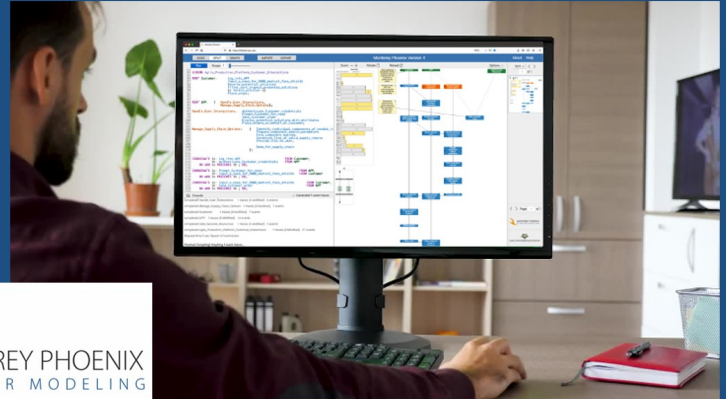


In This Issue:

- SE Spotlight
- Faculty News
- Student Stories
- Alumni Update
- Capstone Corner
- Spring Quarter Awards and Graduations

Your system or process may be primed to behave in ways you never imagined or intended. Find and fix unexpected behaviors lurking in your design with Monterey Phoenix (MP), a user-friendly, NPS-developed language, approach and tool for modeling and reasoning about behavior.



<https://nps.edu/mp>

Letter from the Chairman

Welcome to the Systems Engineering Newsletter for the spring quarter of the 2022 Academic Year!

This quarter we continued to operate in the normal (in-person) format and had our first after-COVID full-fledged graduation with students, their families, faculty, staff, and guests attending the spring commencement ceremony at King Hall on June 17. The commencement address was given by Gen. John W. "Jay" Raymond, the Chief of Space Operations, United States.

The SE Department graduated 43 students this quarter: 17 with the Master of Science in Systems Engineering, 4 - Master of Science in Systems Engineering Analysis, 5 - Master of Science in Engineering Systems, and 17 - Master of Science in Systems Engineering Management. Two students graduated with distinction and one student was recognized for his outstanding thesis. As usual, two days before graduation, the SE department held the Student Celebration Ceremony, this time via Zoom.

In the spring quarter, SE faculty delivered 36 resident and DL sections and advised 18 capstone project teams, continued advising M.S. and Ph.D. thesis students, served on a variety of departmental and schoolwide committees, and worked on the reimbursable research projects.

During the spring quarter we had the pleasure of hosting and having very fruitful discussions with our sponsors and customers to include the Principal Military Deputy to the Assistant Secretary of the Army (Acquisition, Logistics and Technology); Director, Army Acquisition Corps, LTG Robert Marion; Director, Warfare Integration, N9I, Office of the Chief of Naval Operations RADM James Pitts; and MINDEF Singapore Chief Defense Scientist, Dr. Peng-Yam Tan.

As a result of the NPS Transformation initiative, three business support cells (BSCs) were created to assist departments in all administrative affairs. The SE Department joined BSC #3, led by our own Laura Barnes, ensuring a minimal impact on our day-to-day operations. Under Laura's leadership the SE administrative team has been formed and is composed of Management and Program Analyst Ms. Chiaki Gayle and Administrative Support Assistant Mr. Carlos Picazo Brink Vallin. Chiaki and Carlos - welcome to SE! Laura - thank you for all you have done and continue to do for our department, and now for many other departments at NPS!

Since we are still spread across campus (Bullard Hall is still under renovation), resident faculty, staff and graduating students had a great social gathering at El Estero Park. We intend to continue doing this in the future even after we return to Bullard Hall sometime next year.

I would like to conclude with congratulating our Spring graduates and their families and thanking SE family for the continued great work! Sincerely,

Dr. Oleg Yakimenko
Systems Engineering Chair and Distinguished Professor



Systems Engineering Chairman
Dr. Oleg Yakimenko

Joint Executive Systems Engineering Masters Degree 2022 Industry Trip By Dr. Warren Vaneman, ESEP

The Systems Engineering Department hosted the Annual Joint Executive Systems Engineering Masters Degree Program (PD21) Industry Trip, in Honolulu, HI. 19-25 June 2022. Dr. Wally Owen led the 35 students and faculty members on the trip with the primary goal to explore state of the art concepts, tools, and best practices in both management and technical domains of a company's lifecycle business enterprise.

The Industry Trip began on the Juneteenth Holiday with a visit to Pearl Harbor and the USS ARIZONA Memorial. Since the PD21 students are either active duty Navy or Marine Corps Officers, or Department of the Navy Civilians, it was only fitting the trip's participant's pay their respects to the 2,335 military personnel killed during the attack on Pearl Harbor, including the 1,177 Sailors and Marines who were killed aboard USS ARIZONA, on 7 December 1941.

The industry tour began with a visit to the Navy Information Warfare Center (NIWC) Pacific, in Pearl City. Mr. Wally Fukumae, a September 2021 NPS System Engineering Graduate, and Mr. Neal Miyake hosted the visit and led a discussion of the latest develops supporting the Joint and Naval Forces across the Pacific.



The second visit was to the Third Littoral Anti-Air Battalion at Hawaii Marine Corps Station Kaneohe Bay. The battalions, commanding officer, LtCol James Arnold, led a discussion of his new battalion's role with respect to Marine Corps Force Design 2030. His discussion was extremely insightful because Force Design 2030 marks a new direction for Marine Corps support to maritime operations. This discussion was especially helpful because it helped inform an on-going research effort with the Systems Engineering Department.



The tour continued with a visit to the Applied Research Laboratory (ARL) at the University of Hawaii. The ARL is one of 12 University Applied Research Centers managed by the Office of the Secretary of Defense. The visit was hosted by Dr. Ben Jones, a NPS graduate and Associate Director of ARL. An overview of ARL's recent and on-going research efforts were discussed.



The PD21 group then visited the Pearl Harbor Naval Shipyard (PHNSY), where they were treated to a tour of several dry docks, and the site of a future dry dock. The discussion of the planning for the development of the future dry dock especially interesting given the holistic systems engineering perspective being employed.



The last visit was to the Hilton Hawaiian Village. Mr. Jeffrey Yedlin, Manager of the Hilton Hawaiian Village, was the host for this visit. This visit was especially pertinent given that the hotel is a very large, multi-faceted, enterprise, who entertains up to 16 thousand guests per day, and generates more revenue than all Hilton brand hotels in Asia combined.



The Joint Executive Systems Engineering Management Program, is a joint engineering and management master's degree distance learning program offered by NPS through a partnership with the Massachusetts Institute of Technology, as part of the Educational Consortium for Leadership in Product Development for the 21st Century. Established, and managed, by Dr. Wally Owen, the program's course of study includes both the business (leadership, marketing, organizational processes, finance & managerial accounting, project management, manufacturing, operations management) and the technical (systems engineering, systems architecture, engineering risk analysis, systems optimization) aspects of services, systems, or product development. By integrating both engineering and management elements, the program strives to develop a new kind of leader with a holistic perspective and knowledge of systems, services, and product development. Students acquire the fundamental skills and strategic perspective required of effective innovators and change agents in their organizations.

For more information about the PD21 program, please contact Dr. Wally Owen at wowen@nps.edu or Dr. Warren Vaneman at wvaneman@nps.edu.



The Aerodynamic Decelerator Systems Technology Conference of the American Institute of Aeronautics and Astronautics By Dr. Oleg Yakimenko



Prof. Oleg Yakimenko organized (and served as a General Chair for) the Aerodynamic Decelerator Systems Technology Conference of the American Institute of Aeronautics and Astronautics that took place on May 16-19, 2022 in Toulouse, France, hosted by the French Army Direction générale de l'armement (DGA), analogous of the U.S. Army Combat Capabilities Development Command (DEVCOM). This conference promotes interdisciplinary understanding of aerodynamic decelerator systems, their underlying science and technology, and their applications to government and commercial endeavors. Discussed topics included design and development, modelling and simulation, testing and evaluation, materials and manufacturing, system applications and operations (both military and space). Conference featured Industry/Government/Academia participants from the U.S., France, UK, Germany, Japan, Spain and India to include NASA, European Space Agency, Japan Aerospace Exploration Agency, Space X, Blue Origin, ONERA (French national aerospace research center), DGA Aeronautical Systems, DLR (German Aerospace Center), Vorticity, Airborne Systems, U.S. Army DEVCOM Soldier Center, and U.S. Army Proving Ground.



NPS Applies System Engineering to Bolster Marine Corps Reserves Education System

By Andy Hernandez



Launched in 2014, an evolving effort by the NPS Department of Systems Engineering provides the Marine Corps Forces Reserve with a comprehensive educational system for active duty Inspector-Instructors, critical personnel in ensuring reserve units are well trained and ready to respond.

As Great Power Competition intensifies, the United States Marine Corps is increasingly being called upon as the nation's premier expeditionary force. Critical to its success is the strength of its Reserve component, and the ability to augment active duty USMC forces with trained and ready Marines.

Marine Corps Forces Reserve (MARFORRES) is tasked with this mission. To facilitate this, it assigns active duty Marines to Reserve units as Inspector-Instructors (I-Is), whose job it is to maintain the daily operations of the unit until Reservists report for training. During training periods, the I-I cadre serves as advisors and subject matter experts for the unit.

Historically, however, I-Is were at a disadvantage when reporting to their units. Few of them had ever served in a Reserve unit and they faced a steep learning curve in acclimating to the unique needs and culture of the Reserves. To help overcome this challenge, MARFORRES turned to the Naval Postgraduate School (NPS).

"They decided that they really needed to try and see if there's a better system for presenting information and transferring knowledge that the I-Is require, so they reached out and asked 'Can you help us? What are the different ways we can make this happen?'" recalled Dr. Andy Hernandez, associate professor in NPS' **Systems Engineering** department.

In 2014, MARFORRES established a partnership with NPS to examine the existing I-I education system and to address identified shortcomings in the program. Hernandez, as principal investigator (PI), drew on the wealth of NPS subject matter experts and looked to applied systems engineering – the interdisciplinary study of the design, integration and management of complex systems over their life cycle – to take this on. The team included faculty and students from systems engineering, center for executive education, the former CED3 now GEAC, and defense management.

"We began by asking 'What is the problem? Let's dissect the problem,'" he said. "We developed a clear problem summary and the functions of what the education system ought to do. We basically used a systems engineering approach to break down the bigger problem into smaller solvable problems."

Through this process of functional decomposition, the NPS team and MARFORRES were able to break down in detail the activities that must occur for the overall system to achieve its main purpose. Subsequently, the team developed a set of requirements for designing the education system.

"How do you go about educating the I-Is when they're scattered over 150 separate locations in the contiguous United States, as well as Puerto Rico?" Hernandez said. "That was the original problem. But the other problem was how then do you continue providing information and educating them with fresh information?"

"You need to convey the most recent information," he continued. "You need to be able to engage with them directly. You need to have continued information updates, and you have to figure out how to do this in a distributed fashion."

To accomplish this, the NPS team devised a three-pronged approach: a formal orientation conference with educational lectures; distance learning (DL) with a reach-back portal; and, practical exercises for experiential or scenario-based learning.

Held on an annual basis, the I-I orientation conference introduces basic knowledge about the Reserves, and internal processes that active duty units do not have in particular. Additionally, it's an opportunity to develop relationships among the I-I cadre as well as MARFORRES Headquarters staff.

"There's a need for formal lectures, just like we do here at NPS," Hernandez said. "Sometimes there's just a need to have a face-to-face interaction. Specifically, the commanding general at the time said 'One of the reasons we have an orientation conference is because we want I-Is and headquarters staff to meet one another. The I-I should meet some of the people they're going to be working with at least once so when they call up headquarters, they know who they're actually speaking with during their two- or three-year assignment.'"

The NPS team also developed an interactive, web-based learning portal and designed a series of educational modules to guide incoming I-Is through MARFORRES processes and policies. Created within the university's **Sakai** learning management system, the DL program allowed participants to learn and retain information better than receiving a one-time deluge of PowerPoint slides.

“With the DL portion, now we could go ahead and talk to everybody ahead of time,” Hernandez said. “Once you identify who is coming to the command, you can provide this education right at the beginning of their duty time.”

The portal allows the incoming cadre to interact with the materiel at their own pace, he added. By the time they arrived at the orientation conference, they had a common knowledge base with the other new I-Is.

Finally, the development of scenario-based practical exercises provided hands-on application of material from the portal while creating a forum for current I-Is to share their experiences with challenging and sometime unique situations. This new dimension in the education design addressed a need to inject experiential learning that has been proven to be a highly-effective approach for the I-I population, Hernandez noted.

The NPS team created a one-week workshop with MARFORRES Headquarters staff held during the annual I-I orientation conference. During the workshop, the team builds scenarios for specific situations for incoming I-Is to resolve, situations they may have to deal with when they're in their Reserve component position. Gaming practical exercises in this manner is an excellent way to reinforce concepts and identify areas for improvement, Hernandez said.

“MARFORRES identifies four or five teams of facilitators, active-duty personnel who are in I-I billets,” he explained. “What I do then is I take those facilitators and I partner them up with a NPS faculty member as a mentor. Why do I do that? Because NPS faculty know how to engage, they know how to get out teaching points, they know how to construct the class such that they will get the learning objectives.”

Since its inception in 2014, Hernandez proudly reports the I-I program has continued to grow, adapt and evolve to meet MARFORRES' needs. To date, the new I-I education system has helped educate approximately 1,200 I-Is. The response to this new approach has received a decidedly positive response according to exit surveys that the MARFORRES operations division collects in each orientation conference.

“I think it's a great reflection on NPS that we have the latitude to do this,” Hernandez said. “An operational command identified a problem and we took it on. MARFORRES has different categories of problems, some technical, some social. Because we have a diverse set of scientists at NPS, it is possible to call on these experts to address them.”

“It speaks well of NPS that it has the diversity of talent to do that,” he added. “This has been a satisfying project for the entire team. We saw a real problem set in a real unit and we were able to provide a real answer. That's the strength of NPS.”

<https://nps.edu/-/nps-applies-system-engineering-to-bolster-marine-corps-reserves-education-system>

Systems Engineering Faculty Member, NSIN Foundry 2022 Workshop Milestones

NPS – AUV Prototyping. LCDR Ross Eldred's invention was selected by the National Security Innovation Network (NSIN) Foundry for development. Enabled by NPS' NavalX Central Coast Tech Bridge through a partnership with NSIN's University Director at Cal Berkley, LCDR Eldred's **3D printed AUV**, the Wreck Interior Exploration Vehicle (WIEVLE), provides a scalable, modular, and expendable effects-delivery mechanism designed for operations within confined spaces, littoral, entanglement-prone or deep-sea extremes (**NIF R5**). Two **patents pending** includes an innovative lightweight, re-stowing AUV anchor that can also serve as an antenna for close-range EM network communications. **IMPACT:** Part the NPS “The Kelp Road Initiative,” the CONOPS was developed and presented at the [Warfare Innovation Continuum](#) (WIC) '21 augmenting an NPS NRP study “Offensive Mine Warfare in Great Power Competition” (N359A), which resulted in a CUI report identifying capability gaps and opportunities for exploitation of mobile AUV networks. The NSIN Foundry involvement will potentially move the project from concept to commercial product. LCDR Eldred is now a full-time Faculty Associate-Research (FA-R) at NPS and SELRES assigned to ONR-RC unit S&T-204.

Faculty Receives the Wayne E. Meyer Award



Professor of Practice Don Muehlbach PhD will receive the Wayne E. Meyer Award for Teaching Excellence in Systems Engineering for Cohort 311-2040 at the June Graduation.

Student Stories

Student Receives the Wayne E. Meyer Award



Mr. Andrew David Graham

Selected by the academic advisory committee to receive the Wayne E. Meyer Award for Excellence in Systems Engineering for Outstanding Academic Achievement for June 2022 graduation

Andrew David Graham, a Mechanical Engineer who started his career with Naval Air Warfare Center Aircraft Division (NAWCAD) at Patuxent River, Maryland in 2016. He has been supporting the NAVAIR Additive Manufacturing Integrated Product Team, who's MO is to successfully implement additive manufacturing as a source of manufacturing for NAVAIR aircraft components with on-demand and on-site rapidness. He entered into the NPS SE DL program as encouraged by his colleagues and mentors at work who ensured he was destined to become a SE later in his career (and he can't thank them enough!) Outside of his work and education, He is an avid shade-tree mechanic, auto restorer, fisherman, hunter, and "wanna-be" livestock farmer.

The material taught to him through the systems Engineering program will be invaluable for his career. Applying techniques of systems engineering, including model-based systems engineering is crucial for the success of today's cutting edge but also marginally-funded DoD acquisition programs. He wants to personally thank all of his colleagues, teachers, and current advisors for their job-well done in demonstrating all that SE has to offer. He, along with everyone else in his graduating cohort and the cohorts of tomorrow are fully prepared to improve the efficiency and effectiveness of tomorrow's systems!

The Journal Systems Published the Work of LT Kyle Diatte

The journal Systems recently published the work of LT Kyle Diatte, a graduate of the Naval Postgraduate School's Systems Engineering program. LT Diatte earned his Master's of Science degree in Systems Engineering in December 2021. The journal Systems is an international, scientific, peer-reviewed open access journal on systems theory in practice published bimonthly online by MDPI.

LT Diatte's article, titled "The Integration of Reliability, Availability, and Maintainability into Model-Based Systems Engineering," is based on his master's thesis research with advisors Dr. Van Bossuyt and Dr. O'Halloran, who also co-authored the work. His research focused on the developing a methodology integrating model-based systems engineering and reliability, availability, and maintainability techniques for use during the early design phase of a system.

LT Diatte is from San Jose, CA and a 2015 graduate of California Maritime Academy with a Bachelor of Science in Marine Engineering Technology and a 2019 graduate from Old Dominion University with a Master of Science in Engineering Management.

He began his military career as a Surface Warfare Officer with sea tours onboard USS LEYTE GULF (CG 55) and USS JAMES E. WILLIAMS (DDG 95). While on DDG 95, he was accepted for lateral transfer to the Engineering Duty Officer (EDO) community and orders to Naval Postgraduate School. He is currently serving as a Project Officer at Southwest Regional Maintenance Center (SWRMC).

Abstract of the article follows:

“Model-Based Systems Engineering (MBSE) methods have developed a strong foothold in the design space in industry. These methods have proven fruitful when the right method is applied to the right problem. Reliability, Availability, and Maintainability (RAM) is an equally important area. Currently, there is a gap in applying a methodology to integrate the two in the design process, particularly when the design is complex. This work attempts to provide a methodology that results in the successful integration of RAM and MBSE that can be used during the early phases of design. The methodology was developed after an extensive literature review, followed by the illustration of the methodology through an example of a steam turbine fuel system. Each step of the method is applied and explained in the illustrative example, to include figures, tables, and calculations demonstrating the effectiveness of the method, concluding with evidence for validation.

Link to article: <https://doi.org/10.3390/systems10040101>

Citation of article: Diatte, Kyle, Bryan O'Halloran, and Douglas L. Van Bossuyt. 2022. "The Integration of Reliability, Availability, and Maintainability into Model-Based Systems Engineering" *Systems* 10, no. 4: 101. <https://doi.org/10.3390/systems10040101>



LT Kyle Diatte

SE Students and Professor Awarded Patent By Anthony Pollman

Former SE students LT Austin Fleming, LT Beth Geiss, and LT Ben Rathwell, along with their project advisor, Assistant Professor Dr. Anthony Pollman, were awarded a U.S. patent for their invention entitled "Bi-directional Charging Panel".

Congratulations to former NPS Systems Engineering Department students LT Austin Fleming, LT Beth Geiss, and LT Ben Rathwell, as well as their advisor and mentor Assistant Professor Anthony Pollman, on being awarded a U.S. patent (US 11,296,506, 05 April 2022) for a "Bi-directional Charging Panel" (BCP). The device is critical technology that could be used to eliminate diesel generators and replace them with a network of dual-use, transportation and electricity generation, vehicles to provide power at forward operating bases. Ford Motor Company recently incorporated bi-directional charging capabilities into its latest electric vehicle designs.

System Engineering Student Presents at International Conference By Douglas Van Bossuyt

An article on hybrid mobile microgrids for military applications written by Maj Daniel Varley was recently published in the *Systems Journal*. The research examined the potential for mobile hybrid microgrids, constrained within an International Standards Organization (ISO) Triple Container (TriCon) and not to exceed 10,000 lbs, to provide power in a fuel constrained environment for DoD small critical loads (average loads of 10 kW).

The research proposed a system architectural design that attempted to find a suitable balance in energy density between a photovoltaic (PV) array, diesel generator, and battery energy storage system (BESS), using commercial off the shelf products, that could meet a 14-days-of-autonomy requirement for installation backup power systems.

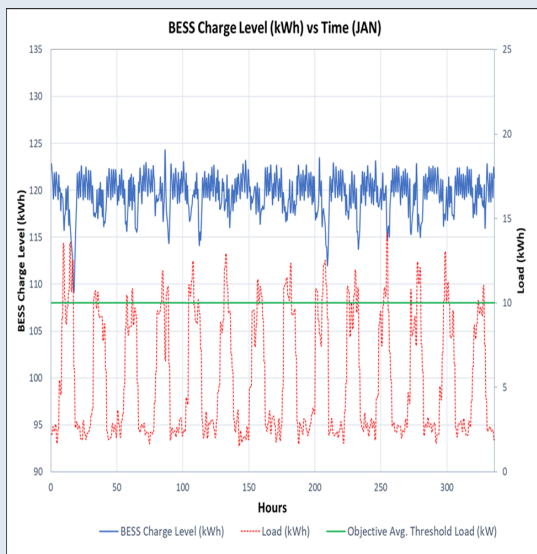
The design provides low voltage power from the BESS to allow for immediate hookup and follow-on setup of the PV array and generator as well as mitigate the handling of transients. The research assumed that building static, customized microgrids at individual critical loads was not warranted if an installation microgrid already exists, however a mobile backup power solution might be warranted to provide the confidence and increased energy resilience needed in the event of installation microgrid failures.

The research showed that the proposed design was able to fall within the size and weight constraints and handle the average 10 kW load for 12 hours a day with zero load shed over a 14-day period with low average solar irradiance (average of 2.8 hours @ 1-sun/day) while reducing reliance on the diesel generator by nearly 40%.

MAJ Varley commissioned in 2006 from the United States Military Academy, West Point, with a Bachelor of Science in Mechanical Engineering. He served the first eight years of his career as an Armor Officer before transitioning to the Army Acquisition Corps in 2014. Dan earned his Master of Science in Systems Engineering in the 580 program in June 2022. His next assignment will be to the Army's Armaments Center, Combat Capabilities Development Command, Picatinny, NJ.



Maj Daniel Varley



In the picture, from the left to right are Ms. Katherine Egerton, Dr. Douglas Van Bossuyt, Dr. Anthony Pollman, and Maj Daniel Varley

This figure shows a snapshot of a single run of the system for the 14-day period of analysis using January GHI input data. The green line represents the design objective threshold load. As seen, the load often exceeds this during peak work hours due to the stochastic nature of the model. The BESS is able to handle the load and the PV and EDG are able to recharge sufficiently to avoid load shed (BESS reaches zero).

Article info:

<https://www.mdpi.com/2079-8954/10/3/74>

Varley, Daniel W., Douglas L. Van Bossuyt, and Anthony Pollman. 2022. "Feasibility Analysis of a Mobile Microgrid Design to Support DoD Energy Resilience Goals" *Systems* 10, no. 3: 74. <https://doi.org/10.3390/systems10030074>

Alumni Update

Former Cohort of PD21 Student Retires

Herb Pokorny was a student in our first cohort of PD21 back in 2000 (employee of NSWC Port Hueneme at the time) and now he is retired after completing over 36 years as a civilian employee of the United States Navy.

He started his career at Naval Ship Weapon Systems Engineering Station (NSWSES) back in 1985 as a GS-5 Junior Professional in the Gun Systems Department. As part of his Gun Systems Department duties, he invested considerable time and energy into developing the specifications for the development of the AN/SPQ-9B radar, as well as leading one of the technical evaluation review panels for the contract award. The extensive department team that supported that effort will always be a source of incredible pride for me, especially in knowing that the SPQ-9B radar is installed and operational on approximately 50 US Navy surface combatants, making a difference to the Navy and making a difference to the Country.

He also spent considerable time away from home during his career, including multiple temporary assignments at program offices in DC, a yearlong rotation assignment with CINCPACFLT Fleet Maintenance in Pearl Harbor Hawaii, and multiple trips to every Warfare Center Division across the country. His time working with the Warfare Center Product Area Director construct was very challenging, but very enlightening in terms of his learning and appreciating the vast capabilities of the entire Warfare Center, which consequently left a permanent mark on how he managed both people and projects. It wasn't all just sacrifices however, he was also given the opportunity to earn my Master of Science degree in Product Development from the Naval Postgraduate School, and he met some amazing people during that time, some of whom he is still in contact with, both professionally and personally.

The final phase of his Navy career was relocating out to the Navy Detachment at White Sands Missile Range. It has been the most dynamic and fascinating aspect of my service to the Navy and the Nation, given the fast paced developmental testing conducted here. The Navy at WSMR is an often misunderstood and underappreciated treasure of the naval research community and the Department of Defense

He mentions earning his MS in Product Development and the amazing associations he made and many that he kept during his career. A testament of our positive impact for students but also their commands and the Navy overall.

Winning Capstone Team Delivers a Decision Support System to Access Demand Reduction Initiatives

The winner of the 522 Systems Engineering Management Outstanding Capstone Project Award for the June 2022 graduating cohort was the team of MAJ Nate Achor, MAJ Courtney Franks, CPT Nick Gillogly, and MAJ Randy Groller. The advisory team was Associate Professor Andy Hernandez (SE), Senior Lecturer Bill Hatch (CEE), and CDR Nick Ulmer (OR). The project team used a systems engineering approach to develop value models and scoring system that could be applied to a range of different demand reduction initiatives (DRI) which the Joint Staff J4 is considering for future investments.



The Department of Defense has developed a new Joint Warfighting Concept that will result in new sustainment needs and investment in new technology. The shift of focus to near-peer adversaries requires new, fundamental, DRI across the services. The Joint Staff J4 Logistics Functional Capability Board (LOG FCB) is charged with vetting these initiatives but lacked a quantitative, credible, repeatable process to effectively assess, compare, and prioritize them.

To address this challenge the team developed the DRI Assessment System (DAS). Applying a modified systems engineering approach, the project team examined the root problems, developed a functional hierarchy of the system, and created a feasible design for the DAS. To identify key DRI attributes, the team again used functional decomposition, this time for each DRI. In so doing, the team was able to determine the common attributes for the range of candidate DRI being evaluated, and from which could be developed value models and a scoring scheme. The result of the effort was a complete assessment tool in Excel, along with instructions, for the J4 team to use.

In October 2022, the Joint Staff J4 LOG FCB will use the DAS to help inform the Capability Portfolio Management Review. The utility of the DAS and the methodology that the team used was not lost on the J4, requesting a follow-on study for FY23. The DAS has been briefed to the Joint Staff Vice Deputy J4, MajGen Maxwell. The Navy Operational Energy Office is also considering energy DRI and has agreed to sponsor a 2023 capstone project to develop a DAS specifically for energy initiatives.

Introducing New SE Department Staff



The Administration Team of the SE Department is now fully staffed and the Business Cell 3 lead, Laura Barnes (in the middle) provides training to Management and Program Analyst Chiaki Gayle (on the right) and Administrative Support Analyst Carlos Picazo Brink Vallin (on the left).

Chiaki Gayle started as the Management and Program Analyst for the Systems Engineering Department on June 6, 2022. Prior to her move into her new role, she was the Administrative Management Specialist in the Office of the Dean of Research. Chiaki has been with the Naval Postgraduate School for over 13 years, and she plans on staying in the civil service for the next 17 years. In her free time, she enjoys spending time with her family and friends outdoors. She loves socializing and learning about the different cultures, foods, and sightseeing. She also plays various sports and running races.

Carlos Picazo Brink Vallin joined the Business Support Unit on May 23, 2022, as the Administrative Support Assistant for the Systems Engineering Department. Prior to his arrival at NPS, Carlos was an Office Technician for the California Department of Parks and Recreation's Monterey District 2015-2022. He enjoys spending time in cold weather, watching movies and exploring with his family and learning about different weather and ocean systems.

Awards and Graduations

Awards

Association of the United States Army, General Joseph W. Stilwell Chapter, Award for Outstanding Army Student

MAJ Daniel W. Varley, USA

Mayer Award for Outstanding DL Student in Systems

Mr. Andrew David Graham, Naval Air Warfare Center Aircraft Division, Patuxent River

Meyer Award in Systems Engineering for DL Teaching

Mark Sykes
CAPT Don Muehlbach, PhD

Systems Engineering Management Capstone Competition

Cohort 522-212 J4 Demand Reduction Initiatives Team

Title: DEVELOPING AN ASSESSMENT SYSTEM FOR DOD DEMAND REDUCTION INITIATIVES

Members: Nathanael Achor, Courtney Franks, William Gillogly, and Randall Groller

Advisors: Alejandro Hernandez, Nicholas Ulmer, and William Hatch

Outstanding Thesis

CPT Mehmet Bahadir, USA

Recommendation for Graduation with Distinction

MAJ Daniel W. Varley, USA

CDR Nathan D. Walker, USN

Mr. Alvaro A. Vasquez II, Marine Corps Tactical Systems Support Activity

Individual Theses

CPT Mehmet Bahadir, USA

Thesis Title: MODELING NONLINEAR WAVE-INDUCED LOADS ON A SUBMERGED BODY USING EXPERIMENTAL MEASUREMENTS

Advisor: Joseph Klamo

Reader: Clifford Whitcomb

LT James M. Dubyoski, USN

Thesis Title: EXPERIMENTAL INVESTIGATION OF THE EFFECTS OF VEHICLE DEPTH AND PROPELLER ROTATION ON THE LIKELIHOOD OF UNDERWATER VEHICLE ENTANGLEMENT WITH MARINE VEGETATION

Advisor: Joseph Klamo

Co-Advisor: Anthony Pollman

MAJ Daniel W. Varley, USA

Thesis Title: FEASIBILITY ANALYSIS OF A MOBILE MICROGRID DESIGN TO SUPPORT DOD ENERGY RESILIENCE GOALS

Advisor: Douglas Van Bossuyt

Co-Advisor: Anthony Pollman

Capstone Teams

Team Name: 308-204

Capstone Title: MISSION ENGINEERING FOR HYBRID FORCE 2025

Members: Jeremy Brown, Nicholas Coker, Alyson Groff, Jin Meng Bryan Low, Jia Ming Neo, Lesleigh Rodrigo, Joshua Shultz, William Sunda, and Nathan Walker

Advisors: Fotis Papoulias and Jefferson Huang

Team Name: 311-2040 Team Hypersonic Squad

Capstone Title: LONG RANGE FIRES JOINT FORCE OPERATIONS IN GPS-DENIED AND DEGRADED ENVIRONMENTS

Members: Muhammad Anwar, Luis Gonzalez-Velazquez, Matthew Murphy, and Raafay Qureshi

Advisors: Eugene Paulo, Paul Beery, Douglas MacKinnon, and Wayne Porter

Team Name: 311-2040 Super Team 6

Title: APPLICATION OF AN ARTIFICIAL INTELLIGENCE-ENABLED REAL-TIME WARGAMING SYSTEM FOR NAVAL TACTICAL OPERATIONS

Members: Rachel Badalyan, Andrew Graham, Michael Nixt, and Jor-El Sanchez

Advisors: Bonnie Johnson and Scot Miller

Team Name: 311-2040 Team Hydrogen EABO

Title: HYDROGEN FUEL SYSTEM FOR NAVY UNMANNED SYSTEMS IN AN EXPEDITIONARY ADVANCED BASSING OPERATIONS ENVIRONMENT (EABO)

Members: Rachel Meyen-Faria, Bradley Petersen, Vanny Prak, and Jonathan Schweichler

Advisors: Paul Beery and Anthony Pollman

Team Name: 522-212

Title: USING MODELING TO PREDICT THE EFFECTS OF AUTOMATION ON MEDEVAC PILOT COGNITIVE WORKLOAD

Members: Leonardo Abreu, John Girton, Mary Lord, Matthew Miller, and Rodolfo Zelada

Advisors: Lawrence Shattuck and Robert Semmens

Team Name: 522-212 J4 Demand Reduction Initiatives Team

Title: DEVELOPING AN ASSESSMENT SYSTEM FOR DOD DEMAND REDUCTION INITIATIVES

Members: Nathanael Achor, Courtney Franks, William Gillogly, and Randall Groller

Advisors: Alejandro Hernandez, Nicholas Ulmer, and William Hatch

Team Name: 522-212 Team VTOL: Human Machine Teaming (Interdependence Analysis)

Title: USMC VERTICAL TAKEOFF AND LANDING AIRCRAFT: HUMAN-MACHINE TEAMING FOR CONTROLLING UNMANNED AERIAL SYSTEMS

Members: Scott Drake, Andre Gatlin, Bryan Harrison, David Ray, and Calvin Taylor

Advisors: Bonnie Johnson, Christian Fitzpatrick, and Scot Miller

Team Name: 711-204P Marine Corps Resource Readiness (MC-R2) Team

Title: INCREASING USMC EQUIPMENT READINESS THROUGH RER MODELING

Members: Aiden Keene, Alvaro Vasquez, and Lara Yaroszewski

Advisor: Bryan O'Halloran

Graduations

Master of Science in Systems Engineering

CPT Mehmet Bahadir, USA

LT Jeremy J. Brown, USN

LT James M. Dubyoski, USN

CDR Nathan D. Walker, USN

MAJ Daniel W. Varley, USA

Mr. Andrew David Graham, Naval Air Warfare Center Aircraft Division, Patuxent River

Mr. Jonathan Schweichler, USN

Mr. Muhammad Shahnaz Anwar, Naval Air Warfare Center Weapons Division China Lake, CA

Ms. Rachel Badalyan, Naval Undersea Warfare Center, Division Newport

Mr. Luis Rubén Gonzalez-Velazquez, Naval Undersea Warfare Center

Mrs. Rachel Joy Meyen-Faria, Naval Undersea Warfare Center, Division Newport

Mr. Matthew Russell Murphy, Naval Sea Systems Command Headquarters Washington Navy Yard

Mr. Michael Wesley Nixt, Naval Air Systems Command, Aircraft Division, Lakehurst

Mr. Bradley Petersen, Naval Undersea Warfare Center, Division Newport

Mr. Vanny Prak, USN

Mr. Raafay Ahmed Qureshi, Army Futures Command, CCDC DAC

Mr. Jor-El Sanchez, Naval Air Warfare Center Aircraft Division, Patuxent River

Master of Science in Systems Engineering Analysis

LT Nicholas Charles Coker, USN

LT Alyson Groff, USN

LT Joshua Ryan Schultz, USN

LT William Russell Sunda III, USN

Master of Science in Engineering Systems Management

MAJ Leonardo J. Abreu, USA

MAJ Nathanael Brewer Achor, USA

MAJ Scott Andrew Drake, USA

MAJ Courtney N. Franks, USA

MAJ Andre' K. Gatlin, USA

CPT Wm. Nicholas Gillogly, USA

MAJ John A. Girton, USA

MAJ John A. Girton, USA

MAJ Randall P. Groller, USA

MAJ Bryan Harrison, USA

CPT Mary K. Lord, USA

MAJ Mathew B. Miller, USA

MAJ David A. Ray, USA

MAJ Calvin W. Taylor III, USA

MAJ Rodolfo A. Zelada, Jr., USA

Mr. Aiden Thomas Keene, Naval Undersea Warfare Center, Division Newport

Mr. Alvaro A Vasquez II, Marine Corps Tactical Systems Support Activity

Ms. Lara Yaroszewski, Naval Undersea Warfare Center, Division Newport

Systems Engineering Distance Learning Graduation Photos



Spring Quarter Systems Engineering Distance Learning Graduation via Zoom

SE Social Gathering at El Estero Park



SE Social and Graduate lunch was held at El Estero Park on June 13, 2022. SE Faculty, Staff, graduating SE students and families enjoyed the pizza and beer.

Request for Alumni News!

The SE Department is interesting in hearing how our alumni are doing.
Please feel free to send the [editor](#) news items for inclusion in future newsletters.

If you would like to subscribe to the Systems Engineering Newsletter, please click [here](#).

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Tony Pollman, Associate Chair for Operations - agpollma@nps.edu

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