



**Capstones to Clinic:**  
Collaborative Workforce Development  
and Regional Resiliency



# About Cybersecurity Clinics

## Consortium of Cybersecurity Clinics

- An international network hosted by UC Berkely that connects university-based cybersecurity clinics to share knowledge, expand the clinic model, and aims to establish clinics in all 50 U.S. states by 2030
- Cybersecurity clinics provide essential security services to under-resourced community organizations while giving students hands-on experience in real-world scenarios
- Modeled after legal and medical clinics, these university-based programs deliver free cybersecurity assistance to clients who couldn't otherwise afford professional services
- Students offer a comprehensive range of technical assistance including vulnerability assessments, policy templates, incident response plans, and compliance certification guidance
- The clinic model prioritizes local impact, embedding public service values in future cybersecurity leaders while bringing needed expertise to organizations in their communities
- The Consortium of Cybersecurity Clinics is expanding this model internationally, with a vision to establish clinics in all 50 U.S. states by 2030

# Introducing the San Diego Cyber Clinic

Cyber Center of Excellence (CCOE), California State University San Marcos (CSUSM), National University and San Diego State University (SDSU) were selected to receive \$1 million grant funding and wraparound support from Google's Cybersecurity Clinics Fund to establish the San Diego Cyber Clinic. The funding from Google.org, the company's philanthropic arm, is part of a \$25 million collaboration with the Consortium of Cybersecurity Clinics.

Cybersecurity clinics at higher education institutions provide free digital security services to under-resourced organizations, similar to how law or medical schools offer free community clinics.



# San Diego Cyber Clinic Overview

## Bridging the Cybersecurity Gap Through Academic Collaboration

- First-of-its-kind collaboration between three California universities and a nonprofit to maximize impact while serving underserved communities
- Students from cybersecurity, homeland security, and computer science programs gain hands-on experience with real-world security challenges
- Free clinic model provides essential cybersecurity services to small businesses, nonprofits, and community organizations that couldn't otherwise afford them
- Innovative cross-institutional approach creates operational efficiencies through shared training, standardized service delivery, and centralized client intake

Goal of 1,000 Students Serving 260 Organizations in 6 Years

# San Diego Cyber Clinic Overview

## Example Client Services:

- Cybersecurity Risk Assessment
- Incident Response Planning
- Disaster Recovery Planning
- Security Controls
- Penetration Test
- Open Source Intelligence Assessment
- CMMC Readiness Assessment
- CMMC Documentation Support
- Cybersecurity Policy
- Security Awareness Training
- Cybersecurity Performance Metrics
- Cybersecurity Product Evaluation
- Threat Intelligence Briefing

# Meeting Critical Cybersecurity Needs

## Workforce Development & Community Protection

- Cyber insecurity remains in the top 10 global risks over the next decade (WEF 2024)
- Nearly 450,000 open cybersecurity jobs in the U.S., including 5,092 in San Diego region
- San Diego: Regional hub with 1,000+ cyber firms, top-ranked education institutions
- Demand for cyber professionals projected to grow 32% by 2033
- Students gain AI and cybersecurity skills through hands-on experience with real-world clients

# San Diego Cyber Clinic Partners

## San Diego Cyber Center of Excellence

- San Diego-based nonprofit with 10 years of experience mobilizing industry, academia, and government to grow the regional cyber economy
- Focuses on cultivating a diverse cybersecurity workforce, promoting security across all sectors, and addressing infrastructure challenges
- Positions San Diego as a global hub for collaborative cybersecurity innovation through cross-sector partnerships



## Cal State San Marcos

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# San Diego Cyber Clinic Partners

## National University

- Veteran-founded nonprofit and San Diego's largest private nonprofit university, offering 190+ online and on-campus programs
- Serves 130,000 learners annually through flexible four-week and eight-week classes designed for nontraditional, working, and military students
- Recognized as a Center of Academic Excellence in Cyber Defense Education by the National Security Agency



## San Diego State University

- Major R1 public research institution serving 37,000 students with bachelor's degrees in 97 areas, master's in 87 fields, and 25 doctoral programs
- Ranks as the #1 California State University in federal research support and stands among top public research universities in California
- Committed to inclusive excellence with over 50% students of color and recognition as both a Hispanic-Serving Institution (HSI) and Asian American Native American Pacific Islander-Serving Institution (AANAPISI)



# Challenges and Lessons Learned

## Differing Schedules

- CSUSM - two-semester capstone process
  - Semester 1 - proposal, project plan and training on tools
  - Semester 2 - capstone project execution, completion
  - Presentation and publication of report
- San Diego State University - not aligned with a specific course
  - Open to any student that completes required training
  - Student training includes Google Cybersecurity Certificate and cybersecurity tools training
- National University - three month capstone class
  - Culminating experience for Cybersecurity MS or BS
  - Cybersecurity tools and training incorporated
  - Completion of deliverables and presentation on project

# Challenges and Lessons Learned

## Sharing Information

- Collaborating across organizations
  - Account management for shared tools and services
  - Impediment: Purchased resources are licensed to the campus that purchased them.
- Different university IT Systems
  - Original theory: share resources (i.e. sharepoint, teams, etc.)
  - Impediment: campus resources require campus user account, and campus policy makes it difficult to grant accounts to external participants
- Current solution
  - Google drive hosted by SDSU
  - Basecamp provided by NU
  - Teams meetings hosted by CSUSM
  - Zoom and zoom webinar capability hosted by SDSU and CCOE
- Potential Solutions
  - Clinic Google Workspace

# Challenges and Lessons Learned

## Legal Requirements

- Differing campus models/policies on intellectual property, collection of data, and risk management
- Private vs Public institutions
- Solution:
  - Building common documents for client and student agreements
  - Template docs modified for each campus

## Tools, Licenses, and Procurement

- Grant objective to provide students with enterprise level tools
- Challenges
  - Different procurement systems
  - Negotiating licensing with vendor
  - Ongoing: license struggle with the “check out” model
  - Systems to support tools
- Solutions
  - Clinic Google Workspace
  - Considering hosted tools
  - Quarterly meetings with finance teams
- Suggestion
  - Create a separate entity for your collaborative clinic and have that separate entity license the tools

# Challenges and Lessons Learned

## Confidential Information

### Challenge:

- Securely store, control access to client info
  - Ensure client information confidentiality is protected
  - Operational practices (encryption, storage restrictions, etc.)
  - Priority to ensure proper disposition of client info at close of project

### Solution:

- Student laptops - limit student collection and storage of client data to these clinic/campus-owned laptops?
  - Impediment - cost and maintenance of laptops
- Shared space - require student to store data only in clinic/campus-owned space where access can be strictly controlled
  - Impediment - no good solution (yet) for collaboration projects

*Note: This problem not entirely due to collaboration, but exacerbated by cross-campus team*

# Progress to Date and Completed Projects

With the pilot cohort, the Clinic has already impacted 21 businesses, 74 students, 18 faculty members and 2 Google mentors!

- CSUSM and NU: Clinic is “culminating experience” (Calif Title 5 Sec 40510 for CSUSM) as capstone project
- Quarterly webinars with Google Mentors
- Monthly advising sessions with Google mentors
- Pre and post project surveys
- Completed x projects
- Utilizing following tools:
  - Axio
  - Basecamp
  - Rapid7 Vulnerability Scanner
  - Security Studio
- Clinic Content

## Examples of Completed Projects

- CMMC Assessment (In-progress) Quarterly webinars with Google Mentors
- Vulnerability assessments for:
  - Small DoD trucking contractor
  - Local school
  - Local water authority
  - Small business working on state projects
  - Small restaurant
- CMMC Training

# In Summary...

## Key Benefits Include:

- The multi-institution collaboration maximizes regional impact through shared resources, tools, and training while leveraging each partner's unique strengths and expertise
- CCOE's established industry relationships and 10 years of experience provide robust client outreach, ensuring a sustainable pipeline of organizations needing cybersecurity assistance
- Unified curriculum and content development across three universities creates consistent, high-quality training materials and standardized service delivery procedures
- The clinic addresses a critical gap by providing professional-grade cybersecurity services to under-resourced organizations that could not otherwise afford or access this essential protection

## Current Challenges Include:

- Procuring tools across multiple organizations
- Identifying resources for protecting client data
- Aligning legal requirements across universities

Interested in Learning More...



FOR MORE INFORMATION, PLEASE VISIT

[www.sdccoe.org/cyber-clinic](http://www.sdccoe.org/cyber-clinic)



Thank you!

## Any Questions?



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