INSTALLATION NEXT

MOBILITY

AFTER ACTION REPORT

MESSAGE FROM THE COMMANDER, MARINE CORPS INSTALLATIONS COMMAND

Installation neXt attendees,

I would personally like to take this opportunity to thank each of you for your exceptional participation in Installation neXt Mobility, held aboard Marine Corps Air Station Miramar. The work that you have put into this event in support of Installation werX and Marine Corps Installations Command (MCICOM) is invaluable to the future of mobility on our Marine Corps installations.

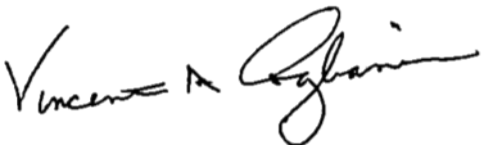
With the future of mobility being shaped and reshaped at an ever-increasing speed, the time is now for our Command to gather and discuss how our communities, service providers and other stakeholders can achieve the installations of tomorrow that we desire; increasing mobility and improving our quality of life.

As the Commander for MCICOM, it is my duty to make sure we are developing innovative solutions that focus on emerging disruptive technologies and their impacts on mobility systems. Events such as these create opportunities to exchange information and ideas, in order to identify and disseminate good practices and develop innovative solutions to help us create the next generation of our installations.

The key to success for our Command begins with finding the balance for what our installations need not only today, but also in the long-term. I know that through these efforts put forth at Installation neXt Mobility, we will enhance our ability to generate and sustain combat power through new and emerging technologies and processes that will continue to help us develop as a Command.

Thank you again for your participation. I know all of you have been instrumental in assisting us in enhancing our installations around the world.

Semper Fidelis,



Vincent G. Coglianese
Major General, U.S. Marine Corps
Commander, Marine Corps Installations Command
Asst. Commandant, Installations & Logistics (Facilities)

MARINE CORPS INSTALLATIONS COMMAND

INSTALLATION NEXT MOBILITY

SYMPOSIUM REPORT

MCAS MIRAMAR // 7-9 MAY 2019

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THERE'S NO DOUBT IN MY MIND THAT THE SOLUTIONS WE DISCUSSED TODAY WILL CHANGE THE FUTURE OF OUR INSTALLATIONS AND THE WAY WE MOVE AROUND THEM.

-MAJOR GENERAL VINCENT COGLIANESE

THANK YOU
TO PARTNERS AND PARTICIPANTS!

THANK YOU MARINE CORPS AIR STATION MIRAMAR!

We would like to thank our host, Marine Corps Air Station Miramar, for their continuous support of Installation neXt Mobility. We would especially like to thank Colonel Dockery and the entire Marine Corps Air Station Miramar Staff including, Ken King, Capt Gregory and the entire CommStrat team, Marine Corps Community Services staff, Ms. Nonnie Artero and the Base Auditorium Staff, the Bob Hope Theater staff, PMO staff, and the Inns at the Corps. The event would not have been a success without you.

FOUNDATIONAL PARTNERS

BARBARICUM

Booz Allen

Office of Naval Research Science & Technology

BMNT

INSTALLATION NEXT MOBILITY

From 7-9 May 2019, Installation werX (I-werX), a supporting branch to MCICOM Office of Modernization and Development (G-7), hosted Installation neXt Mobility, focused on improving the installations movement of personnel and goods. Stakeholders from MCICOM, MCAS Miramar, large and non-traditional defense firms, academia, non-profit organizations, cities, industry, and governments were brought together to leverage attendee expertise and experience in order to explore ways that installations can develop integrated solutions with mobility as a service, autonomous vehicles, air mobility, electric vehicles through 2035.

After hearing from 18 panelists, representing leading companies and agencies in the mobility market, seeing exhibits from of cutting edge technologies, and spending two days in an immersive design think process, I-werX was left with incredibly diverse and intricate visions of the future. From these discussions and the subsequent design think visions, there were three major themes that emerged. These themes I-werX now treats as Mobility Imperatives. In other words, "We must" do these things to achieve multi-modal mobility of people and goods in an around installations. These imperatives are as follows:

- **Unlock commercial mobility markets**
- **Leverage those markets to greatest extent for official mobility**
- **Capitalize on the opportunity to participate & shape the emerging mobility markets**

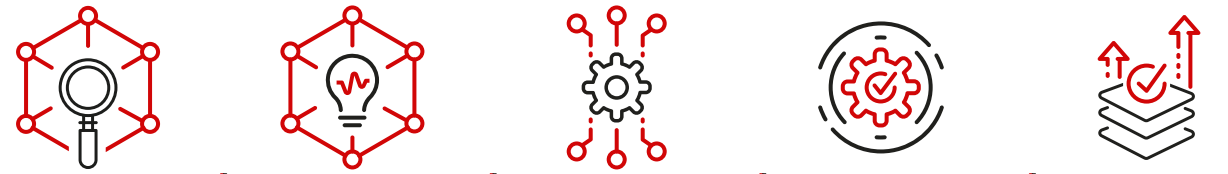
This symposium report is intended to describe the event, capture the results of the event and provide insights for the future guidance for I-werX initiatives. This document will serve as a baseline to support the development of an Installation neXt Operating Concept.

INSTALLATION NEXT

Colonel Dockery, Commanding Officer of Marine Corps Air Station Miramar, welcomes Installation neXt Mobility attendees (U.S. Marine Corps Photo by Sgt Jake Mclung)

INSTALLATION NEXT OPERATING CONCEPT

The MCICOM I-werX Team aims to create collaborative and impactful solutions that address all of the Marine Corps Installations pressing challenges. I-werX does this by being the catalyst for Marines, MCICOM staff, and our external ecosystem to implement the following solutions process. This process is implemented for the vectors on the following page.



Utilize networks and ecosystem to execute this strategy

INSTALLATION NEXT VECTORS

Marine Corps installations are integral to the readiness and resilience of our force, as well as the security of the Nation, but some are outdated and require modernization. Our next generation Marine Air Ground Task Force (MAGTF) requires next generation installations. Installation neXt leverages the power of ideas to imagine and re-imagine bases of the future.

These vectors highlight the nine challenge areas of Marine Corps installations. Installation neXt solutions process and symposiums are incubators for idea generation and concept development that lead to solutions to these challenges.

MOBILITY VECTOR

At the IXM Symposium, the participants tackled the following vector problem statement through hosting an Industry Day and Design Thinking session.

Problem Statement: Marine Corps Installations need to facilitate multi-modal options to the movement of people and goods at the place of need and time of need in an uncertain future.

Low utilization rates for current fleet of non-tactical and garrison vehicles is further disadvantaged by poor physical and IT infrastructures.

Rapid development of ride sharing services, evolving transportation and traffic management technologies and policies are potential enablers to a enhanced mobility.

IXM INDUSTRY DAY

Installation neXt Mobility, as the fourth vector-focused event, differed from the previous three in that it hosted a one-day Industry Day. Mobility industry services and original equipment manufacturers (OEM's) provided static and live -demonstration exhibits and expertise to panels in five key areas to enable design thinking.

Attendees saw some of the latest transportation technologies as part of our industry day demonstrations, heard from expert mobility panels, installation leadership, leading-edge technology experts in manned, unmanned, and autonomous transportation, and community organization partners to build understanding of current mobility innovations and challenges.

IXM hosted 23 mobility industry entities who provided services, equipment, or a combination therein to five focus areas:

1) Official and Personal Mobility **2) Mobility as a Service (MAAS)** **3) Autonomous Vehicles**

4) Air Mobility **5) Electric Vehicles**

Industry Day provided exposure of emergent technologies to Marines, industry, academia, and community members, and was a key component to realistic, feasible, and forward-looking design thinking.

Autonomous Shuttle OEM Navya provided a live demonstration while AV Shuttle OEM Local Motors provided a static demonstration and keynote address. Navya engineers utilized advanced sensors and mapping software to plot and operate a fixed route. Local Motors and Navya engineers explained the ongoing collaborative evolution of autonomous vehicles, electric power, and MAAS enabling standard and on-demand routes for riders on the “last mile” of a commute.

The autonomous shuttle Navya geve attendees rides throughout the IXM Industry Day (U.S. Marine Corps Photo by Sgt Jake Mclung)

The Nikola Motors Reckless vehicles provided live demonstrations throughtout the day (U.S. Marine Corps Photo by Sgt Jake Mclung)

Specific to autonomy, electric vehicles, and air mobility, Nikola Motors, and Planck Aerosystems provided live demonstrations of the semi-autonomous Reckless system integrated with the Planck Shearwater Unmanned Air System. As configured, the Reckless demonstrated the ability to be driven by wire and capability to launch and recover the Shearwater Drone while on the move.

Further, Spira provided two vehicles for Marine Corps leadership to drive and gain awareness of the realm of the possible. OEM Qualcomm displayed their autonomous appliqué kit while Realwear demonstrated their Augmented Reality technologies. Service providers such as Verizon, AT&T, Lime Bike, Lyft, Uber discussed frameworks for a collaborative and service-based approach to mobility to enable future Marine Corps installation capabilities.

Colonel Dockery poses with one of the Spira vehicles (U.S. Marine Corps Photo by Sgt Jake Mclung)

IXM DESIGN SPRINT

As part of the larger event, the MCICOM G-7 hosted a 2 day design sprint focused on unlocking creativity, enhancing collaboration, and ideating a vision of the future with our entire ecosystem. An overview of the event includes:

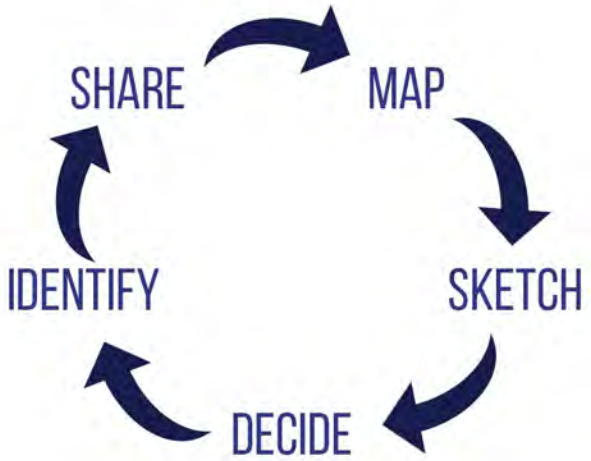
Four simultaneous working groups were conducted in an effort to leverage subject matter expertise, illicit creative thinking, and identify ambitious, cost-effective, and valuable priorities for all Marine Corps installations at large given two broad categories: urban and rural. Installation neXt Mobility facilitators utilized innovative techniques to help participants identify, refine, and present a solution for Mobility as one of MCICOM's nine Installation neXt vectors.

SHARE YOUR IDEAS

Test prototypes with users + stakeholders to pave the path forward

MAP WHAT WE KNOW

Create a shared understanding of the climate



IDENTIFY THE SOLUTION

Rapidly build a solution to learn what works

SKETCH IDEAS FOR SOLUTIONS

Come up with ideas that solve the challenge

DECIDE ON THE WINNING IDEA

Choose the solution you want to prototype

DAY 1

Map + **Sketch -** Evaluate the current state of mobility on installations in order to inspire the most creative solutions to address the challenges teams identified.

Decide - Collaborate and hear solutions from working groups related to the transportation of personnel, goods, and energy in order to refine the winning solution.

DAY 2

Identify - Continue working with other visionary leaders from the military, government, private industry, and academia to focus on the topic of Mobility.

Share - Close out the event with group discussions to share solutions and explore how we intend to harness the solutions

WORKING GROUP SOLUTIONS

GROUP 1: Parking on the Outside, AV on the Inside

Problem Statement: Marine Corps installations need to facilitate multi-modal options to the movement of people and goods at the place of need and time of need in an uncertain future

Solution Type: Processes

Solution Overview: How might we increase the number of transportation options offering services to location?

Group 1 developed a solution for eliminating personal vehicles (PV) on base. After dropping off PV's at the base entrance, personnel would use autonomous on-base transportation vehicles (AV's) to get from one place to another. Base personnel would use an on-demand mobile application that would alert riders of routes, times, and availability of transport.

Impact:

↗ Reduction in wait time and hazard caused by long entry queues at base entrance.

↗ Reduction in the amount of space utilized for on-base parking.

↗ Improved base security by monitoring pedestrian via facial or card scan.

Key Partners:

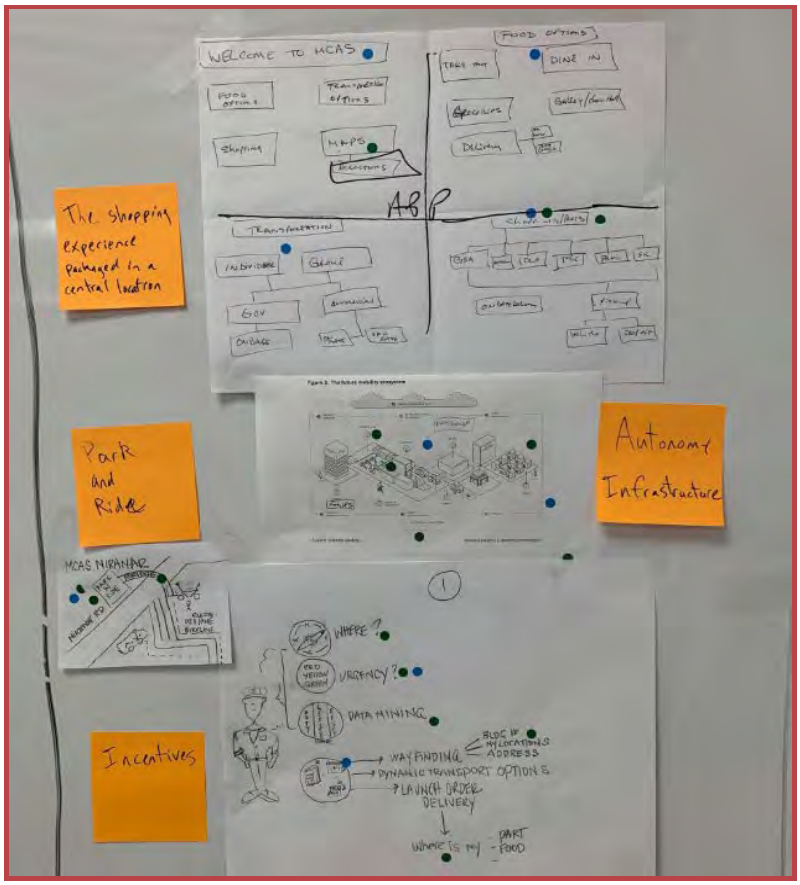
↗ Local government organizations (e.g. San Diego Association of Governments).
↗ Companies pioneering AV mobility options and commercial partners who can support new technology growth.
↗ Constraint specification from multiple on-base partners like the Security G-3 (Operations Staff), as well as support from research organizations like the Office of Naval Research.

Key Resources:

↗ Office of Naval Research provides USG subject matter expertise and academic rigor in assessing and developing AV markets and validation in established AV markets and validation in established AV market technology capabilities.
↗ Security G3/G6: Provides physical and cyber threat assessments for restructuring parking infrastructure on base as well as sets on-base data collection regulatory policy for AV's servicing the base.

Follow-On Activities:

↗ Enable access to the AV market through existing infrastructure such as the universal common access card (CAC) and near term demonstrations.
↗ Facilitate cross functional AV markets so that enabling technologies such as 5G become part of solutions.
↗ Unlock market forecasting and create collaborative demonstrations with cities and universities and ensure a seat at the table for the AV market.



GROUP 2: Good to Go Application

Problem Statement: Marine Corps Installations need to facilitate multi-modal options to the movement of people and goods at the place of need and time of need in an uncertain future

Solution Type: Technology

Solution Overview: How might we increase the number of transportation options offering services to location?

Group 2 focused on addressing the 5W's of mobility - Who, What, When, Where, Why - on and around base. Team members suggested collecting data to drive evidence-based decision making to improve current mobility options. Their solutions also included creating a marketplace for possible future pilots based on end-user feedback.

Impact:

- ↗ Data validated solution implementation.
- ↗ Reduction of transportation costs for USMC and privately owned vehicles by 2035.

Key Partners:

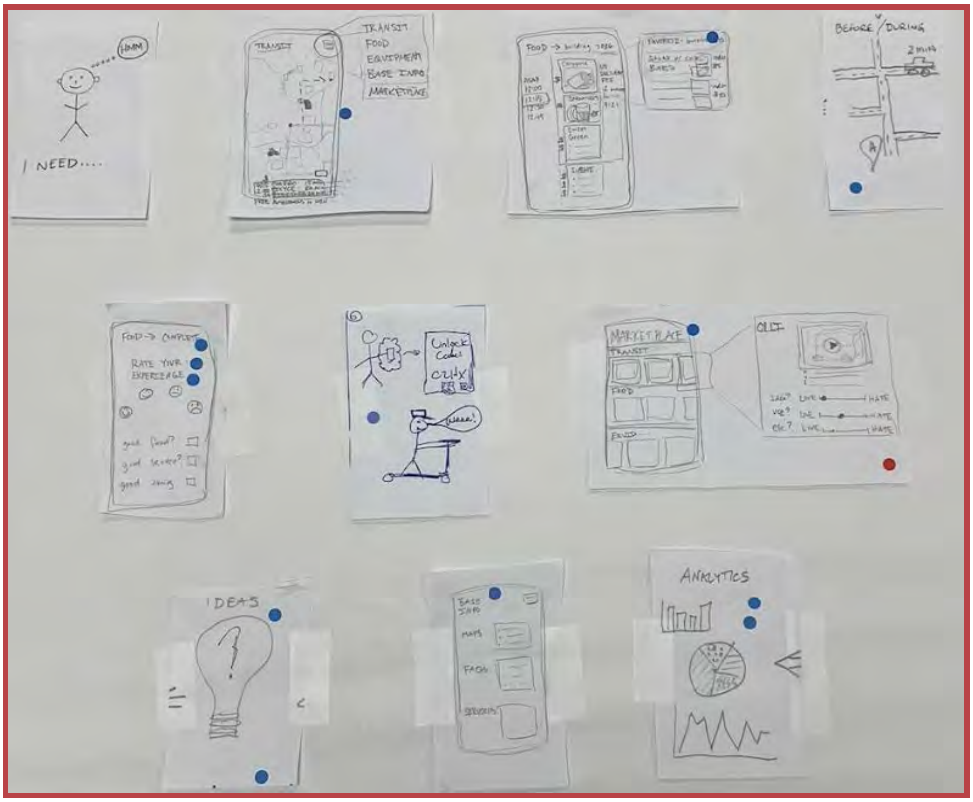
- ↗ Young marines (25 yrs. or younger) and industry partners to associate Mobility as a Service (MaaS) supply with corresponding demand and validate solutions that would be implemented, given their growing majority on base.
- ↗ Industry partners in IT and physical infrastructure to assist with security groups.
- ↗ Installation leadership, facilities management and G-4 transportation to invest in proven capabilities and demonstrated benefits.

Key Resources:

- ↗ Software development to unlock MaaS application and market forecasting.
- ↗ Physical devices and content from industry for collaborative demonstrations on location.

Follow-On Activities:

- ↗ Pilot at other installations that will build on the opportunity for MCICOM to shape emerging MaaS transportation options.
- ↗ Online based application for every installation that prioritizes MaaS market characteristics.



WORKING GROUP SOLUTIONS

Group 3: Semper Sci

Problem Statement: Marine Corps Installations need to facilitate multi-modal options to the movement of people and goods at the place of need and time of need in an uncertain future.

Solution Overview: How might we set the same expectations for mobility inside the base as civilians' lives outside it?

Solution Type: Technology/Framework

Group 3 developed an app-based marketplace to address the ever-changing framework of MaaS. The app would auto-locate users and determine on-base routes by utilizing existing data sets related to on-base mobility (e.g. peak traffic times, common routes, points of interest). This framework could then unlock an app-based marketplace that enables constantly changing supply to meet dynamic demand of MaaS via user feedback to optimize and inform further mobility decisions and establish a flexible framework to incorporate new and emerging multi-modal options.

Impact:

- ↗ Increased reset time and quality of life
- ↗ Time savings for delivery of goods, services, and people
- ↗ Reduction of vehicles on base

Key Partners:

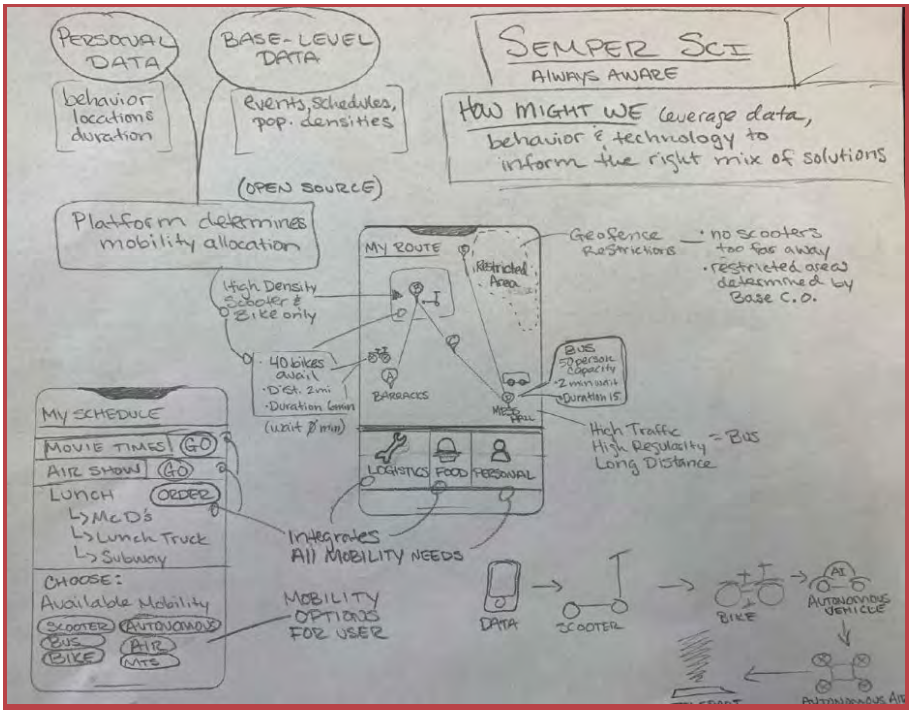
- ↗ Consumers: individuals on base, service members, contractors, dependents, military operations (data source) who will help to prioritize MaaS markets over specific MaaS solutions.
- ↗ Operating authorities: MCICOM, base leadership, Office of Force Resiliency, base communication units, operations team, policy planners whose buy-in will facilitate participation in emerging MaaS markets.
- ↗ Industry: Developers, engineers and data professionals to demonstrate the realm of the possible in near term demonstrations.

Key Resources:

- ↗ Data: Personal & base level to demonstrate market supply and demand conditions.
- ↗ Funding to support near term demonstrations.
- ↗ Team to build product through collaborative demonstrations.
- ↗ Partnerships with mobility suppliers.

Follow-On Activities:

- ↗ Begin small: Pilot program on one base to support a grassroots groundswell and generate end-user buy in.



GROUP 4: Supervisory Control and Data Acquisition (SCADA) Base

Problem Statement: Marine Corps Installations need to facilitate multi-modal options to the movement of people and goods at the place of need and time of need in an uncertain future.

Solution Overview: How might we facilitate multi-modal options to the movement of people and goods at the place of need and time of need in an uncertain future?

Solution Type: Technology/Process

Group 4's solution was technology and process focused. The group first promoted relocating physical barriers such as fences to unlock collaborative spaces. The next part of their solution features a multi-factorID system for all personnel, vehicles, and goods flowing in and out of the base. The solution maximizes collaborative framework development from industry as it requires a 5G supported, integrated sensor suite that would feed centralized database information in real time and capture movement trends. The solution also envisioned separate protection levels and areas for operations vis-a-vis community services to better cater to different mobility needs.

Impact:

- ↗ Visibility and control of resources and user needs - what is available and when.
- ↗ Increased efficiency in the movement of people and goods enable reallocation of resources to operational needs
- ↗ Enhanced quality of life for installation residents and surrounding communities.

Key Partners: Leaders and people to identify true supply and demand and subsequently unlock new markets based on new and emerging collaborative spaces.

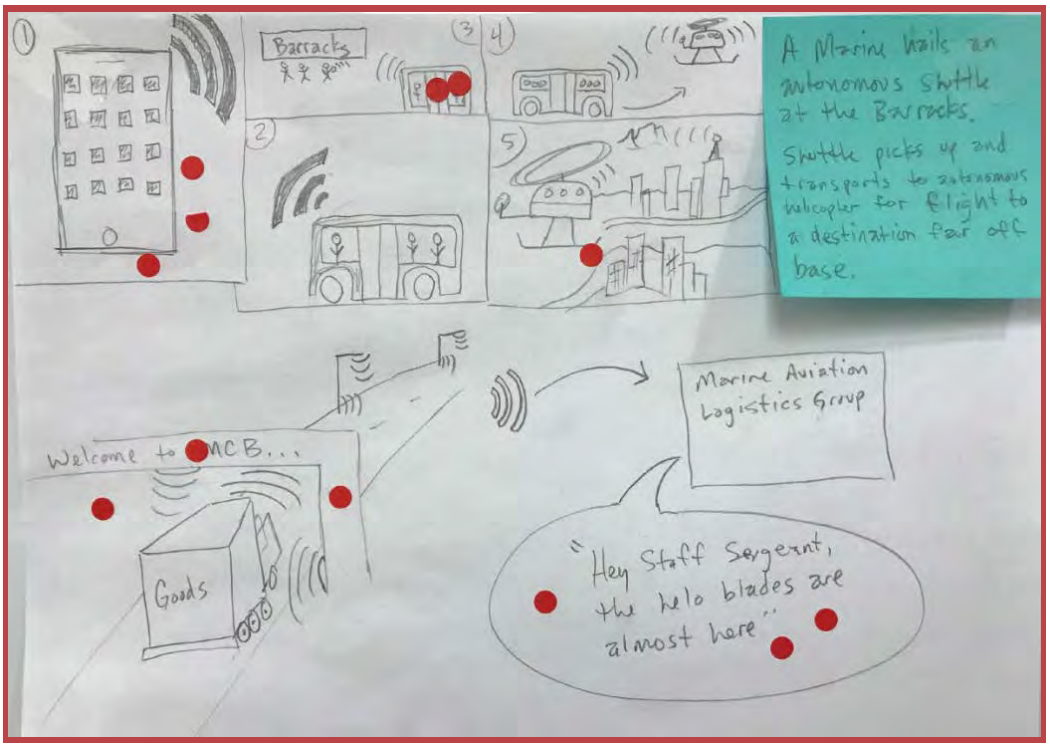
- ↗ Industry leaders in sensor technology, cyber security, data management, and mobility systems and manufacturers.
- ↗ Organizations such as Naval Supply Systems Command (NAVSUP), Marine Corps Systems Command (MCSC), Defense Informations Systems Agency (DISA), Defense Logistics Agency (DLA).
- ↗ City and state government and intergovernmental agreements (e.g. to account for provision of emergency services).

Key Resources:

- ↗ Digital infrastructure to unlock true market supply, and demand.
- ↗ Industry technical expertise for collaborative demonstrations on location.
- ↗ Unlock the ATO to store, process and collect data to prove capabilities.

Follow-On Activities:

- ↗ Identify the initial project team to define requirements and the "how" of base restructuring to enable industry-valid and feasible cross functional solutions.
- ↗ Survey Marine Corps Installations to find bases most closely aligned with this concept and host initial pilot program integrating technologies to establish proto-framwork.



INSTALLATION NEXT MOVING FORWARD

The collaboration will not end with this event. The Marine Corps Installation Command Installation werX (I-werX) team is dedicated to working with our ecosystem of Marines, MCICOM, industry, government, military, and academia to create solutions for our installations together.

One way that the MCICOM I-werX team has been engaging with the ecosystem is through a sponsored crowd sourcing challenge with NSIN, a national security technology accelerator. Through this challenge, we were able to identify mutliple solutions to the Resilience Challenge. Our team of subject matter experts reviewed and assessed the solutions and their benefit to Marine Corps Installations. We are proud to announce our winners!

LT Patrick Edward, NAVFAC NCR

Navy Lieutenant Patrick Edwards proposed the development of cloud-based Building Information Models system that will help visualize issues and support modernization and sustainment decisions of critical facilities and utility infrastructure.

LT Edward will be part of an upcoming MD5 Fellowship where he will focus on going through the research and problem curation steps in order to evaluate what opportunities exist to infuse Building Information Modeling (BIM) and 3D visualization to address the most pressing energy resilience issues. At the end of the Fellowship, LT Edward will present his insights.

Co-Winners: Dave Ross, MCAS Miramar civilian and Chris Woeler, MCICOM Civilian

Both Dave and Chris proposed solution concepts related to Telecommunications as a utility. Both of the submissions suggested contracting telecommunication infrastructure like we do utilities. This will limit the cost of having to constantly upgrade the infrastructure as technology advances.

Dave and Chris will partake in a planned off site with ecosystem partners, Verizon and AT&T, in order to co-locate and collaborate with industry and military to refine a few solution concepts around installations communication issues. The concepts will then be presented to MCICOM stakeholders to identify how to further the concept.

Maj Steve Harvey, MCTSSA and MCICOM Representative (TBD)

Steve Harvey proposed a solution in which we leverage Amazon's analytics and other capabilities in order to learn best practices and create a 'partnership' in which Amazon technology scouts for MCICOM. It was then identified that Amazon has a fellowship program that MCICOM could leverage.

Various Marines and MCICOM staff will participate in a 3-6 month internship with Amazon Training with Industry (TWI) Program. During their time at Amazon, they will have access to an abundance of Amazon training and networks and learn new techniques and skills for the Marine Corps. The goal is to identify opportunities to utilize cloud services to improve our installation infrastructure.

SPEAKER BIOGRAPHIES

PANEL 1 SPEAKERS: Individual and Personal Mobility

Colonel Charles Dockery, Commanding Officer, Marine Corps Air Station Miramar

Col Dockery graduated from the United States Naval Academy with a B.S. in General Engineering and was commissioned a Second Lieutenant in the United States Marine Corps in May 1994. Colonel Dockery has over 2400 flight hours in the F/A-18D. He is a graduate of the Marine Division Tactics Course and the Weapons and Tactics Instructor Course, and was the Marine Corps Aviation Association's Robert Guy Robinson Award Winner in 2004. He is a distinguished graduate of both the Australian Command and Staff College and the U.S. Army War College. He holds a Masters degree in Strategy and Policy from the University of New South Wales (Australia) and a Masters degree in Strategic Studies from the U.S. Army War College. His personal awards include the Air Medal with numeral '8', Navy and Marine Corps Meritorious Service Medal, the Defense Superior Service Medal, and nine Sea Service Deployment ribbons.

Colonel Joseph D. Williams, Chief of Staff, MCIWEST

Col Williams was commissioned in 1992 and upon completion of The Basic School, reported to Naval Air Station Pensacola, FL in May 1994 and was designated a Naval Aviator in 1996. He has twice deployed as a member of the 13th Marine Expeditionary Unit and also deployed in support of both Operation Iraqi Freedom and Operation Enduring Freedom. Other assignments include Executive Assistant to the Department of the Navy Assistant for Administration; Senior Military Advisor, Director Operational Test and Evaluation, Office of the Secretary of Defense; and the Director, Commandant of the Marine Corps Safety Division. Colonel Williams is a graduate of Ithaca College with a B.S. in Business Management, Johns Hopkins University, School of Advanced International Studies, Global Public Policy M.A. program. He is currently the Chief of Staff for Marine Corps Installations West-Marine Corps Base Camp Pendleton.

Colonel Raul Lianez, Commanding Officer, Marine Corps Base Hawaii

Colonel Raul Lianez is a native of Norfolk, Virginia. He graduated from United States Naval Academy in 1993 and was commissioned as a 2nd Lieutenant. In 1996 he was designated a CH-46E pilot. In 2003 he attended Naval Postgraduate School in Monterey and received a Master of Science in Manpower Systems Analysis. In August of 2007 Maj Lianez served as the Aircraft Maintenance Officer deploying with the Red Dragons during OIF 06.08-2 to Al Taqaddum, Iraq. In June 2009, LtCol Lianez took command of Marine Wing Headquarters Squadron One, 1st MAW, Okinawa, Japan. Following squadron command, LtCol Lianez attended TLS at the Marine Corps War College earning a Masters in Strategic Studies. In 2012, he received follow on orders to the Chairman Joint Chief of Staff, Joint Operation Directorate (J-3), the Pentagon. He was promoted to his current rank in February 2016. His personal decorations include the Legion of Merit, Defense Meritorious Service Medal, the Meritorious Service Medal with gold star, the Air Medal Numeral 5, the Navy Commendation Medal with gold star, the Joint Service Achievement Medal, and the Navy Achievement medal with gold star.

PANEL 2 SPEAKERS: MOBILITY AS A SERVICE (MAAS)

Hao Meng - San Diego Market Manager, Lyft

Hao Meng is Market Manager of Lyft San Diego. She oversees driver and passenger experience and acquisition, service quality, market growth and strategic direction for San Diego, one of Lyft's top, fastest growing markets. She brings more than ten years of management and operations knowledge, strengthening the local Lyft driver community and building its passenger base through local marketing efforts. She has built partnerships with some of San Diego's top organizations, including a first-of-its-kind pilot with the U.S. military at Camp Pendleton and local favorite UC San Diego.

David Richter - Chief Business Officer-Lime

David is the Chief Business Officer of Lime since October 2018. Before that, David was Uber's VP, Global Head of Business and Corporate Development, from June 2017 through May 2018. He was a member of the Executive Leadership Team (ELT), reporting to the CEO, and led the business development, corporate development and brand relevance teams. David first joined Uber in January 2014 as VP, Strategic Initiatives. Earlier, David held a wide variety of roles at startup companies, including leading business and corporate development, legal, finance and product teams. He played a significant role in DivX's 2006 IPO and in the sale of two public companies -- DivX in 2010 and Sonic Solutions in 2011. David was also a venture capitalist at Maveron and a lawyer in private practice. David holds a J.D. from Yale Law School and a B.A. in Government from Cornell University.

Danielle Kochman - Senior Regional Planner,San Diego Association of Governments

Since 2006, Danielle Kochman has been a Regional Planner with the San Diego Association of Governments (SANDAG). Danielle initially joined the transit planning team at SANDAG, managing specialized transportation grant programs, capital projects, transit planning studies, and supporting Bus Rapid Transit implementation. To follow her passion for technology and innovation, Danielle moved to the Transportation Demand Management team in 2018. In her new role, Danielle is spearheading efforts to collect ride-hailing data to inform long-range transportation planning and policies and overseeing an effort to implement the region's first robust planned Mobility Hub, which will leverage technology and new transportation services to expand personal mobility and improve access to transit. Danielle received her undergraduate degree in Economics at UC San Diego, completed a certificate program at Columbia University's Graduate School of Architecture, Planning and Preservation, and began her career as a Regional Planner at the San Joaquin Council of Governments.

Chris Pangilinan - Global Head of Public Transportation, Uber

Chris Pangilinan is the Global Head of Public Transportation Policy at Uber. In this role, Chris works to help transit agencies and riders harness Uber's technology platform to make transit more convenient and easier to use. Prior to joining Uber, Chris was a program director at TransitCenter, and served in various planning and engineering roles at New York City Transit, the San Francisco Municipal Transportation Agency, the Chicago Transit Authority, and the US Department of Transportation. Chris has a B.S. in civil engineering from Portland State University, and an M.S. in transportation from MIT.

PANEL 3 SPEAKERS: AUTONOMOUS VEHICLES

Jay Rogers, CEO & Co-Founder, Local Motors (LMI) Industries

As the CEO and co-founder of LM Industries (LMI), which exists to shape the future for the better. LMI makes technology forward products using the four pillars of our innovation ecosystem: co-creation, micro-factories, direct digital manufacturing, and lab partnerships. The team begins every product with community-powered, human-centered design and by reinventing manufacturing with micro-factories, we create big things on a smaller scale for the local communities that actually need them. The LMI process breaks down the barriers to sustainable product development, reducing waste, consuming less energy, and ensuring we use only the materials we need. We have the unrivaled capacity to make the improbable come to life. Based in San Francisco, LM Industries is the parent company of Local Motors and Launch Forth.

Eddie Mottern - Executive Vice President, Robotic Research

Mr Mottern has over 18 years of experience with program development and execution, robotic vehicle development, integration and testing. His area of expertise lies in the planning and management of Government and Commercial robotic programs. Mr Mottern handles day-to-day operations, budgeting and handles high-level decision making. Mr Mottern is spearheading Robotic Research's push into commercial solutions where autonomy and ancillary technologies are needed. He has several publications on the safe operation of unmanned systems in complex environments.

Paul Guckian - Vice President, Engineering, QUALCOMM

As vice president at QUALCOMM, Mr. Guckian is responsible for corporate engineering services including company wide responsibility for regulatory engineering and compliance. He is responsible for Electromagnetic Compatibility (EMC) and Regulatory certification of new wireless technologies being introduced into different market segments including consumer electronics, automotive, aviation, industrial, and medical markets. He works directly with QUALCOMM customers and industry groups as well as country regulators, such as the Federal Aviation Administration (FAA), Federal Communications Commission (FCC) , and the U.S. Food and Drug Administration (FDA) the US to ensure streamlined processes for device development and ease of radio certification. In 2016, Paul leveraged his experience with the FAA and made Qualcomm the first commercial company to receive an FAA authorization for UAS flights in Class B airspace. In 2018, Paul led Qualcomm's Autonomous Vehicle Tester Program in acquiring permits to test autonomous vehicles in different states.

Major Kyle Holway- Deputy Director, Marine Corps NexLog

Major Kyle Holway is the Deputy Director, Unmanned Systems at Headquarters Marine Corps (HQMC) Installation & Logistics (I&L) Logistics Plans (LP), Next Generation Logistics (NexLog). He has served in this role for two years, advocating on behalf of LtGen Chiarotti, DC I&L, for autonomous Air, Ground and Surface platforms with logistics applications. Prior to his current role, Major Holway served as a Motor Transportation officer in multiple company grade officer billets in the continental United States and forward deployed. Major Holway is a graduate of the Expeditionary Warfare School, Marine Corps University, and Seton Hall University with a Master's in Public Administration

Kevin R. Curtis - Verizon Smart Community DoD Lead and Distinguished Solutions Architect, Verizon

Kevin R. Curtis is the Federal Lead and Distinguished Solutions Architect for the Verizon Smart Communities (VSC) within Verizon Business Group. He is responsible for Federal Government Technical Monitor (GTM) and technology strategy as well as developing outcome based Internet of Things (IoT) solutions that digitally transform business processes in communities, cities, and venues to enhance connectivity, livability, public safety, situational awareness and operational efficiencies. Kevin is predominantly focused on Verizon's portfolio of IoT solutions as well as Verizon's Horizontal IoT solutions.

PANEL 4 SPEAKERS: AIR MOBILITY

Chad Sweet, CEO ModalAI Inc

Chad is the CEO of ModelAI, Inc. and has more than 20 years of leadership experience and is currently responsible for system architecture and business development for ModalAI. Through June 2018 he led global robotics R&D at Qualcomm Research. His entrepreneurial drive led to multiple autonomous robotics product launches based on Qualcomm's Snapdragon and he was responsible for launching the Snapdragon Flight autonomous drone platform. Previously he led efforts in computer vision and wireless communications with 14 patents granted

Maj Andrew Musto- Defense Innovation Unit (DIU)

Maj Musto is a mobilized Selected Marine Corps Reserve (SMCR) reservist serving as a program manager at Defense Innovation Unit. At DIU he oversees multiple projects within the Autonomy portfolio, with a focus on UAS and distributed logistics. Prior to DIU Andrew flew Harriers on active duty and most recently served as a Forward Air Controller in the reserves. His Masters is in Computer Engineering and he has experience working as a software engineer and program manager in the aerospace industry.

Jesse Gipe - Director WTC San Diego Regional Economic Development Corporation

Jesse Gipe currently serves as Director of World Trade Center (WTC) San Diego an affiliate organization to San Diego Regional Economic Development Corporation (EDC). As Director of WTC San Diego Jesse leads a team focused on increasing regional exports and supporting international firms looking to establish a presence within San Diego County. Prior to his role as Director of WTC, Jesse was the Senior Manager of Economic Development with EDC and was the industry lead for aerospace and defense. In that role he led several multi-million dollar DoD funded grants to support small to medium size defense contractors. As the aerospace lead Jesse worked with the City of San Diego to draft and submit the region's successful application for the FAA's IPP program.

"We dream of a world where anyone can fly wherever they want, whenever they want. We've invested a tremendous amount of thought and care into designing an aircraft and a service that will let us deliver this, meeting society's demands for urban air travel that is quiet, safe and environmentally positive."

-Daniel Wiegand, Lilium CEO

PANEL 5 SPEAKERS: ELECTRIC VEHICLES

Andrew Christian, VP Business Development- Nikola Corporate

Andrew Christian is the Vice President of Business Development and Defense at Nikola Motor Company. He believes in the principle of "inspiring passionate people to innovate so the team can move at the speed of trust." Christian retired from the United States Marine Corps with over twenty-eight years of active duty service as a prior enlisted Marine and Officer.

Christian has been on fourteen deployments during his Military career. In 2012, Christian reported to Coronado, California for duty with the Navy SEAL Command. In 2014, Major Christian was promoted to Lieutenant Colonel and commanded 1st Marine Raider Battalion from 2015-2017. He deployed to Iraq in 2016 and commanded a Special Operations Task Force of Marine Raiders, U.S Army Special Operations Forces, and Navy SEALS during the battle to take back Mosul from ISIS. Lieutenant Colonel Christian's personal awards include the Navy Marine Corps Heroism Medal, Legion of Merit with Combat Valor device, two Bronze Star Medals with Combat Valor devices, two Navy Marine Corps Commendation Medals with Combat Valor devices, the Combat Action Ribbon with four Gold Stars.

Natasha Contreras - Electric Vehicle Customer Engagement Program Manager, SDG&E

Natasha Contreras is the Electric Vehicle Customer Engagement Program Manager with San Diego Gas & Electric (SDG&E) focusing on transportation electrification education and outreach. Natasha's team manages all the marketing efforts for the newly launched "It's On" branding campaign and organizes a multitude of public events including San Diego EV Day and the Eco Center display at the San Diego International Auto Show. Natasha is also leading the implementation of the Senate Bill 350 Priority Review Projects in San Diego and Southern Orange County, installing charging infrastructure at the Port of San Diego, San Diego International Airport, for fleet and shuttle providers, and an educational campaign for local dealerships. Natasha began her career with the Port of San Diego as a Marketing Advisor, before joining SDG&E in 2009. She holds a BS degree in Marketing and Communications from San Diego State University, and Masters of Science in Project Management (MSPM) from University of Wisconsin Platteville.

Ted Sears - Senior Project Leader, NREL Transportation Market Transformation Group

Ted is a Senior Project Leader in National Renewable Energy Laboratory (NREL)Transportation Market Transformation Group, and is located at NREL's Washington, D.C., office. Ted is the task leader for EPAct tasks within the U.S. Department of Energy's Vehicle Technologies Office and has served previously as the task leader for DOE's Federal Energy Management Program (FEMP Sustainable Federal Fleets Program. These tasks involve oversight of the State, Alternative Fuel Provider, and Utilities Fleet program, the Federal Fleet Program, New Rulemaking, and Legislative Analysis. Ted is a graduate of Dartmouth College, the Harvard School of Public Health, and the University of Connecticut School of Law. Before joining NREL, Ted was a senior environmental consultant with the law firm of Bergeson & Campbell, P.C. in Washington, D.C. His past positions include serving as a senior environmental consultant with The Technical Group, LLC, an adjunct faculty member of the U.S. Department of Agriculture Graduate School, and an attorney at the Environmental Law Institute.

"It's clearer every day: the future of transportation is electric. "

-David Reichmuth, Senior Vehicles Engineer

INSTALLATION NEXT MOBILITY DESIGN THINKING PARTICIPANTS

INSTALLATION WERX TEAM

FIRST NAME	LAST NAME	ROLE	ORGANIZATION
Suzy	Fitzpatrick	Deputy Director ACS/G7	Installation werX, MCICOM G7
LtCol Brandon	Newell	I-werX West	Installation werX MCICOM G7
Capt Jessica	O'Reilly	IX Catalyst, MCICOM G7	Installation werX MCICOM G7
Amanda	Huntley	IX Catalyst, MCICOM G7	Installation werX, MCICOM G7
Nicole	Lach	IX Catalyst, MCICOM G7	Installation werX, MCICOM G7
Clarence	Dingman	Program Manager/Mobility SME	Installation werX, MCICOM G7
Ken	King	IXM Logistician	UNAVFAC Camp Pendleton

GROUP 1

FIRST NAME	LAST NAME	ROLE	ORGANIZATION
Marissa	Brand	Program Manager, ONR	Naval Information Warfare Center
Laurie	Mulligan	DoD Client Partner	Verizon
John	Koenig	Marine Corps Account Leader	Guidehouse
Sean	Sadler	Senior Program Manager	Applied Research Associates
Ed	Richie	Director, Global Defense Initiatives	Real Wear
Tyrone	Rael	Section Chief, Traffic Management	USAF 412th Wing Logistics Readiness Squadron
Alex	Cambell	Graduate Student Researcher	UC Davis Energy Graduate Group
Roy	Lane	Commanding Officer	Naval Base San Diego

GROUP 2

FIRST NAME	LAST NAME	ROLE	ORGANIZATION
Sam	Geiger	Vice President	Fortistar & Trystar
Whitney	Tallarico	Program Coordinator	Office of Naval Research
Dwayne	Pierce	Program Analyst	G4 Transportation Services, United States Marine Corps HQ
Taylor	Gygi	Business Developmet	Local Motors
April	Petonak	Transportation Planner	San Diego Association of Governments
Matthew	Cox	ITS Engineer	IBI Group
Termaine	Babers	Distribution Officer	Marine Corps Logistics Command

GROUP 3

FIRST NAME	LAST NAME	ROLE	ORGANIZATION
Todd	Hylton	Exec. Director, Contextual Robotics Institute	UC San Diego
Ron	Zich	Director, USMC Programs	AT & T
Mychal	Loomis	Traffic Engineer & Consultant	Kimley Horn
Donald	Ratliff	Camp Pendleton Management Analyst	United States Marine Corps
Jason	Keir	Flight Chief, Base Vehicle Management	Edwards Air Force Base
Yvonne	Mercado	Waterfront Operations & Transportation Officer	Naval Station San Diego
Shaun	Fernando	Director, Future Cities	Guidehouse Consulting
Sam	Neck	Chief Executive Officer	Sandbox
Brian	Alvara	President/ Unmanned Systems Tech Lead	3R's Robotics/ U.S. Navy

GROUP 4

FIRST NAME	LAST NAME	ROLE	ORGANIZATION
Steve	Harvey	Major, Director, Innovation Center	USMC Tactical Systems Support Activity
James	Gough	Transportation Director	Transportation Services G4, Marine Corps Installation Command
Greg	Rhoney	Director, Global Mission Solutions	TapHere! Technology
Andy	Knox	Program Manager, Smart Cities	Naval Facilities HQ
Elizabeth	Owen	Student, Urban Planning	UC San Diego
Debbi	Leung	Transportation Systems Planner	IBI Group
Joe	Sanchez	DoD Initiatives, Program Manager	Arizona State University
Amy	Pignataro	Manager	Guidehouse Consulting
Art	Rubio	Program Lead, ESTEP	Naval Information Warfare Center