HAWAII DEFENSE ECONOMY
Second largest sector of Hawaii's economy

Phase III Hawaii Defense Economy (HDE) Action Plan

Authors:

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	Jeffrey Donohoe Associates, LLC is a multi-discipline economic and real estate consulting firm. The firm is based in New Hampshire, and provides a comprehensive range of advisory, marketing and management services to clients in the private and public sectors.

Cover Page Photo: The crew of the Virginia-class fast-attack submarine USS Missouri (SSN 780) render honors to the Battleship Missouri Memorial while arriving at Joint Base Pearl Harbor-Hickam as part of a homeport change from Groton, Conn. Photo By: U.S. Navy, Mass Communication Specialist 2nd Class Michael H. Lee.

CASSIDY INTERNATIONAL AIRPORT, Kiribati - MV-22 Ospreys and KC-130J Hercules are parked during Marine Rotational Force - Darwin trans-Pacific flight, Cassidy International Airport, Kiribati, Sep. 19, 2019. The flight was conducted to improve upon the Osprey trans-Pacific concept that has been developed and refined over the past three MRF-D iterations. Photo By: 1st Lt. Colin Kennard.

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1.0 Executive Summary

Hawaii has long been recognized for its strategic importance and unique relationship with the military. With a presence in all four counties across the state, the military is a vital industry that sustains and strengthens the state's economy. From civilian jobs and local business contracts, to spending by active duty military personnel deployed in Hawaii and their families, the **defense industry is second only to tourism,** supporting approximately **30K jobs** and contributing **$4.2B** in economic impact.[1] The Department of Defense (DoD) Office of Economic Adjustment (OEA) in its Fiscal Year 2018 state report estimated that **total defense-spending accounted for $7.2B** in FY 2018 – **$2.3B**[2] in military **contract awards** for local businesses, and **$4.9B** in **payroll**, the largest component of total defense spending in Hawaii (ranking **#9** among the 50 states). According to the OEA, **Hawaii is ranked #2** in **state defense spending** as a percentage of Gross Domestic Product (GDP) at **7.7%**, just behind the Commonwealth of Virginia at 10.3%.[3]

Given its significance, **any changes in DoD spending will have a significant impact on the state's economy**. Therefore, it is critical that the state be proactive to ensure Hawaii's economy is resilient to any potential changes in defense spending. Likewise, the recent impacts from the COVID-19 global pandemic have highlighted the importance of defense spending, which has helped to stabilize the state's economy, as tourism (Hawaii's #1 industry) has become the hardest hit economic sector in 2020 with significant revenue and job losses.

Action Plan Objectives

This Department of Economic Development & Tourism's (DBEDT) Hawaii Defense Economy (HDE) report provides a **proposed** action plan of **strategic** recommendations that can be used to guide future defense industry resilience efforts, to include:

- Proposed action plans for each priority area;

- A detailed Scope of Work for the action plan to be implemented in a proposed Phase III of the project; and

- An estimated budget and timeline to implement the plan and meet the proposed deliverables.

Action Plan Summary

This action plan has two core components:

- **HDE DoD Industry Alliance** – Establish a Hawaii-focused DoD industry specific organization designed to identify current and future industry challenges and develop solutions. This alliance would include representation from the three industry focus areas identified in Phase II – Engineering Services, IT Services, and Ship Repair & Building. It would provide a program management function and working group concept to support the success of other complimentary recommendations identified in this action plan to include:

  o Workforce/curriculum development (ship repair apprenticeship, K-12 STEM/IT program)

  o Hawaii-based DoD small business mentorship and support (training, facility clearance sponsorship, SMM one-on-one engagements)

  o Regulatory/legislative advocacy to improve the business climate

- **Cybersecurity Support** – Partner with INNOVATE Hawaii – the state's NIST Manufacturing Extension Partnership (MEP) National Network Center – to provide immediate assistance to local DoD contractors and small businesses. They would provide cybersecurity risk assessments and technical assistance to increase the number of Hawaii-based DoD small businesses that meet requirements to do business with the DoD.

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[1] HDE Website (http://defenseeconomy.hawaii.gov/)
[2] The HDE Project Team utilized a rolling 12-month spending analysis to allow comparison across annual periods; 2020 includes a portion of calendar year 2019 awards.
[3] https://oea.gov

The long-term goal is to cultivate a cybersecurity ecosystem in the state that will provide opportunities for local Hawaii businesses and jobs both in the private and public/defense sectors.

Additional details are included in this action plan for each core component.

The crew of the Virginia-class fast-attack submarine USS Mississippi (SSN 782) returns to Joint Base Pearl Harbor-Hickam following a six-month Western Pacific deployment, March 30, 2018. Photo By: Petty Officer 2nd Class Michael.

2.0 Background

Starting in November 2019, the HDE Phase II project team updated and upgraded the HDE website to provide stakeholders timely and insightful reports to better understand military spending in the state to include job and economic impact estimates. The data model behind the website formed the basis of a defense sector industry analysis that informed the project team on critical industry sectors based on spending concentration. The data also identified defense contractors receiving prime and subcontract awards with a place of performance of Hawaii. Using this information, the HDE project team conducted a SWOT analysis using an online survey deployed to 507 defense-related contractors located in Hawaii, and received a 21% response rate – 89% of the respondents were small businesses and 84% were service providers. The following section provides highlights from this survey:

HDE SWOT Analysis Highlights

- **Strengths & Opportunities:** The majority of HDE establishments surveyed had a favorable view of their internal characteristics (strengths) and future success in the defense market (opportunities). **Financial Health[4]** and **Defense Market Outlook[5]** received the highest ratings in terms of strengths and opportunities, indicating the defense market has been financially rewarding to contractors and is expected to continue with more opportunities in the future.

- **Weaknesses & Threats**: **Market Flexibility[6]** received the lowest rating in terms of weakness, indicating it is difficult for defense firms to serve both public and private (commercial) markets. However, within *NAICS 23: Construction*, firms appear to be more resilient in their ability to move back and forth between the defense and private sectors, an internal strength for Hawaii's largest defense spending industry sector at $719.6M in 2020. Overall **DoD Dependency[7]** is moderately high at an average of 46% across the firms surveyed. This indicates some degree of weakness with the potential of a threat in the event of a downturn in defense market spending. In addition, many respondents indicated the **Business Climate[8]** and **Labor Market[9]** (Skilled Labor Availability) are significant challenges, both threats, especially in the professional services sector.

- **Top 3 HDE Focus Areas**: Through the SWOT analysis, the HDE project team identified NAICS 5415: Computer Systems Design and Related Services (Cybersecurity & IT), NAICS 541330: Engineering Services, and NAICS 336611: Ship Building and Repairing, as the Top 3 HDE focus areas with the greatest potential for sustaining Hawaii's defense industry and building economic resiliency.

IT Services & Cybersecurity (NAICS 5415)

NAICS 5415: Computer Systems Design and Related Services is an important industry sector, given the size of annual defense spending, high-growth rate, relatively high-paying occupations, and DoD mandates for cybersecurity. Outside of Hawaii's defense economy, cybersecurity supports jobs across multiple industries located in the state, including finance/banking, transportation/shipping, tourism etc., beyond just professional services. The following provide key insights for this industry sector:

- Contract awards have risen over the last five years, approaching **$128M** in 2020, almost equal to 2019.

- Net dollar flows[10] support approximately **1,700 jobs** and contribute **$240M** in economic impact.[11]

- The Top 3 occupations by total Hawaii employment include 1) *Software Developers & QA*, 2) *Computer Systems Analysts*, and 3) *Computer Occupations, Other*. Four out of the Top 5 have both **low location quotients** and **noticeably lower median salaries** as compared to the median national salaries, suggesting that the local economy may not be substantially diverse enough to provide the demand needed to increase both the median salaries and location quotients closer to national levels.

Engineering Services (NAICS 541330)

NAICS 541330: Engineering Services is an important industry sector due to its very large annual defense spending in Hawaii and high-paying occupations within the state. These services are related not only to missile defense, but many other defense requirements, such as system repair and maintenance and facility construction.

- Contract awards have risen over the last five years **(+3.4%)**, approaching **$293M** in 2020.

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[4] Assessment of an HDE establishment's overall financial performance.
[5] Assessment of the growth potential of the markets which an HDE establishment currently serves or has the potential to serve.
[6] Assessment of an HDE establishment's ability to serve a variety of markets (to include commercial markets).
[7] Measure of the extent to which an HDE establishment is reliant on DoD business to operate profitably.
[8] Assessment of the favorability of Hawaii's business environment in support of an HDE establishment's operations.
[9] Assessment of the Hawaii skilled labor pool's ability to meet the current and future needs of an HDE establishment.
[10] Net Dollar Flows: Sum of Prime Contract Obligations flowing into the state + Sum of Subcontract Awards flowing into the state from Out-of-State Primes - Sum of Subcontract Awards flowing out of the state from In-State Primes.
[11] HDE Website (http://defenseeconomy.hawaii.gov/)

- Net dollar flows entering Hawaii support approximately **4,490 jobs** and contribute **$569M** in economic impact.[12]

- The Top 3 occupations by total Hawaii employment include:

<u>Engineers</u>: *1) Civil, 2) Electrical* and *3) Mechanical Engineers* – There is a high employment and location quotient for Civil Engineers, which aligns well with the large defense construction spending in the state. All three have median average salaries that are **lower than the median national salaries**. The data suggests that the demand and supply is relatively balanced within the engineering services sector.

<u>Technologists/Technicians</u>: 1) *Electrical and Electronic Engineering Technicians*, 2) *Calibration and Engineering Technicians*, and 3) *Architectural and Civil Drafters* in contrast to engineer occupations, have a **higher median salary in Hawaii in comparison to the rest of the U.S.**

- Our industry workforce survey noted only slight gaps in terms of engineering firm needs versus the skilled local labor pool, indicating a healthy industry sector.

Ship Building/Repairing (NAICS 336611)

Pearl Harbor Naval Shipyard (PHNSY) is the nation's largest, most comprehensive fleet repair and maintenance facility between the U.S. West Coast and the Far East. It is the largest industrial employer in the state, with a civilian workforce of more than 5,000 and over 500 active-duty Navy personnel. Most of the spending within *NAICS 336611: Ship Building and Repairing* is concentrated at PHNSY. This sector continues to be an important part of the Hawaii Defense Economy and provides significant economic diversity to the local economy, which is heavily service-oriented.

- Contract awards have risen over the last five years (**+33.9%**, factoring in relatively high spending in 2019), approaching **$177M** in 2020 (although down from $261.5M in 2019).

- Net dollar flows support approximately **1,820 jobs**, and contribute **$305.5M** in economic impact.[13]

- The Top 3 occupations by total Hawaii employment for this sector include: *1) Plumbers, Pipefitters, and Steamfitters, 2) Welders, Cutters, Solderers, and Brazers* (typically associated with Ship Repair/Building) and *3) Misc. Assemblers and Fabricators*. Most of the trades have relatively **high-median average salaries compared to the nation** as a whole but very **low location quotients**. It is unclear if this is due to Hawaii's national ranking as a service-based economy as opposed to manufacturing, which would explain lower location quotients in these occupations, or if there is truly a skilled labor gap.

- The 2020 HDE Ship Building and Repair (NAICS 336611) workforce survey noted **gaps in availability of moderately experienced**, especially marine welders, pipefitters, blasters and painters.[14] Respondents recommended vocational training starting at the high school level.

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[12] HDE Website (http://defenseeconomy.hawaii.gov/)
[13] HDE Website (http://defenseeconomy.hawaii.gov/)
[14] The Top 3 occupations by total Hawaii employment include: 1) Plumbers, Pipefitters, and Steamfitters, 2) Welders, Cutters, Solderers, and Brazers (typically associated with Ship Repair/Building) and 3) Misc. Assemblers and Fabricators; May 2019 data from https://www.bls.gov/oes/

Clockwise from top left: **Photo #1** – Two U.S. Army AH-64D Apache attack helicopters assigned to the 2-6 Cavalry Squadron, 25th Combat Aviation Brigade launch eight "fire and forget" AGM-114L Hellfire Air to Surface Missiles during a training exercise off the coast of Oahu as part of the Rim of the Pacific (RIMPAC) 2016. Photo By: Sgt. Erin Sherwood. **Photo #2** – A common hypersonic glide body (C-HGB) launches from Pacific Missile Range Facility, Kauai, Hawaii, on March 19, 2020, during a DoD flight experiment. Photo By: U.S. Navy. **Photo #3** – Marine scout snipers with Weapons Company, 2nd Battalion, 3rd Marine Regiment, conduct high angle shooting on Range 10. Photo By: Sgt. Sarah Dietz. **Photo #4** – A C-17 Globemaster assigned to the 154th Wing, Hawaii Air National Guard, prepares to receive a post flight evaluation from Airmen assigned to the 734 Air Mobility Squadron after a Joint Forcible Entry Operation (JFEO) jump at Andersen Air Force Base, Guam, on June 30, 2020. Photo By: Senior Airman Michael Murphy

3.0 Defense Sector Alliance

The Phase II project team conducted a HDE SWOT online survey that provided feedback from defense contractors doing business in Hawaii. **Financial Health** (4.0 avg./68% Agree) and **Defense Market Outlook** (3.9 avg./68% Agree) received the highest ratings in terms of average score and also percent of agree (Agree and Strongly Agree responses), indicating the defense market has been financially rewarding to contractors and is expected to continue with more opportunities in the future. On the other hand, **Market Flexibility** (2.7 avg./26% Agree) received the lowest rating, indicating it is difficult for defense firms to serve both public and private (commercial) markets. Overall **DoD dependency** is moderately high at an average of 46% across the firms surveyed. These internal characteristics make the industry sector more vulnerable to changes in DoD spending, amplifying the impact. Although defense spending has continued to increase in Hawaii over the past five years, future program budget changes could have an oversized impact on the state. Strategies that improve market flexibility and decrease DoD dependency are challenging to design and effectively implement, especially for small business service providers fostered within the defense sector through acquisition preferences. This action plan focuses these types of contractor-by-contractor recommendations on the ship repair and building industry in Section 5.0.

Within *541: Professional, Scientific, and Technical Services*, the industry sector with the highest number of survey responses, respondents agreed that the **Business Climate** and **Labor Market** (skilled labor availability) are significant challenges, both **threats** to these two industry sectors. Furthermore, a significant number of comments were

provided to add additional color to these challenges – *a general tone of disregard and aversion towards the defense sector*.

To address these two threats, this action plan recommends the establishment of a Hawaii-focused, DoD industry-specific organization (Defense Sector Alliance) designed to identify current and future industry challenges and to develop solutions. The organization would be an alliance spearheaded by a Hawaii-based organization with established industry relationships, statewide. Alliance membership would extend beyond industry to include key HDE stakeholders – DoD agencies/commands, educational institutions, and other supporting organizations. The alliance would improve future engagement and program development within the three immediate industry focus areas identified in Phase II – Engineering Services, IT Services, and Ship Repair & Building.

The alliance would address **workforce development** gaps identified in the SWOT analysis by partnering with industry, DoD commands, and educational institutions to chart a way forward to meet the demands of the DoD industrial base. Particular attention should be given to IT and cybersecurity related fields as that workforce will help meet the demands for industry cybersecurity certification as well as existing IT and cybersecurity DoD/contractor requirements. In addition, the alliance would help shape **curriculum development** by partnering with educational institutions to develop a K-12 curriculum centered upon growing high demand IT careers fields to meet the increasing demand of DoD and the industrial base.

The alliance would help expand opportunities for local defense contractors by forming a **mentorship program** between both DoD contracting commands, resource partners, and existing DoD contractors. This mentorship program will seek to **educate local businesses** on efforts to **expand contracting opportunities** to include: formation of Joint Ventures, sub-contracting promotion, access to opportunities that are component specific and not widely publicized (Navy eSeaport, Army CHESS, etc.), guidance for GSA Schedules and other Multiple Award Contracts, and sponsorship for facility clearances for local businesses.

In order to address shortages of security-cleared personnel in Hawaii, this action plan recommends the exploration of an initiative to **increase opportunities** for **local DoD small businesses** to compete for **opportunities** that are restricted to organizations with **facility clearances**. In addition, it allows these companies to **pursue clearances** for additional personnel to eventually increase the number of cleared personnel in the state. Government agencies and large contractors would have to be willing to sponsor local small businesses for work requiring clearances. Sponsored small businesses would in turn have to work towards obtaining and maintaining a facility clearance. Currently, **56% do not have Facility Clearances**, as indicated in the action plan feedback survey.

This initiative requires additional due diligence to evaluate the extent of the need from DoD small businesses and the constraints and risks voiced by DoD contracting representatives – DoD small business offices and contracting commands in Hawaii – and large defense prime contractors. The Pacific Island Chapter of NCMS – The Society or Industrial Security Professionals may be able to help guide and even lead this initiative, including helping to develop a program framework. Feedback from the action plan feedback survey indicates considerable interest in this initiative, as explained in Section 6.0. The project manager (PM) will establish a stakeholder engagement plan to develop a way forward.

Finally, the alliance would partner with local and federal officials to drive **regulatory advocacy** by promoting regulations/legislation that enhances the business environment for the local contracting community and provides a competitive/comparative advantage to local businesses.

3.1   Strategic Recommendations

1

Action 1: Establish a Hawaii-focused, DoD industry-specific alliance designed to identify current and future challenges and develop solutions.

- Partner with a Hawaii-based organization with established industry relationships, statewide to lead the DoD industry alliance. Develop an alliance charter, governance and sustainability plan that includes specific goals and expectations.

- Assign overall Phase III program management responsibilities to the Defense Industry Specialist within DBEDT to include overseeing the coordination of effort by both INNOVATE Hawaii for cybersecurity certification requirements and the vendor responsible for establishing the Defense Sector Alliance. In addition, responsibilities would include maintaining communication with OEA and submitting required deliverable and financial reports.

- Hire a Program Manager (PM) to manage the alliance and day-to-day requirements. The PM will also support other action plan requirements, such as serving as a liaison to DBEDT, CyberHawaii, INNOVATE Hawaii and any other partners involved. The Alliance contractor should be based in Hawaii and have existing relationships with industry and government stakeholders throughout the state.

- Secure marketing and outreach services to develop and facilitate effective industry and public engagement.

- Proactively advocate small business participation through effective organizational frameworks, such as small business committee, rotating industry representation, etc.

- Utilize MAC relationships with military commands to drive active DoD participation, including DoD small business offices and major acquisition commands.

- Develop a sustainability plan to continue the initiative in earnest beyond the timeframe of an OEA Phase III program.

- Key metrics can include: number of meaningful alliance events and initiatives, such as educational workshops, mentorship cohorts, career fairs and internship opportunities, etc.

2 Action 2: Address workforce development gaps by partnering with industry, DoD commands, and educational institutions to chart a way forward to meet the demands of the DoD industrial base.

- Develop a DoD workforce development working group/committee within the DoD industry alliance and task the committee to develop a DoD workforce development strategy. Key metrics can include: workforce development committee established, strategy completed with action plan, etc.

- Identify workforce gaps that require partnering with educational institutions for curricula development and existing DoD contractors to develop internship programs. Identify similar efforts undertaken by local organizations and government entities designed to diversify local workforce to meet industry/DoD demands. Examples of K-12 programs could include:

    o Sponsoring advanced manufacturing clubs at high schools and career technology schools.

    o Creating and initiating a manufacturing career awareness program at the middle school level.

    o Establishing vocational training at the high school level to meet Hawaii's current industry needs, i.e. welding, CNC, etc., and future advanced manufacturing skills, i.e. robotics, additive manufacturing.

    Key metrics can include: number of program participants and/or number of training events.

- Conduct one-on-one workforce assessments with Hawaii-based DoD SMMs (focusing on ship repair and building) and provide an industry report of workforce-related findings with recommendations to include expanding the existing HCC apprenticeship program to provide opportunities for contractors supporting

defense-related ship repair and/or implementation of other innovative training programs. Key metrics can include: number of apprentices graduating and/or number of apprentices hired for full-time employment

- Encourage unemployed and underemployed job seekers to consider careers in advanced manufacturing.

- Serve as a liaison to integrate initiatives developed in support of the cybersecurity ecosystem to include development of a program to increase the number of local IT workers with in-demand IA/cybersecurity industry certifications.

3   **Action 3: Form a mentorship program between both DoD contracting commands, resource partners, and existing DoD contractors to educate local businesses on efforts to expand contracting opportunities.**

- Develop mentorship program working group/committee and seek participation from various stakeholders, i.e., DoD contracting commands, resource partners and existing DoD contractors. Key metrics can include: number of mentorship events and/or number of local business participants,

- Develop a program to help local small DoD businesses obtain sponsorship opportunities from DoD agencies or large primes to obtain facility clearances. Key metrics can include: number of facility clearances and/or number of personnel cleared, etc.

- Partner with INNOVATE Hawaii to conduct one-on-one engagements with Hawaii-based DoD SMMs to improve operational excellence and develop an innovation roadmap. Although this industry sector receives relatively large annual defense spending, there are only a limited number of small and medium sized businesses receiving prime contract awards. As a result, efforts to engage SMMs on a one-on-one basis should have a large impact on the overall sector. Engagements can also include cybersecurity assessments to meet DoD compliance requirements. Key metrics can include: number of assessments completed, number of projects completed, and/or number of roadmaps completed.

- Expand access to military installation "job fairs" by promoting the inclusion of defense contractors during industry outreach events conducted by local military installations to ensure equal access to qualified workforce participants.

- Key metrics can include: number of mentorship events and/or number of local business participants, number of facility clearances and/or number of personnel cleared, etc.

4   **Action 4: Promote regulations/legislation that enhances the business environment for the local contracting community and provides a competitive/comparative advantage to local businesses.**

- Develop a business regulatory advocacy working group/committee and partner with local and federal officials to drive regulatory advocacy.

- Include representation from small and large Hawaii-based DoD contractors on the working group/committee.

- Key metrics can include: number of regulatory changes.

3.2 Key Partners

- A Hawaii-based organization with established industry relationships, statewide will take the lead and develop a charter and governance plan.

- The Hawaii Chamber of Commerce and the **Military Affairs Council** within the Hawaii Chamber of Commerce.

- **DBEDT** will support the MAC, NDIA, and other HDE community stakeholders through OEA grant writing and metrics reporting.

- **DoD small business offices, contracting commands,** and major military component commands will actively participate in alliance events and engage industry and provide feedback on constraints and risks related to sponsoring local Hawaii businesses to obtain facility clearances.

- The **University of Hawaii System** and other educational institutions.

- **Ship Repair Association of Hawaii (SRAH)** can serve as an industry engagement organization, facilitating outreach to members and helping to shape any recommendations that come out of the industry findings report from the one-on-one SMM engagements.

- **CyberHawaii** will be invited to/participate in alliance events.

- **INNOVATE Hawaii** will conduct outreach and engagement and technical assistance of DoD Small and Medium Manufacturers (SMMs) in coordination with the DoD industry alliance.

- **NCMS – The Society or Industrial Security Professionals, Pacific Island Chapter** will provide feedback on constraints and risks related to sponsoring local Hawaii businesses to obtain facility clearances and may serve as the organizational lead for this initiative.

- Existing resource partners (Hawaii PTAC, SBDC, VBOC, SBA, etc.)

3.3   *Resources Needed*

In order to support the Defense Sector Alliance, resources are needed for the following program elements:

- The Program Manager and other organizational-related expenses to establish and operate the Alliance.

- Marketing/communication and outreach efforts.

- Training and education: webinars/workshops and material development.

- One-on-one SMM assessments. Costs related to this program would be driven by the number of SMM assessments with a focus on Hawaii-based ship repair and building contractors.

- Evaluation of opportunities and seed funding to expand the HCC Apprenticeship Program or alternative training concept.

- Analysis of K-12 program requirements and seed funding. The analysis would also identify other funding sources to sustain the program beyond the initial seed money.

HONOLULU, Hawaii - Eight U.S. Air Force F-22 Raptors, a KC-135 Stratotanker and a C-17 Globemaster III taxi on the runway during a routine training schedule April 21, 2020, at Honolulu International Airport, Hawaii. Given the low traffic at the airport due to COVID-19 mitigation efforts, the active-duty 15th Wing and the Hawaii Air National Guard's 154th Wing seized an opportunity to document the operation which showcases readiness and their unique Total Force Integration construct. The units of Team Hickam work together seamlessly to deliver combat airpower, tanker fuel, and humanitarian support and disaster relief across the Indo-Pacific. Photo By: Senior Airman John Linzmeier.

4.0 Cybersecurity & Supporting Ecosystem

The Phase II HDE SWOT analysis demonstrated the importance of *NAICS 5415: Computer Systems Design and Related Services* to the overall economy in Hawaii, given the size of annual defense spending, high growth rate, relatively high-paying occupations, and DoD mandates for cybersecurity. Cybersecurity is an important domain within DoD contracted NAICS 5415 services, focused on protecting information systems and networks. Outside of Hawaii's defense economy, cybersecurity supports jobs across multiple industries located in the state, including finance/banking, transportation/shipping, tourism etc., beyond just professional services. Regardless of the industry sector, cybersecurity is becoming a business imperative across the economy.

This action plan focuses on **cybersecurity as the most pressing need** within Hawaii to **assist DoD contractors with risk assessments and technical assistance** in the near term and **cultivating a cybersecurity ecosystem** in the state in the long term, which will provide opportunities for local Hawaii businesses and jobs both in the private and public/defense sectors. The Phase II HDE SWOT analysis indicated that the local economy may not be substantially

diverse enough to provide the demand needed to increase median salaries for IT Services closer to national levels.[15] The increasing demand for cybersecurity jobs coupled with successful efforts to grow the cybersecurity workforce will go a long way in diversifying this important industry sector. The following provides additional supporting facts from the 2020 Phase II HDE SWOT Analysis:

- **Information security analysts** are among the **Top 6 fastest growing jobs** in the U.S. at +32% from 2018-2028 (projected),[16] and are high-paying occupations.

- **Cybersecurity skills** and **DoD security clearances** have been **in high demand** in Hawaii for IT-related job postings compared to the rest of the nation over the last year.[17]

- The 2020 HDE IT Services (NAICS 5415) workforce survey noted gaps in the local skilled labor pool for information security analysts and data scientists, most heavily in the moderately to highly experienced job levels, not entry level. Anecdotally, several respondents echoed: 1) the salary gap between technology professionals in Hawaii versus counterparts on the mainland; and 2) difficulty finding security- (Secret/Top Secret) cleared candidates to fill security-sensitive, computer systems-related positions.

- New DoD mandates for protection of Controlled Unclassified Information (CUI) residing in contractor systems will increase the **demand for cybersecurity jobs and services**. Most importantly, cybersecurity certification will be required for Hawaii-based companies to do business with the DoD in the near future. These new DoD mandates highlight the continued importance of cybersecurity; namely the DoD will require Hawaii-based companies to receive **third-party cybersecurity certification** by 2025 in order **to do business with the DoD**.

- Beyond the original DFARS 252.204-7012/NIST 800-171 requirements, the near-term challenge for companies with CUI will be the additional requirements from the **DFARS Interim Rule**, which introduced **three new clauses that impact companies** currently under NIST 800-171 (i.e. have CUI) and all other DoD contractors (under CMMC[18]). Note: this rule goes into effect November 30, 2020. The following table provides a summary of these new DFARS clauses:

DFARS Clause	Summary Requirements
252.204-7019	• Required to maintain a record within the Supplier Performance Risk System (SPRS). • Low, Medium, or High assessment completed at least *every three years* and reported to SPRS.
252.204-7020	• Requires a contractor to provide access to its facilities, systems, and personnel when the DoD is conducting or renewing a Medium or High assessment.
252.204-7021	• Requires CMMC be used or included in all contracts, task orders, solicitations, etc.; DoD acquisitions with 7021/CMMC requirement will ramp up FY21-FY25 with certification required by 10/1/2025. • Certification by third party auditor at the time of contract award.

- **30%** of 2020 HDE SWOT survey respondents indicated **limited awareness of NIST SP 800-171 requirements**.[19] It is important to note that awareness does not necessarily mean a DoD contractor is prepared for Level 1 certification. Moreover, **58% do not have System Security Plans**, as indicated in the

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[15] The Top 3 occupations by total Hawaii employment include 1) Software Developers & QA, 2) Computer Systems Analysts, and 3) Computer Occupations, Other. Four out of the Top 5 have both low location quotients and noticeably lower median salaries as compared to the median national salaries. Location quotient represents ratio of an occupation's share of employment in a given area to that occupation's share of employment in the U.S. as a whole.

[16] https://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts.html

[17] Cybersecurity skills required at a frequency of 7% versus 1% nationally and Top Secret/Sensitive Compartmented Information (TS/SCI) clearances at a frequency of 12% versus 2% nationally; Top Hard Skills; Emsi Q2 2020 Data Set | www.economicmodeling.com.

[18] DoD's Cybersecurity Maturity Model Certification (CMMC) program is a new set of cybersecurity standards to protect defense companies from cyberattacks. The CMMC program will require certification for all companies doing business or who want to do business with DoD. Certified Third-Party Assessment Organizations (C3PAO) will certify companies against the different CMMC standards/levels. All companies on contract with the DoD will need at least CMMC Level 1 certification.

[19] 9 respondents disagreed or strongly disagreed that they were aware and 24 were neutral (neither agreed or disagreed).

action plan feedback survey. Increased scrutiny will certainly create urgency to complete risk assessments and implement plans.

- **70%** of survey respondents also indicated they would be **interested in participating in a future partnership/alliance** with stakeholders representing industry, government, and academia within Hawaii to build the labor force related to Computer Systems Design and Related Services (NAICS 5415).

This action plan addresses these opportunities and challenges through **direct assistance** to Hawaii-based DoD small businesses through cybersecurity clinics and system security assessments. Furthermore, the plan provides two **workforce initiatives** to increase access to in-demand cybersecurity training certifications for the local workforce, and over the long term, develop a cybersecurity workforce and supporting ecosystem. Fortunately, Hawaii has two existing tenant organizations with the capability to lead these initiatives – INNOVATE Hawaii and CyberHawaii.

INNOVATE Hawaii, the state's Manufacturing Extension Partnership (MEP) Center, is part of the National Institute for Science and Technology (NIST) MEP Network. Like other MEP Centers around the U.S., INNOVATE Hawaii is charged with assisting Small and Medium Manufacturers (SMMs) with information and tools needed to improve productivity, assure consistent quality, accelerate the transfer of manufacturing technology and infuse innovation into production processes and new products.[20] **Cybersecurity assessments** are a **core capability** of the **NIST MEP Network** within the Industry 4.0 innovation offerings.[21] Given the large presence of professional services businesses supporting the DoD in Hawaii, INNOVATE Hawaii would have to expand its scope beyond manufacturers to include services; however, this is not likely to be a constraining factor. An increase in industry engagement and completed assessments provides a revenue opportunity for INNOVATE Hawaii. Its cost-sharing model provides a means to magnify grant funding to achieve greater impact, while ensuring DoD small businesses remain committed and accountable. Finally, INNOVATE Hawaii can partner with other Hawaii-based consultants and academic organizations to expand its organic capabilities to complete the engagement activities and assessments.

CyberHawaii is a non-profit organization committed to developing and enhancing Hawaii's cybersecurity capabilities.[22] CyberHawaii is developing and accelerating educational opportunities from K-12 into higher education, as well as ensuring students are job ready upon graduation and successful in securing cybersecurity jobs in Hawaii. In February 2020, NIST published best practices guidance[23] for building a cybersecurity workforce and supporting ecosystem. This action plan recommends consulting support to strengthen and expand CyberHawaii's existing efforts by completing a **gap analysis of the current Hawaii cybersecurity ecosystem**. In alignment with NIST guidance, this effort may include the following activities:

- Finding anchor institutions and others already investing resources into similar efforts (e.g. NSA, DISA, Navy, University of Hawaii);

- Interviewing each stakeholder formally to determine needs/wants, assets, concerns;

- Conducting an environmental scan of existing efforts to minimize duplication of efforts; and

- Collecting and analyzing data to understand cybersecurity workforce needs and opportunities to address any mismatch between the needs of employers and the students coming from cybersecurity degree or certificate programs.

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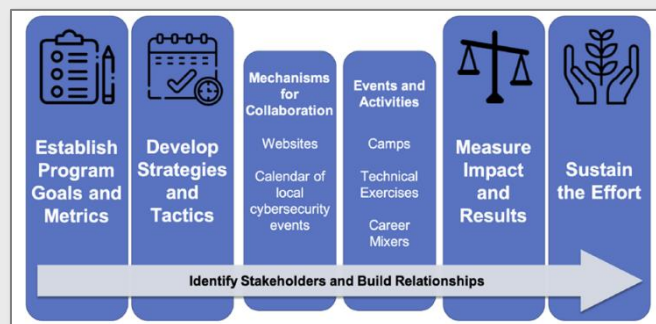
[20] MEP National Network Strategic Plan 2017-2022
[21] 4th industrial revolution focused on interconnectivity, automation, machine learning, and real-time data.
[22] https://www.cyberhawaii.org/about-cyberhawaii/
[23] NISTIR 8287, Roadmap for Successful Regional Alliances and Multistakeholder Partnerships to Build the Cybersecurity Workforce (Link).

The consulting team would work closely with stakeholders in Hawaii to establish program goals and metrics. The PM leading the day-to-day activities of the Defense Sector Alliance would serve as a liaison to this initiative, providing industry engagement support, as needed. CyberHawaii may be well under way with implementing these steps. This initiative is more focused on expanding the ecosystem and ensuring it has all of the resources required to be successful and impactful.

In parallel to the gap analysis of the current Hawaii cybersecurity ecosystem, this action plan recommends that CyberHawaii utilize additional OEA grant funding to **subsidize costs** or additional training events for **in-demand Information Assurance (IA)/Cybersecurity certifications**[24] for small DoD businesses and/or moderately experienced individuals with DoD IT-related jobs seeking advancement opportunities. This initiative seeks to increase the number of in-demand IA/cybersecurity industry certifications in the state.

4.1   Strategic Recommendations

1

Action 1: Provide cybersecurity clinics and risk assessment reviews for DoD small businesses.

- Partner with INNOVATE Hawaii, the state's MEP Center. NIST MEP has expertise in cybersecurity assessments, organically or through third-party service providers (TSPs), and has successful cost-sharing programs to assist industry.

- Conduct periodic clinics, e.g. monthly or quarterly, to provide a forum for small businesses located in Hawaii engaged, or interested in engaging in the defense market (manufacturers or service providers) to obtain guidance from experts on questions related to NIST SP 800-171 requirements to include the DFARS Interim Rules (effective 11/30/2020) and Cybersecurity Maturity Model Certification (CMMC).

- Provide risk assessment reviews of a small business's cybersecurity hygiene to improve compliance to standards, mitigate cyber risks, and help small businesses continue to compete in the DoD market.

- Key metrics can include: number of workshops completed, number of people trained, and number of risk assessments completed.

2

Action 2: Build a cybersecurity ecosystem within the state.

- Build a cybersecurity workforce and supporting ecosystem within Hawaii, based on best practices guidance published by NIST.[25]

- Partner with CyberHawaii to serve as the lead or catalyst organization to keep the effort moving forward.

- Hire consultants to conduct a gap analysis of the current Hawaii cybersecurity ecosystem. This would include: 1) an assessment of anchor institutions and others already investing resources into similar efforts; 2) stakeholder interviews to determine needs/wants, assets, concerns; and 3) an environmental scan of existing efforts to minimize duplication of efforts.

3

Action 3: Increase access to in-demand cybersecurity training certifications for the local workforce.

- Subsidize costs or additional training events for in-demand IA/Cybersecurity certifications for small DoD businesses and/or individuals with DoD IT related jobs seeking advancement opportunities.

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[24] This may include: CompTIA Security+, IAT Level II Certification, and/or Certified Information Systems Security Professional
[25] NISTIR 8287, *Roadmap for Successful Regional Alliances and Multistakeholder Partnerships to Build the Cybersecurity Workforce* (*Link*).

- Key metrics can include: number of people certified.

4.2   Key Partners

- **INNOVATE Hawaii** will take the lead and establish the assessment capability required by partnering with academia and cybersecurity consulting companies as needed to enhance organic resources.

- **CyberHawaii** will play an important role as the lead/catalyst for developing the cybersecurity ecosystem in Hawaii.

- **DBEDT** will support INNOVATE Hawaii and CyberHawaii through OEA grant writing and metrics reporting.

4.3   Resources Needed

In order to support the Cybersecurity and Supporting Ecosystem initiatives, resources are needed for the following program elements:

- Cybersecurity risk assessments/engagements. Costs related to this program would be driven by the number of assessments. Approximately 10% of the respondents to the HDE 2020 SWOT survey indicated lack of awareness, meaning ~50 contractors would likely be served by engagement via clinics. We estimate 50% of these contractors (~25 DoD small business contractors) would be interested in further engagement through gap assessments to better enable them to achieve CMMC Level 1 certification.

- A gap analysis of the current Hawaii cybersecurity ecosystem.

- Seed funding to subsidize in-demand IA/cybersecurity industry certifications.

Schofield Barracks, Hawaii - U.S. Army Soldiers from the 3rd Battalion, 7th Field Artillery Regiment, 3rd Brigade Combat Team, 25th Infantry Division, load into a Marine Corps V-22 Osprey during a joint artillery training mission at Makua Valley, Hawaii, Aug. 11, 2020. This was the first time Soldiers and Marines trained together in a joint field artillery exercise on Oahu. Photo By: Sgt. Effie Mahugh.

5.0 Action Plan Prioritization & HDE Community Feedback

The HDE Phase II project team developed and deployed an action plan idea evaluation survey in October 2020 to gather stakeholder feedback. The online survey was sent to 392 email addresses of Hawaii-based industry and community stakeholders. A survey link was also sent to various Hawaii-based organizations, so it could be distributed internally to specific stakeholders for feedback. This feedback technique was used due to the impact of COVID-19 restrictions that limited in-person meetings and workshops. The survey received a response rate of approximately 21% and provided feedback predominantly from private sector businesses (68%), as shown in Figure 6.1.

Figure 6.1 – Type of Organization

Figure 6.1 – Type of Organization
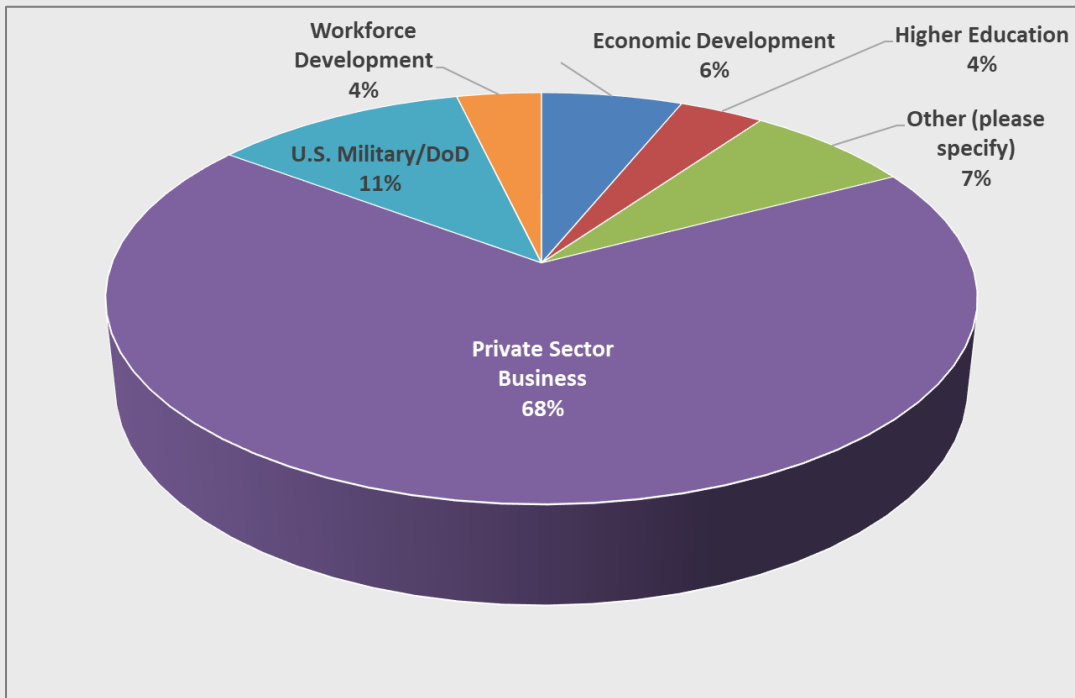
Of those private sector businesses, the top industries represented were Construction, Professional Services, and Other Services, as shown in Figure 6.2.

Figure 6.2 – Private Sector Industry

Figure 6.2 – Private Sector Industry
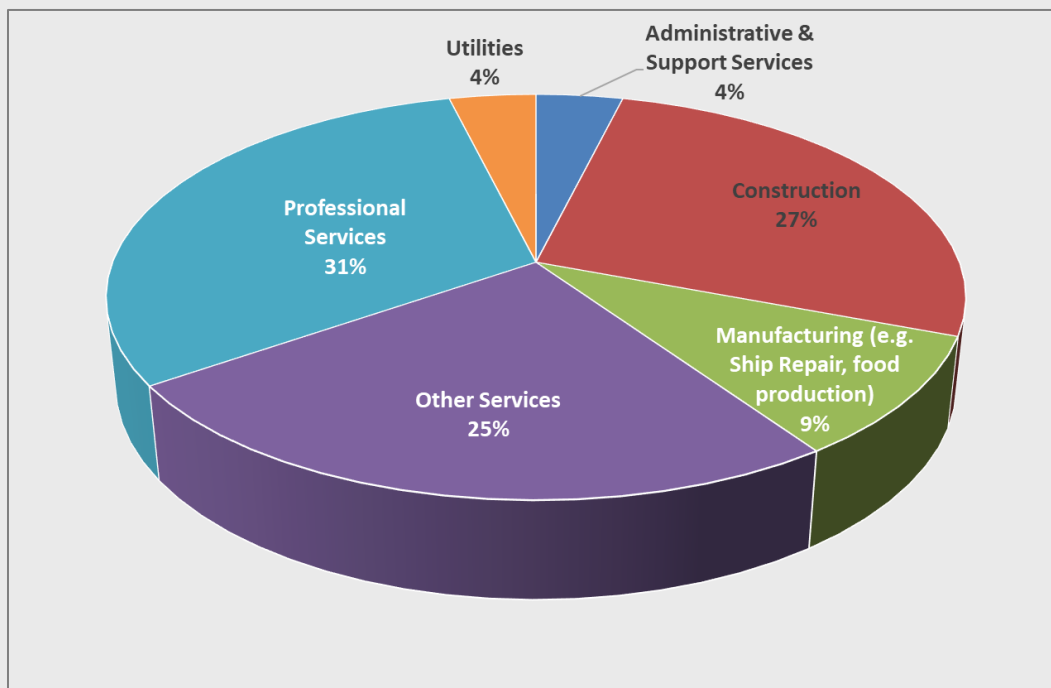
Feedback was solicited for each of the eight action plan ideas in terms of value/effectiveness for advancing the growth and resiliency of the defense sector in Hawaii. The survey requested feedback along a 0-4 scale with zero indicating "No Value/Not Effective" and 4 meaning "High Value/Effectiveness". An option to select "Not Qualified to Evaluate" was provided for those respondents who did not feel comfortable providing an evaluation. An average

score was derived across responses for each action plan idea. **All received positive feedback** (above 2.0 – Some Value/Effectiveness) with some garnering more perceived value/effectiveness than others, as shown in Figure 6.3.

Figure 6.3 – Action Plan Feedback
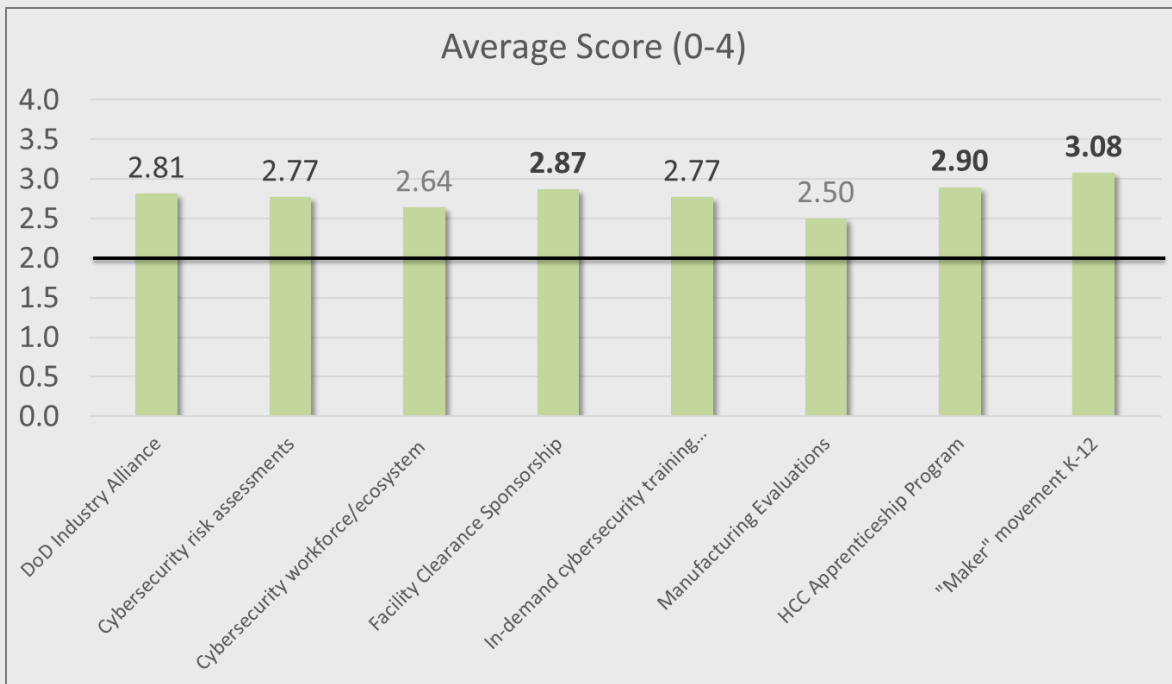
The top three action plan ideas included:

- A "Maker" movement program for K-12 education (3.08);

- HCC Apprenticeship Program enhancement (2.90); and

- Facility Clearance Sponsorship (2.87).

The lowest rated action plan ideas included:

- Conducting one-on-one industry engagements for the ship repair industry through INNOVATE Hawaii (2.50),;and

- Cybersecurity workforce and supporting ecosystem initiative (2.64).

The lower rating for the manufacturing evaluations may have been driven by limited responses from the ship repair industry. Three out of the five manufacturing industry stakeholders that responded to the survey indicated that this initiative would be moderate to high value/effectiveness.

In the next section, we provide a proposed timeline and action plan summary.

PEARL HARBOR, Hawaii - Multinational navy ships and a submarine steam in formation during a group sail off the coast of Hawaii as part of exercise Rim of the Pacific (RIMPAC) 2020. Ten nations, 22 ships, 1 submarine, and more than 5,300 personnel are participating in Exercise Rim of the Pacific (RIMPAC) from August 17 to 31 at sea in the waters surrounding Hawaii. RIMPAC is a biennial exercise designed to foster and sustain cooperative relationships, critical to ensuring the safety of sea lanes and security in support of a free and open Indo-Pacific region. Photo By: Petty Officer 3rd Class Jenna Do.

6.0 Timeline

Figure 7.1 provides a timeline of action plan key tasks and milestones/reports over an 18-month Phase III period. This timeline serves as a guide to help inform sequencing and integration of tasks with other factors not considered in the report, e.g. contracting/hiring requirements, grant milestones etc. It is expected that more exact timelines and requirements will be further defined and improved.

Figure 7.1 – Action Plan Timeline

Figure 7.1 – Action Plan Timeline

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

HDE DoD Industry Alliance

- Select PM
- Develop alliance — Charter/ governance plan
- Form Working Groups
- Workforce Development WG – Design/Execute Programs & Initiatives
- Mentorship Program WG – Design/Execute Programs & Initiatives
- Business Regulatory Advocacy WG – Design/Execute Programs & Initiatives
- INNOVATE Hawaii SMM prep
- Conduct one-on-one DoD SMM engagements and risk assessment
- Develop sustainability plan
- Develop industry "findings" report

Cybersecurity & Supporting Ecosystem

- Select consultant
- Conduct gap analysis of cybersecurity ecosystem — Gap Analysis Report
- Create IA/Cyber certification program
- Execute IA/Cyber certification program
- INNOVATE Hawaii cyber program prep
- Conduct one-on-one DoD contractor engagements and risk assessments
- Conduct bi-monthly Q&A webinars