space Characterization and Space Force Enhancement. Changes in technology offer the opportunity to significantly enhance our present capabilities in these critical mission areas. SMDC/ARSTRAT's goal remains to continue to develop, refine, and integrate new Space and missile defense technologies into our Army in order that our Soldiers and forces are able to exploit our nation's Space and missile defense capabilities to the fullest.

Whether or not technology and its ever increasing rapid advance are good or bad is subject to debate. What is clear and not open to debate is the fact that rapidly changing technology is affecting our lives, our institutions and in particular the Army. The Army cannot afford to ignore changes in technology but must effectively integrate them into the force in a holistic manner. As you read this issue of the Army Space Journal, please take note of the technological advances and issues highlighted within that are impacting our Army. Also take note of the unique role that SMDC/ARSTRAT has in developing, expanding, and integrating Space technologies for both the Army and Joint Force. 

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