BASE OF THE FUTURE
SYMPOSIUM
After-Action Report

Marine Corps Installations Command (MCICOM)
G-7 Office of Modernization and Development

2017

MESSAGE FROM THE COMMANDER

MARINE CORPS INSTALLATIONS COMMAND

Team and Installation Partners,

As the Commander for Marine Corps Installations Command it is my task to ensure our installations and infrastructure are capable, resilient, and right-sized platforms to generate force readiness and project combat power across the range of military operations. As the character of the 21st century continues to be rapid evolution, it is imperative that we modernize our installations.

In order to ensure our success, we need ready partners in the Department of Defense, government organizations, industry, think tanks, academia, and Congress. The purpose of this after action report is to highlight the value of bringing together disparate entities who are committed to leveraging existing and emerging technologies and processes to the way our installations are operated and managed.

The contributions made at the Base of the Future Symposium at Marine Corps Logistics Base Albany will help shape an Installation-neXt concept that will set a vision for the future of our installations.

Thank you to everyone who contributed their ideas and energies. I am excited to engage this audience again soon.

Semper Fidelis,

Vincent G. Coglianese
Major General, U.S. Marine Corps
Commander, Marine Corps Installations Command

CONTENTS

INTRODUCTION

Installation-werX (I-werX), a supporting branch to Marine Corps Installations Command (MCICOM) G-7 Office of Modernization and Development, hosted the inaugural Base of the Future (BoF) Symposium at Marine Corps Logistics Base (MCLB), Albany, on November 7-9, 2017. The three-day symposium brought together visionary leaders from military, government, private industry, and academia to actively participate in designing a Base of the Future through the exchange of ideas, sharing of experiences, and integrating enabling concepts necessary to transform today's installation into tomorrow's smart base.

This after-action report (AAR) is intended to capture the results of the symposium and facilitated working groups, and act as an impetus for follow-on actions on behalf of I-werX and the dedicated partners that participated in the event. This document will serve as a baseline to support the development of a Marine Corps Base of the Future Strategy, Operating Concept, and Campaign Plan. It also compiles input provided by attendees through an Event Feedback Form to glean overall successes and lessons learned.

OVERVIEW

Symposium attendees heard from Marine Corps leadership, connected with fellow industry and academia experts, and gained perspective and provided insight on the areas where modernization initiatives can enhance and optimize Marine Corps Installations. Attendees helped the Marine Corps envision tomorrow's base of the future by contributing to five facilitated working groups focusing on Installation Protection, Information Systems, Logistics Support, Marine Corps Community Services, and Public Works.

The concept of the BoF will capitalize on the speed of technologies such as robotics and autonomous systems (RAS), the resilience of renewable energy and smart grids, the robust nature of commercial off-the-shelf (COTS) technologies, and the interconnectedness of the Internet of Things (IoT) as starting points to establish a new paradigm for design and operation of our bases and stations.

The BoF Symposium objective is to provide a collaborative environment where disparate entities and organizations can generate ideas to develop new and emerging concepts for design and maintenance of Marine Corps Installations. When entities from different backgrounds in thought and industry come together "controlled collisions" happen; it accelerates innovation and enables individuals to think outside the box.

Implied tasks include:

- Developing relationships and potential partnerships for future collaboration
- Exploring alternative methods of planning
- Identifying optimized alternatives to current methods and functions of installation management

ASPECTS OF A BOF:

RESPONSIVE

- Power Projection Platforms
- Future Force Training (mental and physical)
- 2025 Marine Air Ground Task Force (MAGTF) "physical and virtual ranges"
- Deployment and redeployment of USMC forces

RESILIENT

- Renewable
- Efficient
- Safe
- Eco-compatible

EXEMPLARY

- Quality of Life Services (exceeds industry standard)
- Law Enforcement/Fire/EMS
- Medical
- Day Care
- Schools
- Access to Retail

MOBILE

- On-Demand Transportation
- Green Spaces
- High Utilization
- Shared Model (personal and mission)

REVITALIZED

- Recreation
- Health
- Fitness
- Collaborative-Teamwork

STATE-OF-THE-ART

- "Sense of Community" in a Digital Age
- Work Space
- Residential

A Base of the Future is safe, cost-efficient, operationally effective, and fiscally sustainable

WORKING GROUPS OVERVIEW AND NOTES:

PURPOSE

Five simultaneous working groups were conducted in an effort to gain input, perspectives, and illicit creative thinking from members of the military, government, private industry, and academia utilizing design thinking and lean six sigma facilitation methodology. The purpose of the focus groups was to analyze the current state of Installation Protection, Logistics Support, Public Works, Marine Corps Community Services, and Information Systems, identify areas for improvement, and then envision out-of-the-box solutions to current challenges.

ATTENDEES

The working groups were facilitated by Booz Allen Hamilton MCICOM G-7 support staff and government personnel, design thinking and lean six sigma subject matter experts (SMEs). A breakdown of participants is highlighted below in *Figure 1*.

RECOMMENDATIONS

During the Symposium the working groups generated hundreds of ideas to enhance resiliency and readiness of Marine Corps Installations. Potential near-term solutions included:

To be deployed on Installations:

- Digital fortress protecting the fence line and aboard an installation
- In transit visibility (ITV), geofencing, and digital and bio validation to ensure security on base while increasing access
- Integrated sensors and artificial intelligence (AI) predictive capabilities
- Sourcing materials via 3-D printing, COTS technology, or stock
- Utilizing AI and cloud technologies to aid employees in streamlining processes
- Universal hot spot
- Cloud services

Deployed on an Installation, yet scalable or additional applicability identified:

- Autonomous and connected vehicles
- Alternative fuel vehicles
- Vehicle-to-Grid (V2G)
- Driver-assistance capabilities
- Autonomous drones supporting installation protection or geographic information systems (GIS)
- 3-D printing
- Partnerships program
- Wireless capabilities

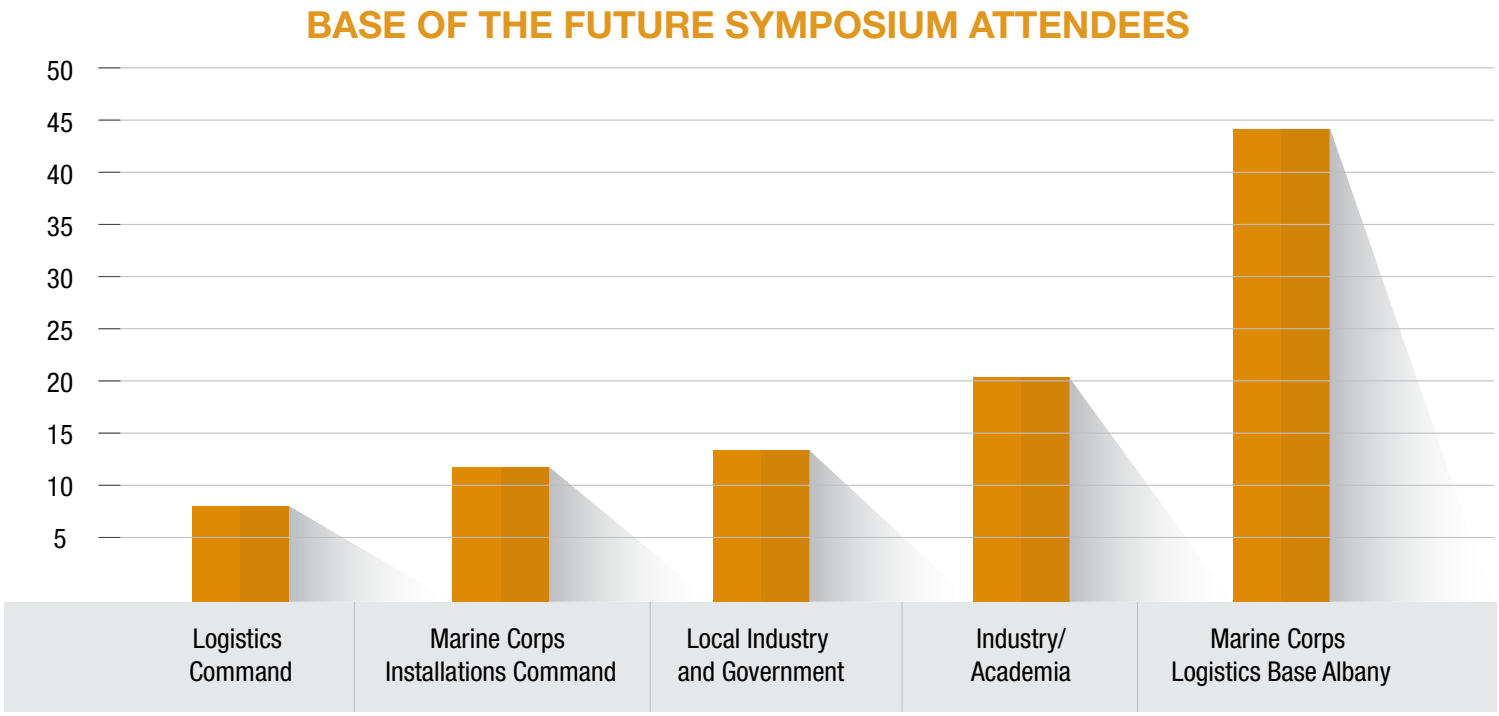


Figure 1: Base of the Future Symposium Attendees

KEY FINDINGS:

INSTALLATION PROTECTION

Facilitators: John Gray Parker and Girair Simon

SME: Myles Baer

Marine Corps Installations exist to assure warfighter readiness and Installation Protection supports this goal by protecting and enabling critical assets (internal and external) for base operations to support the readiness mission. Assets on an installation are categorized as information, people, infrastructure, and equipment, while most threats to these assets can be categorized into data loss, data containment, intrusion, and insider threats. Many threats will be constant today and in the future, while other threats are only just emerging or will only be known in the future as technology, environment, communities, and culture evolve.

Installation protection is a continuous cycle:

- Preparedness
- Monitoring
- Responsiveness
- Resiliency

As attendees re-imagined what an installation would look like in the future, they made assumptions to help consider potential assets and threats. A Base of the Future will:

- Be energy independent, with an ability to operate in "island mode" disconnected from the public grid
- Employ advanced technology (including AI, drones, and robotics)
- Serve as a knowledge hub that can attract industry, academia, and government collaboration
- Be decentralized and collaborative with communities to provide all non-mission critical services
- Command unmanned logistical systems
- Be dedicated solely to warfighter readiness

VISION OF THE FUTURE:

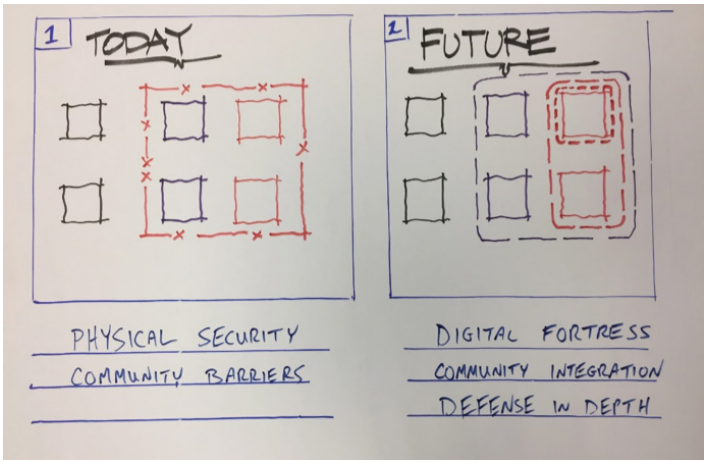


Figure 2: Installation Protection Vision of the Future

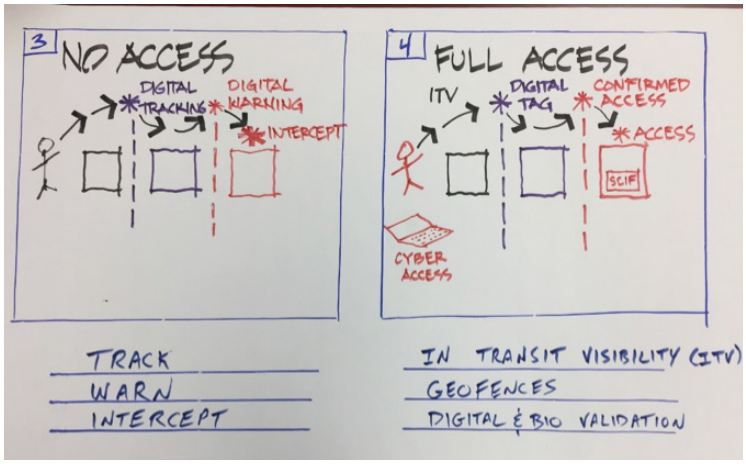


Figure 3: Installation Protection Vision of the Future

As the Installation Protection Working Group envisioned protection for the BoF, participants focused on leveraging current and future technologies to optimize base access control. The current state of technology should allow Marine Corps Installations within five years to transition to:

- Moving Support Services to the local community (such as housing, medical, logistics, and other community services) through partnerships
- Using Smart ID's with existing technology for facial recognition and retinal scan
- Employing an "EZ Pass"-like system for daily commuters
- Maintaining total visibility usage across the Enterprise (Physical &Cyber) using digital and bio validation

As technologies evolve and mature, the Marine Corps should increasingly adopt them into Installation Protection practices, incorporating advanced encryption (i.e. Blockchain) for identity and data validation; geofencing, non-lethal weapons, robotics, AI, and drones for threat response and deterrence; and advanced training capabilities (e.g. virtual reality and holodecks) for civilians and Marines alike.

LOGISTICS SUPPORT:

Facilitators: Dmitri Reavis and Molly Reddy

SME: Kelly Eadie

Logistics support enables installation tenants to accomplish their assigned missions across a portfolio of transportation, fuel, procurement, food services, supply, and human resources. The current structure of the base is not responsive to real-world needs of the human beings and missions it is supporting. Also, despite the need for streamlined buying processes, official procurement processes and guidelines slow things down, and is potentially more costly across all buying levels. The lack of autonomy in the IT procurement process leads to a breakdown in service and loss of capability.

Logistics for the BoF is simplified, user friendly, automated, and flexible to support the warfighter. It will be highly adaptive to current and future situational changes through the use of deeply embedded and predictive information ecosystems that translate into operational excellence. We will develop customized logistic support to increase efficiencies in transportation, fuel, procurement, and food and supply services. This will be achieved using:

- Simplified transactions
- Ubiquitous sensors
- Digital twins
- Predictive services
- Proximity Management
- Amazon-esque services
- Leveraging disruptive technologies

VISION OF THE FUTURE:

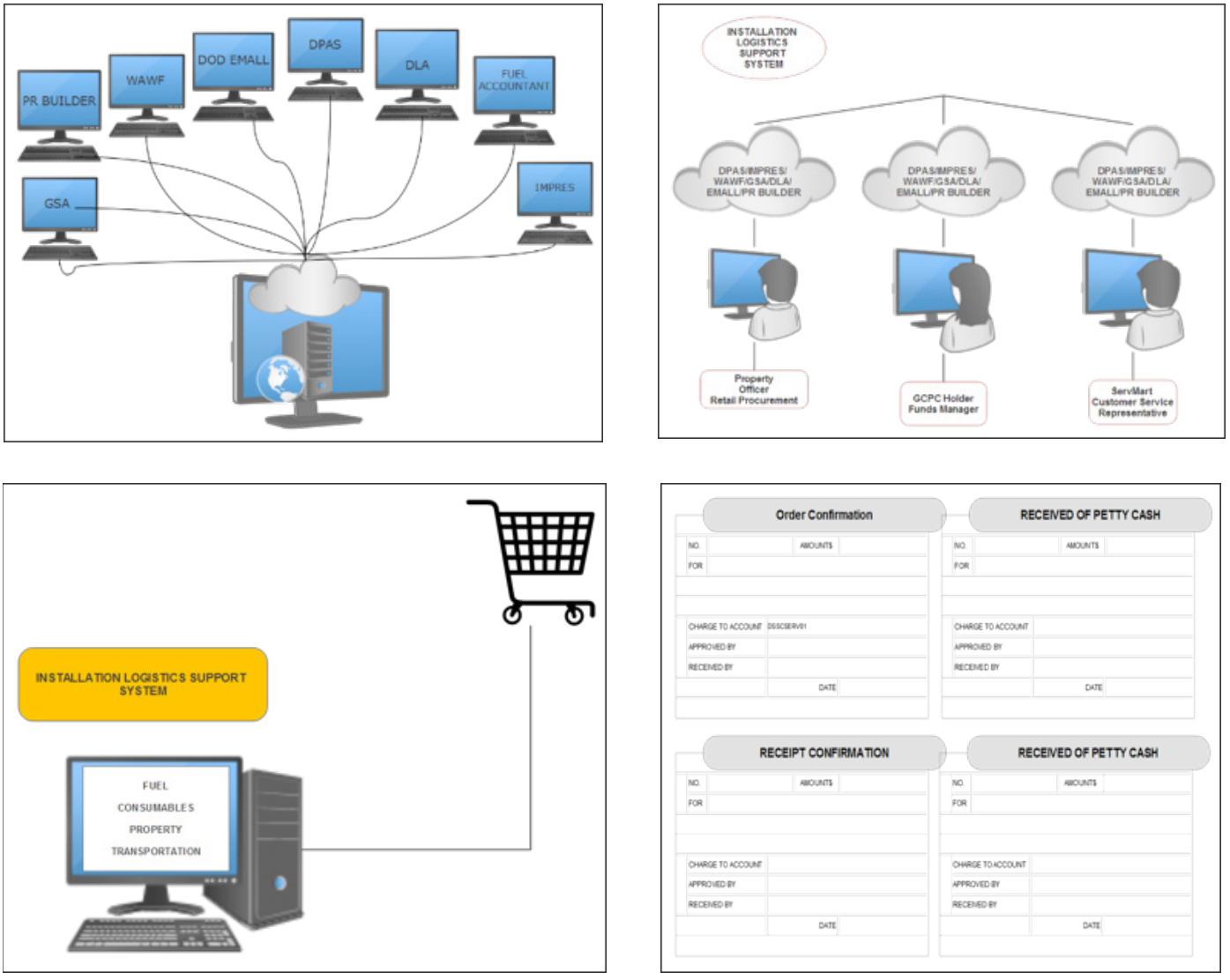


Figure 4: Logistics Vision of the Future

Transportation is changing rapidly in every sector. The use of driver-assistance capabilities and autonomous and connected vehicles, and the development of alternative fuel vehicles, is creating revolutionary change in both personal and public transportation. The BoF should leverage these technologies to create a more effective and efficient transportation infrastructure that ensures mission success while exceeding current expectations for productivity and safety.

Changes to the transportation infrastructure on the BoF will create dramatic change in all areas of base logistics. The moving of smaller equipment, supplies, and packages can be accomplished using autonomous drones. Because of dramatic changes in the types of vehicles used on the BoF, bases can generate all the electricity required for transportation needs using renewable energy sources.

The logistics team at the BoF Symposium developed an innovative idea that would create a single interface for all procurement systems to allow people to make purchases though one user-friendly interface.

By thinking about the realm of possibility for logistics and transportation, the BoF Symposium logistics team reimagined how MCICOM can lead the DoD into the future.

PUBLIC WORKS:

Facilitators: Stephen Arlington and Capt Jessica O'Reilly

SMEs: LCRD Jason Boatright and Fred Broome

Public Works ensures a satisfactory quality of life and operational capacity by being prepared to adapt to change and respond quickly and efficiently to external forces. Currently, customers need to feel they are being heard and assured that their needs are being met while having their expectations managed in the face of budget and priority constraints. Also, issues need to be accurately diagnosed and validated while still maintaining a quick response time. The workforce needs to be equipped to quickly respond to a variety of issues with high technical competence despite the limited labor resources and the challenges of recruiting and retaining cutting-edge technical talent. Proactive measures need to be put into place in order to efficiently plan and even predict the proper level of effort, skill, and resources.

VISION OF THE FUTURE:

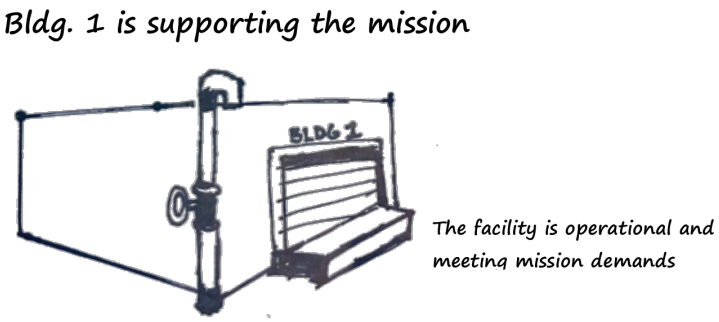


Figure 5: Public Works Vision of the Future (Step 1)

Figure 6: Public Works Vision of the Future (Step 2)

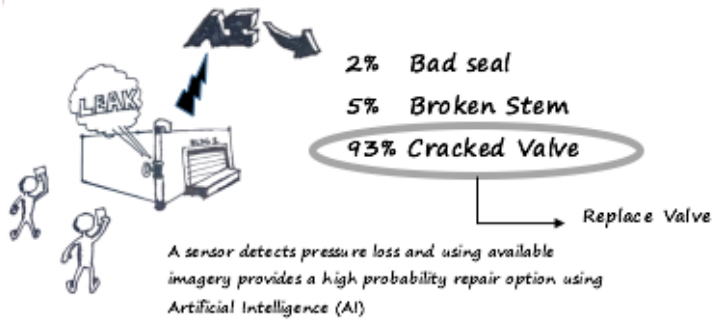


Figure 7: Public Works Vision of the Future (Step 3)

VISION OF THE FUTURE:

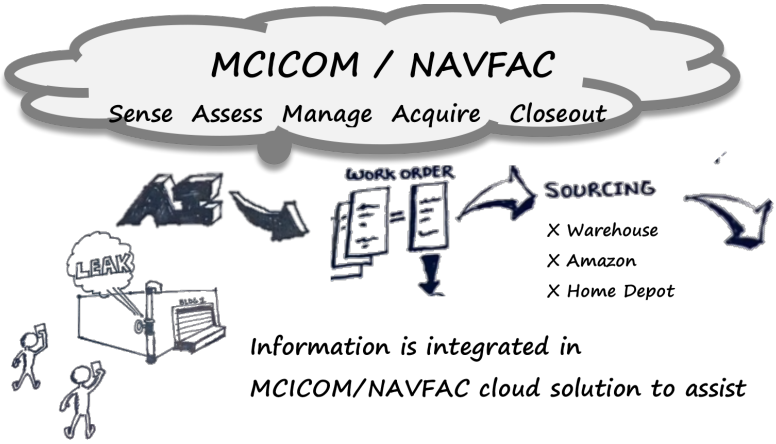


Figure 8: Public Works Vision of the Future (Step 4)

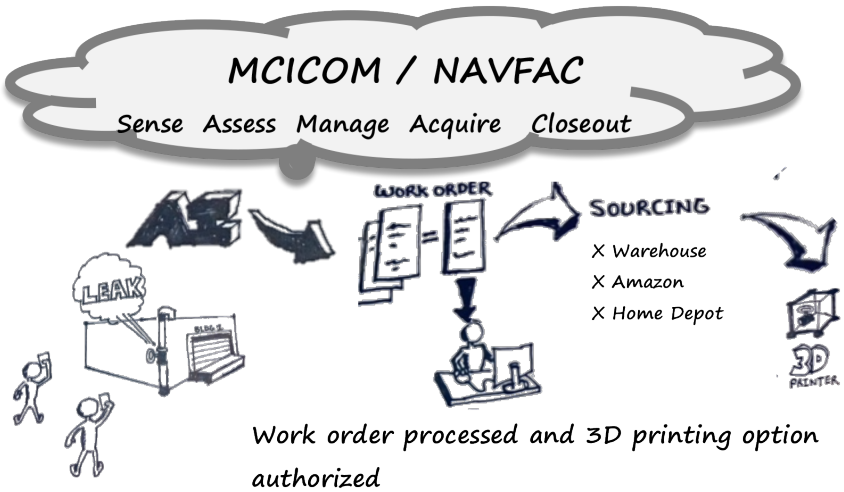


Figure 9: Public Works Vision of the Future (Step 5)

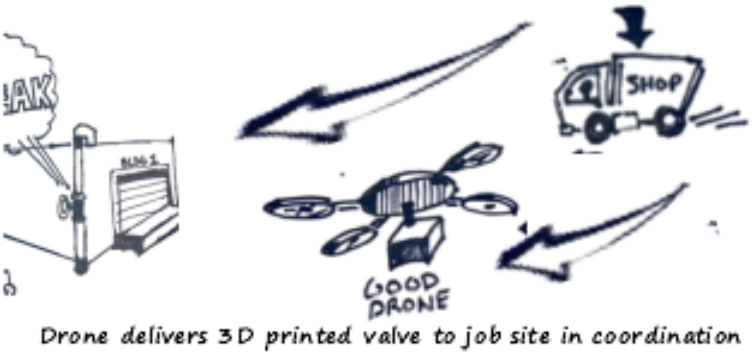


Figure 10: Public Works Vision of the Future (Step 6)

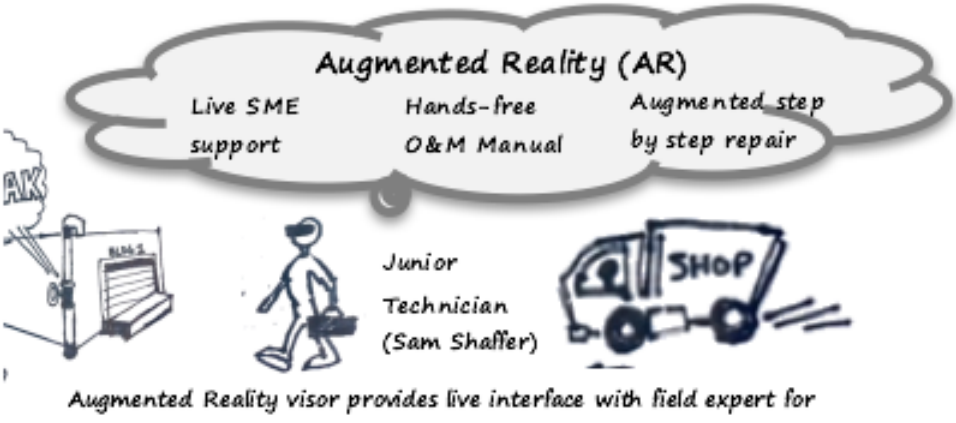


Figure 11: Public Works Vision of the Future (Step 7)

VISION OF THE FUTURE:

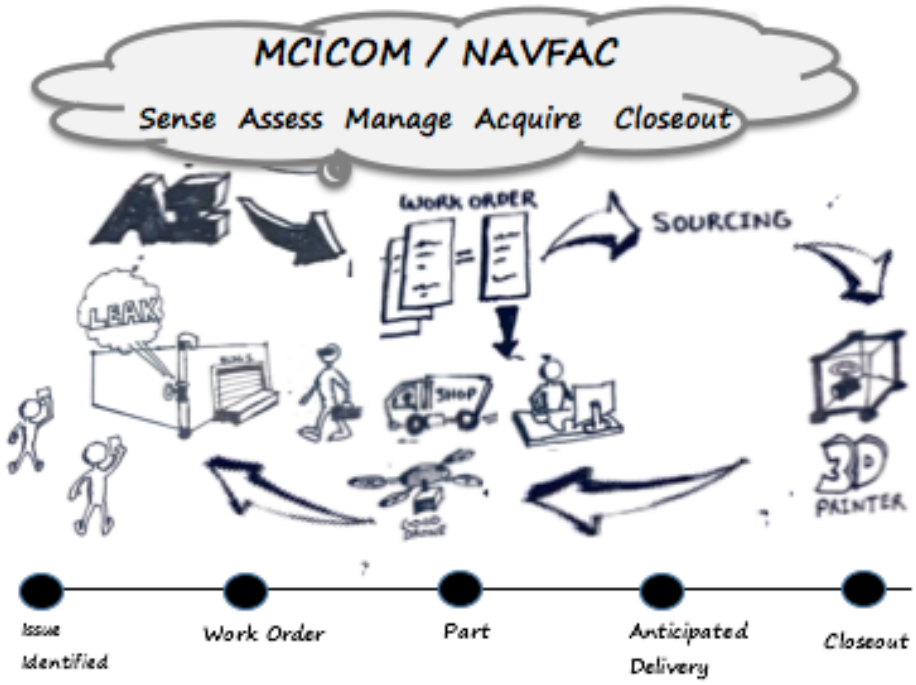


Figure 12: Public Works Vision of the Future (Step 8)

- **Proactive:** The utilization of a predictive with integrated sensors to foresee failures and reduce operation downtimes
- **Flexible:** The ability to source materials efficiently (3D Printed, COTS, Stock), while also utilizing partnerships and technical experts with limited staffing
- **Innovative:** The utilization of virtual assistants, AI, and Cloud technologies to aid employees in streamlining processes; simultaneously attracting younger tech-savvy employees
- **Evolutionary:** The ability to leverage commercial digital technology, generative designs, and industry partnerships to R&D iterative designs (building, infrastructure, equipment) which are aligned with a real-time, fiscally realistic, Master Plan that authenticates requests to maximize value within funding constraints.

MARINE CORPS COMMUNITY SERVICES (MCCS):

Facilitators: Gina Bryant and Laura Michael

SMEs: Deborah Bouyer and Craig Pruett

MCCS provides quality of life programs, products, and services to support and enhance the operational readiness, war fighting capabilities, and life quality of Marines, their families, retirees and civilians. Currently the programs are developed without consideration of the facilities available to support them, while facilities on installations sit idle due to evolution of requirements (e.g. base chapel). MCCS is also challenged with how to communicate the value proposition of their program and services to their users. Although it was not mentioned during the working group, MCICOM G-7 understands that MCCS cannot compete on price or availability of some services offered outside the gate, leaving Marines frustrated with their lack of options on base.

VISION OF THE FUTURE:

The Base of the Future will provide Marines with convenient and just-in-time quality of life services through appropriated funds to allow installations the latitude to make decisions that will meet the needs of Marines and families specific to the installation. Each installation will leverage local partnerships in the community to provide services to supplement installation resources.

Figure 13: Marine Corps Community Services Vision of the Future (Steps 1-3)

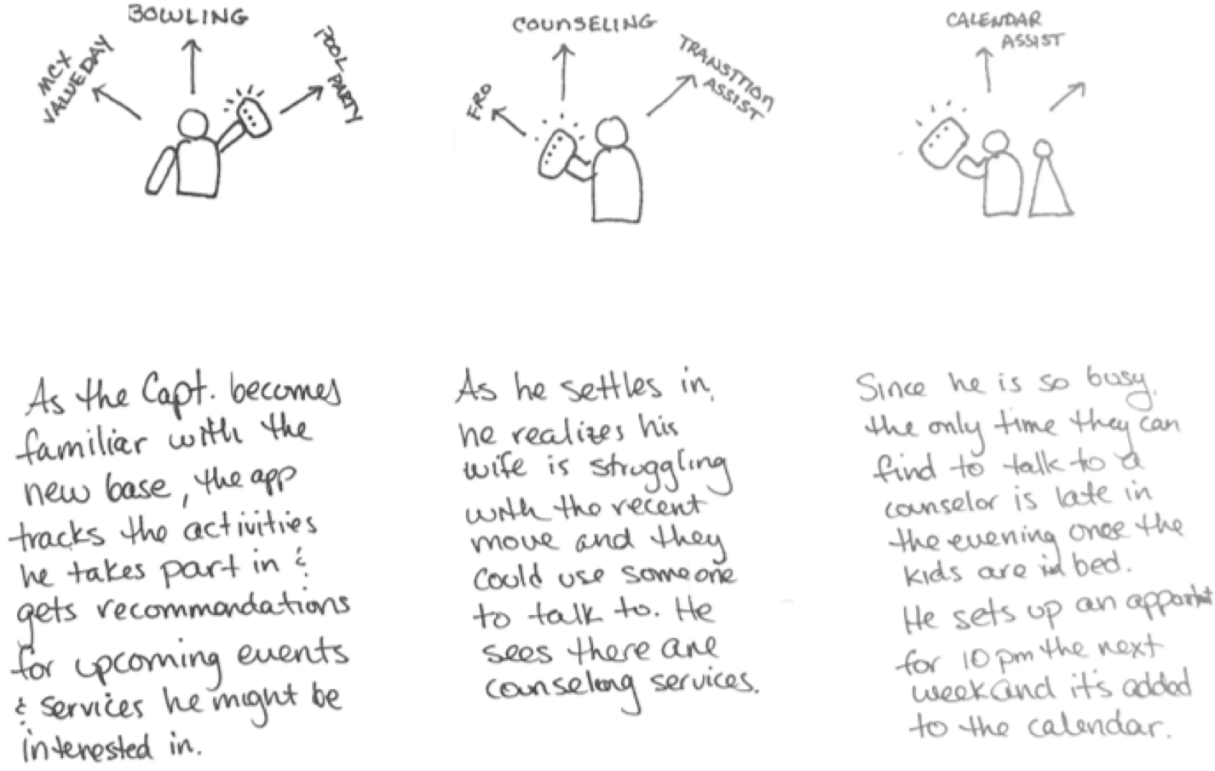


Figure 14: Marine Corps Community Services Vision of the Future (Steps 4-6)

VISION OF THE FUTURE:

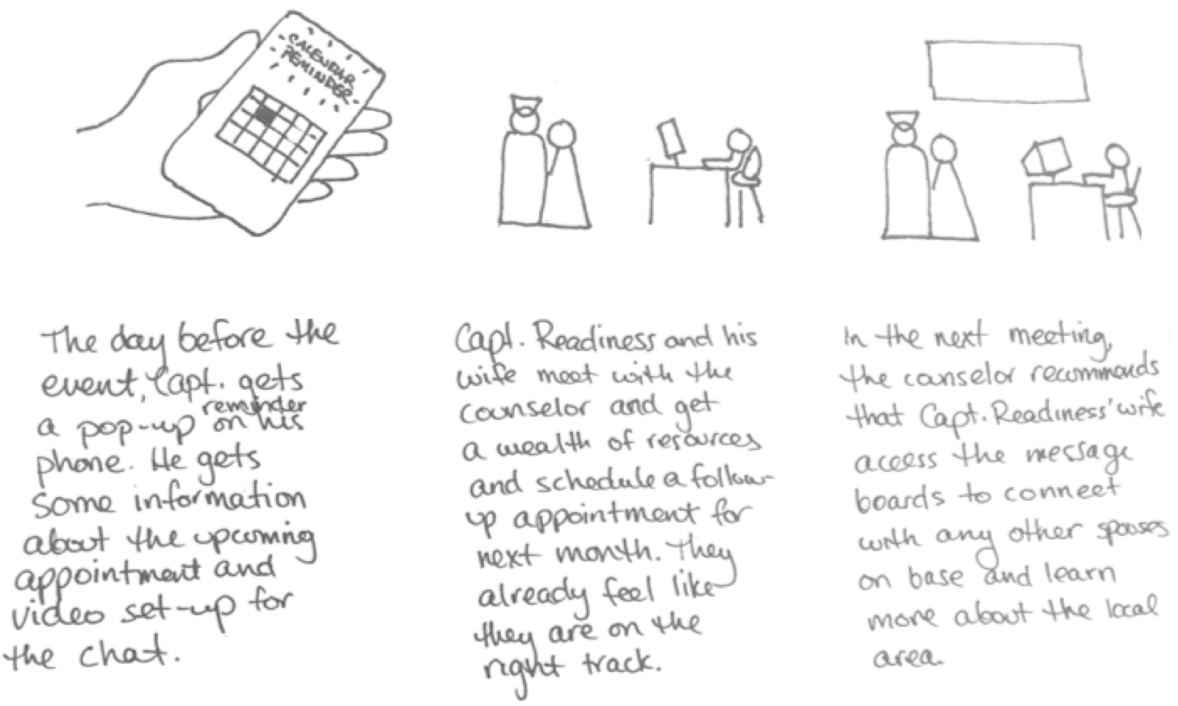


Figure 15: Marine Corps Community Services Vision of the Future (Steps 7-9)

Facilities and recreational spaces will be flexible and customizable to the needs of the specific installation and designed to prioritize convenience for Marines and families given the population living on base. This means that one single buildings will begin to provide a suite of services to those living there. Food choices that can be leveraged through partnerships are on the first floor of a housing building, sport courts and gym facilities are indoors for usage around the year, indoor multi-use activity spaces are near the living areas for work and recreation use by Marines and their families, and accessible rooftop community spaces.

INFORMATION SYSTEMS:

Facilitators: Kimberly Reath and Susan Stuffle

SME: Dr. Lori Farr

DoD manages over 15,000 networks for 4 million users. The Marine Corps is now maintaining its own enterprise network (MCEN); is challenged to meet both garrison requirements and operational forces at the tactical edge to support the warfighter (readiness) in keeping with the Joint Information Environment vision.

Current data demands within MCEN are growing at an exponential rate (from terabytes to petabytes) that will further exacerbate the challenges of our information services and infrastructure. Meanwhile, the current processes do not meet the demands of this environment.

VISION OF THE FUTURE:

The five year plan, as developed by the Network Management Services working group, will mimic the networking environment that most of us experience in our homes, or in the private sector. It is understood that federal facilities, and more specifically Department of Defense properties, require particular attention to security and regulatory requirements. Simply adopting private sector practices is not an option. However, the working group believes that modeling the convenience and speed of private sector services is a reasonable vision.

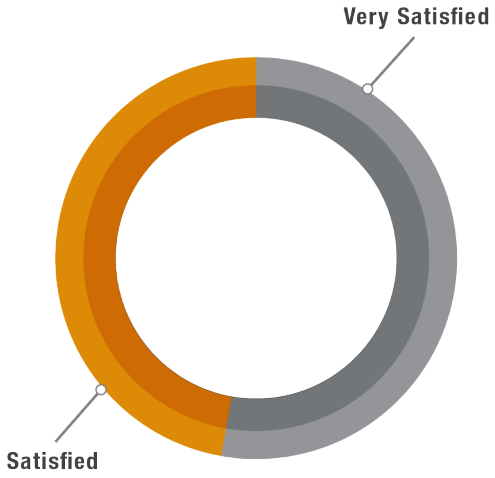
1. **Mobile (Cloud Based):**
    - **Hardware, Software, Storage: A cloud based solution ensures users have the most current software services, updated automatically. Also, cloud services relieve the installation of the need for storage equipment, and the capacity issues that go along with local storage.**
    - **Universal Hot Spot:** Cloud services can also provide broader connectivity, relieving users of signal strength issues. The universal hot spot is accessible across the entire installation.
2. **High-Speed Wireless:** A limited number of military/civilians currently have access to wireless capability when using government provided computer assets. The vision is to allow computers to use wireless capability via combination of mobile hot spot data access, or cellular data access.
3. **Secure:** As stated above, any solution must meet DoD and Federal security requirements.
4. **Reliable:** Any solution must be reliable, with minimal down time.
5. **An Integrated Enterprise System:**
    - **Standardized at All Installations:** While MCLB Albany serves as a test site, ultimately the accepted solution must be standardized at all installations. Hardware, software, policies, and procedures must be aligned across all installations.
    - **All-DoD:** A better solution is to align across all of DoD.
    - **Outside Community:** There is also the potential possibility to coordinate and align with contracted organizations and other government organizations.
6. **Based on Machine Learning:** In support of security, the new network should be able to recognize non-conforming, or abnormal conditions. For instance, if an unauthorized user accesses the network, or an authorized user exhibits unexpected network behavior (time of access, frequency, site, etc.). Much like private sector identity protection services learn the usual patterns of its users, and alerts the user to an unusual activity. Attention must be paid not only to users, but to the tasks being supported, aligned with Mission Essential Tasks.
7. **Device Agnostic:**
    - **Accessible from Many Devices:** As originally envisioned by NMCI (but never achieved or sustained), military/civilians should be able to access their profiles and content, such as current desktop, from multiple devices. Also, devices may travel. User needs to be able to connect while away from usual working space.
    - **Bring Your Own Device:** This option is already in trial across DoD. Military/civilians are able to access email on personal iphones, with the appropriate software and security devices. Military/civilians are able to conduct business using personal computers, again with appropriate software, security devices, and protocol associated with sensitive material.

LESSONS LEARNED:

We polled attendees to understand their overall satisfaction with the event and understand lessons learned as we look to improve the Symposium for future iterations. Out of the 19 participants that completed the evaluation form, the following results were captured:

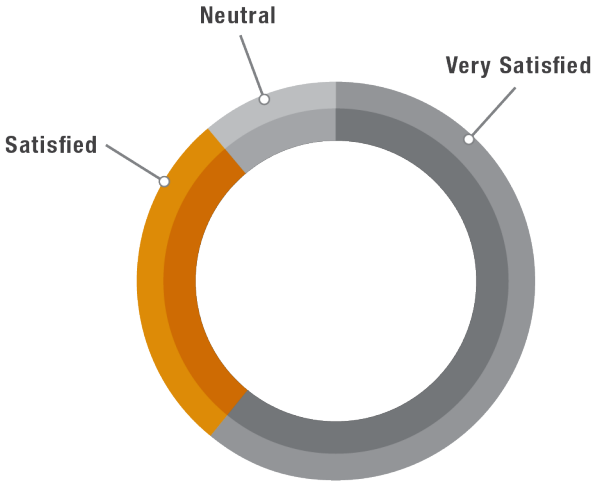
Overall, how satisfied were you with the Base of the Future Symposium?

- "Base of the Future Symposium triggered much needed conversation on where military installations need to go."
- "Great facilitators, excellent group."



How satisfied were you with the format of the working groups?

- "Great mix of topics and individuals with different perspectives."

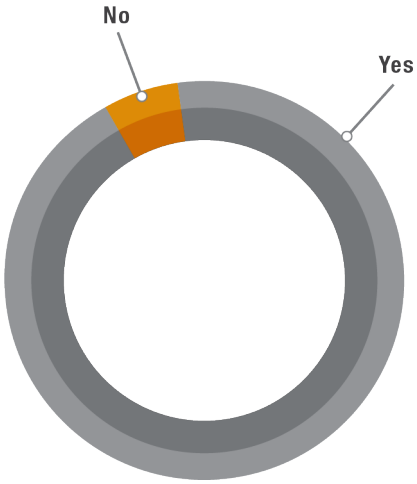


Is there any information that you'd like to see as a follow-on to this Symposium or at the next Symposium?

- "This should be implemented at higher HQ levels as well as on a triennial basis to gleen info on the latest ideas and concepts."
- "Greater understanding of vision and intent of MCICOM for future plans."
- "Focus areas of the commanders."

Would you recommend attending this Symposium to your colleagues?

- "I would recommend this Symposium because we have younger generations of people in my office and their input and thoughts would be very helpful when reconstructing a future base."
- "It opened my eyes to the challenges facing the USMC and bases."
- "Informative backgrounds as USMC works on its plan and opportunity to engage."



Are there groups or subject matter experts you did not see represented that you think could add value at the next Symposium?

- "More technology partners to expand government understanding of the art of the possible."
- "More outside IT representatives from private industry."
- "More community leader representatives."

Overall comments:

- "Great event. We need to have a 'Part II' follow-up conference in the Spring 2018 timeframe."
- "This was a great group and the input provided by each was tremendous. This exercise was taken very seriously."
- "Enjoyed breaking our long-held paradigms and really looking at what is possible."

WORKING GROUPS

Working group facilitators were also asked questions about the overall conduct of the Base of Future Symposium and were encouraged to provide both positive and negative feedback. Some of the key takeaways and lessons learned for the next event were as follows:

WORKING GROUP PREPARATION:

- Lead time translated into downstream issues
- Experience and perspective of users utilizing base services - interview them prior to the event
- Have all facilitators involved in prep meetings
- Don't emphasize the facilitation methodology throughout the event
- Create an internal SharePoint page where all prep materials are posted

WORKING GROUP STRUCTURE:

- Community Service - Types of users to get perspectives from are a mom and/or dad living on the base, single marine reliant on the base, retiree off base, and understand their unmet needs and frustrations
- Force protection – Gain the perspective of those that are living and working with the problem
- Have access to users and people in the workshop understanding their needs and problems - Tuesday for folks to be able to discuss them
- Think about how we improve current services vs. what the Base of the Future looks like
- Some felt threatened by the process and that we were attacking their services
- Those that are open to the innovation and the process are the best advocates and participants in these meetings
- Logistics - had a "firefighter mentality" - hard to focus further on
- MCCS – protective of their portfolio and did not like talking about innovation/change
- Do not need a local SME - If we are talking 5 year plan
- SME only needed day one to provide an overview and look at context in story-telling and set the stage for the conversation
- Prep SME on their role and intent of the Symposium
- Understand some SME's will be protective of their programs

TOPICS:

- Make the topics more centered around a particular area
- Too broad

TIME:

- More time needed in working groups due to broad topics
- All very productive discussions
- Having wiggle room to allow for natural discussion
- Tuesday morning could be condensed to one hour - and get right into the working groups
- Having more time will make it easier for people to present

MEMBERS:

- Groups around 8, max 10
- Expectation that the attendees will be there the whole time
- Logistics - Getting started was difficult and the topics were so broad, we need problem statements
- Each SME needs to be fully briefed
- Two facilitators per group is beneficial

OUTBRIEF:

- What would we present (good materials)
- Confirm structured understanding of roles and responsibilities
- Having someone that would like to out-brief would make it better
- Having a volunteer would steer the conversation one way or the other
- Have a brief to the entire Symposium and then one that is synthesized to senior leadership
- More time to prep for the outbrief would be beneficial.

ADDITIONAL ITEMS:

- Run through the out-brief with the SMEs
- Be a little looser with the out-brief and have the entire team giving the brief (one being the Marine Corps)
- Role play skit/physical prototype
- Potentially 2-day service jam
- Proactive communications to the attendees and expectations for their participation and expectations for SMEs involvement
- There would be value in the G-7 team all housing in the same location
- Have facilitators and G-7 team stay in the same hotel

BASE OF THE FUTURE ATTENDEES

FIRST NAME	LAST NAME	COMPANY
Albert	Calamug	MCICOM (Installation-werX)
Che	Bolden	MCICOM (Installation-werX)
Dave	Forbes	Booz Allen Hamilton
Dmitri	Reavis	Working Group Facilitator
Edelina	Rose	MCICOM
Gina	Bryant	Working Group Facilitator
Girair	Simon	MCICOM
Gregory	Douquet	Red Duke Strategies LLC
Gregory	Hanweck	MCLB Albany & LOGCOM
Hubert	Smigelski	MCLB Albany
Igor	Van Gemert	SIM-CI
Jameel	Ali	LOGCOM
James	Flass	MCICOM
James	Gough	MCICOM
James C.	Carroll	MCLB Albany
Jason	Boatright	MCLB Albany
Jeff	Caspers	Battelle
Jessica	O'Reilly	MCICOM (Installation-werX)
Jody	Redding	Office of Senator Johnny Isakson
Joey	Taylor	LOGCOM
John	Reed	Reed Charters
John	Scholl	MCLB Albany
John Gray	Parker	Working Group Facilitator
Johnny	Higdon	MCLB Albany
Joseph	Garcia	MCLB Albany
Joseph	Wombough	MCLB Albany
Kathleen	Rooney	MCICOM (Installation-werX)
Kelly	Eadie	MCLB Albany
Kenneth	Cutts	Congressman Sanford Bishop
Kenneth	Douglas	Albany Area YMCA
Kent	Morrison	MCLB Albany
Kimberly	Reath	Working Group Facilitator
Kurt	Bland	MCLB Albany
Kurt	Droste	MCLB Albany
LaKisha	Bruce	United Way of Southwest Georgia
Larry	Crockett	LOGCOM

BASE OF THE FUTURE ATTENDEES, CONTINUED

FIRST NAME	LAST NAME	COMPANY
Laura	Michael	Working Group Facilitator
Lori	Farr	MCLB Albany
Lumus	Kerlegon	MCLB Albany
Mary	Singleton	City of Albany
Matt	Borron	Association of Defense Communities
Matt	Hardwick	MCLB Albany
Merrill	Dickinson	MCLB Albany
Michael	Brown	Johns Hopkins University Applied Physics Lab
Michael	Scalise	MCI-East
Molly	Reddy	Working Group Facilitator
Myles	Baer	MCLB Albany
Pamela	Green-Jackson	MCLB Albany
Patricia	Cowling	MCLB Albany
Paul	Brickley	Reed Charters
Phillip	Baker	AECOM
Phillip	Millerd	MCLB Albany
Randall	Kennedy	MCLB Albany
Rashelle	Beasley	Albany Convention and Visitors Bureau
Richard	Bailey	MCLB Albany
Robert	Durling	MCLB Albany
Roderick	Barrett	MCLB Albany
Ron	Smith	MCLB Albany
Ronnie	Williams	MCLB Albany
Sara	Hewitt	Booz Allen Hamilton
Sean	Lamonzs	MCLB Albany
Sendy	Potts	MCLB Albany
Sharon	Subadan	City of Albany
Shawn	Hollingsworth	IBM
Stephanie	Jumel	EDF
Stephen	Arlington	Working Group Facilitator
Stephen	Lacovara	LOGCOM
Steven	Land	MCLB Albany
Susan	Stuffle	Working Group Facilitator
Tameka	Wimbush	Office of U.S. Representative Sanford Bishop
Tammy	McCrary	CTSI
Troy	Gonzalez	Booz Allen Hamilton
Wayne	Dudding	National Energy Technology Laboratory