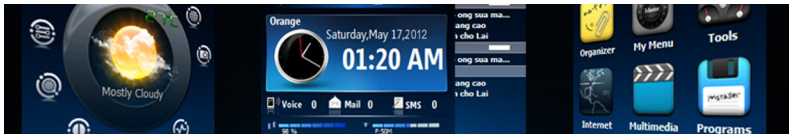
Mobile technologies altering all processes



By BG Randal Dragon and Mike McCarthy

Two years ago U.S. Army leaders embarked on a project assessing the power of Smartphone technology to fundamentally change how Soldiers communicate and access data, knowledge and training. The intent of the project was to determine if there was significant value and military utility in leveraging the quantum advances and rapid developments across the spectrum of Smartphone-related technologies to fill the capabilities gaps identified in the legacy systems of the U.S. Army.

Rather than establish a traditional acquisition program, the senior leadership of the Army provided guidance for the U.S. Army Training and Doctrine Command to establish what became known as the "Connecting Soldiers to Digital Applications" or "CSDA" project. The Army Capabilities Integration Center and its subordinate Brigade Modernization Command at Fort Bliss, Texas were given the lead for establishing and managing the project for TRADOC and the Army. Using a series of low dollar pilot projects, across a broad spectrum of potential use cases in the administrative, training and operational domains for the rapidly advancing technologies of the Smartphone industry, the CSDA initiative began looking for systemic solutions to assess industry solutions.

From the very beginning of the CSDA project, the goals were clearly defined by the senior leadership of the Army. CSDA is intended to define best practices needed to give our Soldiers the advantage of emerging technologies and capabilities. The project identifies and develops new approaches to create a persistent learning environment for the Soldier by adapting existing and emerging technologies. It was also designed to forge a path forward to enable every Soldier access to relevant and critical knowledge, information and learning, independent of the Soldier's location or environment. Additionally, CSDA develops the means to rapidly update and disseminate relevant information at a fraction of the cost of traditional methods. Finally, it arms the Soldiers with select administrative, training, and tactical applications to accomplish individual and collective tasks.

In keeping with a new approach of reviewing and assessing emerging technologies, the CSDA project was given the challenge of using what became known as the Agile Capabilities Life Cycle Process (commonly referred to as the "Agile Process") to reduce the traditional development and acquisition five to seven year process. This abbreviated process offers the Acquisition community a venue to cut through cumbersome administrative policies and practices in order to deliver the best technologies available to the Soldier as rapidly as possible. Rather than establish a special project office full of experts, it was determined that the best approach was to leverage work being done across the Army with various aspects of Smartphone technologies and to integrate Soldier feedback throughout.

An underlying principle for the CSDA project was to seek solutions that could evolve with the continuing innovation and advancements in technology that frames the Smartphone industry. It has always been about more than Apps or hardware; the CSDA project is about finding paths that will enable Soldiers to take advantage of new and emerging technologies – to give them a competitive advantage in combat, training and garrison at the edge. No one has the ability to look far into the future and identify what the most affordable and best technologies will be available in five or ten years, any more than could have been predicted ten years ago.

The CSDA project was structured to look for long-term solutions that provide the best technology the Army can afford. The velocity of change throughout the Smartphone industry is incredible. To the senior leaders and the Leads for the CSDA project it has never been about buying the newest and coolest things only to have them become obsolete before they are fielded to the Soldiers who need them the most. The CSDA project is more about leveraging industry solutions and creating the potential for placing the most advanced, affordable solution in the hands of our Soldiers from a system perspective. Considerations for the complete system include the devices, Apps, information security, backend servers and software, power management, transport layer solutions, life-cycle sustainment. The project also continues to assess even such mundane things like how to use Smartphones without the Soldier having to remove their

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A Soldier uses his Smartphone to track the friendly forces at the Network Integration Evaluation 12.2.

gloves to use the touch screens.

As the project matures, the most frequent question asked by industry partners, users and interested partners continues to be: "Has the Army selected a phone and an operating system?" The short answer is, no! By remaining true to this approach the Army retains flexibility to look across many industry partners and avoid costly solutions that must be sustained indefinitely. This approach also provides the opportunity to stay current with new and emerging technologies over time.

Early in the discovery phase of the project, the CSDA leads attended a conference that focused on developing a tactical Smartphone. The goal was to deliver a rugged device that weighed in at no more than 3.5 pounds, used the Android 2.0 operating system, cost no more than $5,000 per device, and could be developed and delivered in less than 5 to 7 years. The CSDA project leadership agreed this was not the right solution. The Soldiers needed a low-cost solution that could be easily replaced if damaged or upgraded/replaced when better technologies became available.

Applications or "Apps" are an important and essential element of the project. Using the model developed in the commercial side of the market, Army leaders embarked on several efforts to address the challenges of providing solutions for Soldiers.

CSDA identified three probable sources for Apps as well as how to get Apps into the hands of Soldiers. Industry anticipated Army managers would come to their doors with an open checkbook (as traditionally occurred) to have expensive software crafted at great expense and time. In keeping with the Agile Process model, the CSDA project endeavored to find low-cost solutions to address app requirements they could not build for themselves.

The Signal Center of Excellence took on the challenge of training individuals how to write and build apps. The intent of the course was to take individuals within the Functional Area 53 (Information Systems Management) and give them the skills and tools to write Apps in order to meet the immediate needs of the commands the FA 53 officers are assigned to. Over time the course was opened up to allow others to attend and receive the same skills. As part of the training individuals build actual apps that are available for both Android and Apple devices.

The third source for apps identified by the CSDA project is from the users themselves. The Army hosted the "Apps for Army" competition to see if this was a viable source for Apps – the response of this competition far exceeded expectations. At Fort Bliss, the BMC staff generated more than 85 tactical and operational Apps used during the evaluation and assessment of various technologies and solutions provided from industry. Additionally a number of Apps were created by the Soldiers from 2nd Brigade, 1st Armored Division – the brigade combat team dedicated to conduct the Army's Network Integration Evaluation. Several Apps were written by Soldiers while they were in the field conducting the NIE.

To ensure the apps available to the Soldiers are safe and secure, policies and protocols have been implemented to review the source code of all Apps designed for Smartphone and device use. The review has three primary goals: (1) a legal review to ensure copy write laws are not violated; (2) a technical review to ensure that the technical code does not contain harmful code or generate data to third-party sources (as most commercial Apps do); and (3) a doctrinal review by the proponent school or center of excellence. The CIO/G6 created a "Store Front" as a repository for apps that meet these prescribed standards. As the

(Continued on page 10)

(Continued from page 9)

Army Store Front comes on line, there will also be a feedback mechanism for apps-users to provide evaluations, similar to the feedback mechanisms used in commercial apps stores.

Nothing is ever as simple as it appears. Because of the potential for Soldiers to use Smartphone technologies in operational combat environments, it is absolutely essential the technologies and applications meet the established standards for protecting sources and users of data and information. Data must be protected while at rest, in transit, and in-process. This also requires that devices and operators be able to operate at various levels of security and have the ability to move back and forth without having separate devices. During the early phases of the project, hardware requirements to operate above secret level were not achievable with commercial devices while maintaining affordability.

An initial challenge was overcoming institutional and cultural traditions. Many of the policies and procedures in use throughout the government are residual Cold-War era approaches established to allow for zero-risk. Time and the environment have changed – the threats and technologies of the Cold-War have changed or no longer exist.

SSG Gilbert Hinojosa of 2BCT, 1st AD using his Soldier Warrior ensemble Smartphone during operations at the Network Integration Evaluation 12.2 at Fort Bliss, Texas.

Similar to commanders of the past, commanders in today's operating environment at all levels must manage risk to minimize adverse impacts on their operations and their Soldiers. By connecting Soldiers to the network, we have opportunities to provide Soldiers the ability to access information at the edge, and to take advantage of Smartphone technologies against their opponents.

Although the process of achieving the Information Assurance measures necessary to meet the intent of the project have not moved as quickly as one would like, the good news is they are moving in the right direction and gaining traction throughout the IA community.

Initially TRADOC approved eight Pilot projects to assess the value and utility of using Smartphone technology.

Seven of the pilots focused on the institutional Army, primarily in the training base. The projects were developed by the proponent schools and ranged from advanced individual training to Officer Advanced Leadership Courses. Portions of our schools programs of instruction were converted into digital media on a variety of devices ranging from iPods, readers, tablets and phones. The eighth pilot focused on the tactical and operational uses of Smartphones. In each case, the results of the pilots far exceeded expectations.

As the CSDA leads reviewed and analyzed the results of the Pilot projects a dramatic trend emerged. Graduation scores of the Soldiers using CSDA technologies increased an average of 10% across the board over the scores of their peers. In one case, a self-paced class graduated from advanced individual training, two weeks sooner than average class graduation times. As the trends continued to emerge, the CSDA team began to look at the "why" in an effort to isolate to root cause for the dramatic improvements of the Soldier's scores.

In several cases Soldiers attributed using e-readers to access publications outside the classroom that previously they were unable to take back to the barracks due to high printing costs; this access gave them an incentive to continue studying after the normal duty day.

It was also identified the Soldiers were in many cases using the technology in their off-duty time to compete against other Soldiers, for better, faster, and more accurate results using their interactive learning modules.

Training became fun. The Soldiers provided critical feedback that indicated they expect to have the same quality products found in the commercial market, and were quick to identify production flaws.

The selection of the Brigade Modernization Command at Fort Bliss, to participate in the CSDA project is an additional benefit. The mission of the BMC is to conduct physical integration and evaluation of the

network, capability packages and other core capabilities in order to provide Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities recommendations to the Army as part of the Brigade Modernization Program – in short, to evaluate and assess solutions being considered for the modernization of the brigade combat teams across the force.

Given a fully functional BCT (2/1 AD) coupled with the large training areas and airspace of Fort Bliss and White Sands Missile Range -- unmatched at any installation -- and wide use of the available electromagnetic spectrum, the right environment for evaluating Smartphone technologies under realistic operational conditions results.

BMC conducts two major evaluation events per year in partnership with the Army's Test and Evaluation Command, and the ASA-ALT's Systems of Systems Integration Office Directorate. Additionally, small targeted excursion events are conducted in conjunction with other 2/1 AD training events.

The Network Integration Evaluations are formally structured and instrumented activities designed for an in-depth look at how technologies work in the hands of the Soldiers. In addition to formal data collection and analysis, Soldiers are given the opportunity to provide their unstructured and subjective feedback on how the technology and solutions worked and what utility and value it provides – in essence, the 2/1 Soldiers become the ultimate advocates for our deployed or deploying combat formations.

The CSDA project has used the NIE to evaluate the full spectrum of solutions with great success. It continues to inform the CSDA management on what paths to pursue, and not pursue. Technologies that look good on paper or in the lab turn out to not provide value-added to the Soldiers when the ambient temperatures exceed 117 degrees. Other technologies have performed exceptionally well and are potential game changers.

As a direct result of the work at the BMC, the Soldiers of 2/1 AD and many others, a number of solutions have already made it into the hands of Soldiers deployed around the globe and in combat operations in both Afghanistan and Iraq.

The CSDA project has informed the Army on the viability and military utility of using Smartphones across a full spectrum of military operations and domains with great results. Numerous Programs of Record are examining the incorporation and integration of a wide range of technologies into their efforts. The technologies have proven to be battle-worthy and durable, low cost solutions for fundamentally changing how Soldiers communicate and learn. The sister services are now looking at how these technologies can serve them and their Sailors, Airmen and Marines. The ground-swell continues now as the rest of government begins looking at using the same technologies across a full spectrum of missions and task. Smartphones are no longer the purview of senior leaders and executives, but have become a critical tool for everyone and show great promise for connecting Soldiers to the Network and empowering our Soldiers at the edge.

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Acronym QuickScan

AD – Armored Division
AIT – Advanced Individual Training
ARCIC – Army Capabilities Integration Center
ASA-ALT – Assistant Secretary of the Army for Acquisition, Logistics and Technology
BCT – Brigade Combat Team
BMC – Brigade Modernization Command
CIO – Chief Information Officer
CSDA – Connecting Soldiers to Digital Applications
DOTMLPF – Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities
FA – Functional Area
IA – Information Assurance
NIE – Network Integration Evaluation
SOSI – Systems of Systems Integration
TRADOC – U. S. Army Training and Doctrine Command