Colvin Run Networks

Mission-Driven Analytics

Colvin Run
www.colvinrun.com

IRONCLAD: Integrated Resilient Operations for Naval Cloud and AI Deployments

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Colvin Run Networks: Company Overview

Expertise & Innovation

- ✓ Applied data science experts leveraging cloud analytics, AI/ML, distributed ledger, and market-leading technologies
- ✓ Headquarters in Tysons, VA
- ✓ Founded in 2018 with Grants from Virginia Center for Innovative Technology (CIT), 2020 Virginia SBIR Success Story
- ✓ Recognized as Top 10 Startup serving the United States Air Force and MassChallenge
- ✓ Secret Clearance, CMMC Level 2.0, GSA MAS Contract Holder, $7.5M Credit Line
- ✓ Rapid SBIR Phase III Acquisitions

Our Platforms

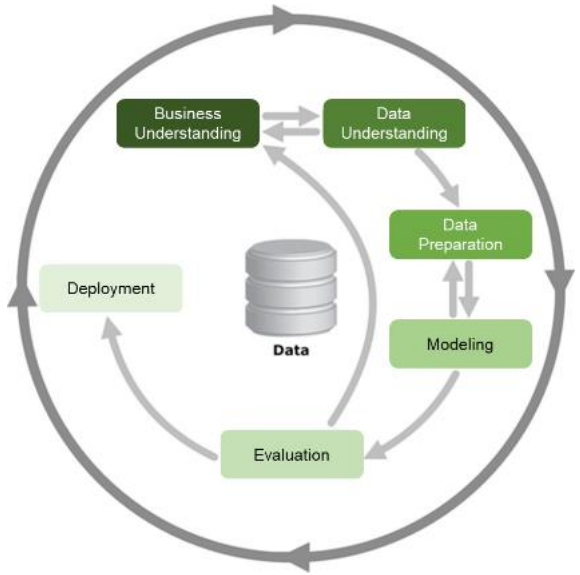
Afforma AI

Mission-Driven Analytics

Copia

Mission-Driven Hardware Trust & Assurance

User-Centered Design



Mission-Critical Customers

World-Class Technology Partners

Microsoft Google IBM GDIT aws +ableau servicenow databricks

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CRISP-DM: Cross Industry Standard Process for Data Mining

Business Understanding

Determine Business Objectives
Background
Business Objectives
Business Success Criteria

Situation Assessment
Inventory of Resources Requirements, Assumptions, and Constraints
Risks and Contingencies
Terminology
Costs and Benefits

Determine Data Mining Goal
Data Mining Goals
Data Mining Success Criteria

Produce Project Plan
Project Plan
Initial Asessment of Tools and Techniques

Data Understanding

Collect Initial Data
Initial Data Collection Report

Describe Data
Data Description Report

Explore Data
Data Exploration Report

Verify Data Quality
Data Quality Report

Data Preparation

Data Set
Data Set Description

Select Data
Rationale for Inclusion / Exclusion

Clean Data
Data Cleaning Report

Construct Data
Derived Attributes
Generated Records

Integrate Data
Merged Data

Format Data
Reformatted Data

Modeling

Select Modeling Technique
Modeling Technique
Modeling Assumptions

Generate Test Design
Test Design

Build Model
Parameter Settings
Models
Model Description

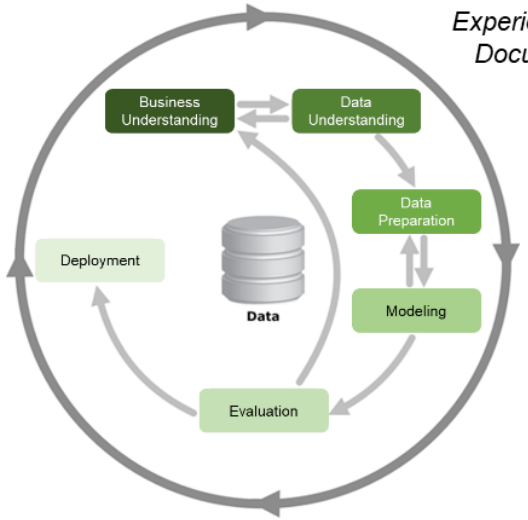
Assess Model
Model Assessment
Revised Parameter Settings

Evaluation

Evaluate Results
Assessment of Data Mining Results w.r.t. Business Success Criteria
Approved Models

Review Process
Review of Process

Determine Next Steps
List of Possible Actions
Decision



Deployment

Plan Deployment
Deployment Plan

Plan Monitoring and Maintenance
Monitoring and Maintenance Plan

Produce Final Report
Final Report
Final Presentation

Review Project
Experience Documentation

For More Information on CRISP-DM: https://inseaddataanalytics.github.io/INSEADAnalytics/CRISP_DM.pdf

IRONCLAD Introduction

Integrated Resilient Operations for Naval Cloud and AI Deployments

Integrates AI/ML Capabilities

Deploys advanced AI/ML models in a secure, scalable, multi-cloud environment tailored for naval operations.

Enhances Operational Resilience

Provides reliable, vendor-flexible solutions to address connectivity challenges in critical OCONUS locations.

Streamlines AI Deployment

Accelerates the development, deployment, and management of AI models using a modern MLOps platform.

Strengthens Security

Implements Zero Trust principles and advanced security measures to safeguard Navy operations and data.

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IRONCLAD Expertise and Collaboration

Colvin Run

Project Leadership and Integration
Colvin Run leads the IRONCLAD initiative, integrating advanced AI/ML capabilities into a multi-cloud MLOps platform tailored for the Navy.

- Design the overall architecture
- Ensure alignment with operational goals
- Deliver secure, scalable solutions that meet Navy-specific requirements

Google Cloud

Advanced Cloud Infrastructure
Google Cloud provides the technology backbone of IRONCLAD, offering tools such as Vertex AI, TensorFlow, and Kubernetes for rapid AI/ML deployment.

- Multi-cloud integration capabilities enhance flexibility
- Zero trust security measures ensure compliance with federal standards.

NOCTUA TECHNOLOGY

Engineering Expertise and Mission Alignment
Noctua contributes deep domain knowledge and engineering proficiency to design and implement secure, innovative, and scalable solutions.

- Extensive experience in the defense and intelligence sectors
- Trusted Google Cloud partner, specializing in designing, deploying, and managing machine learning solutions at scale

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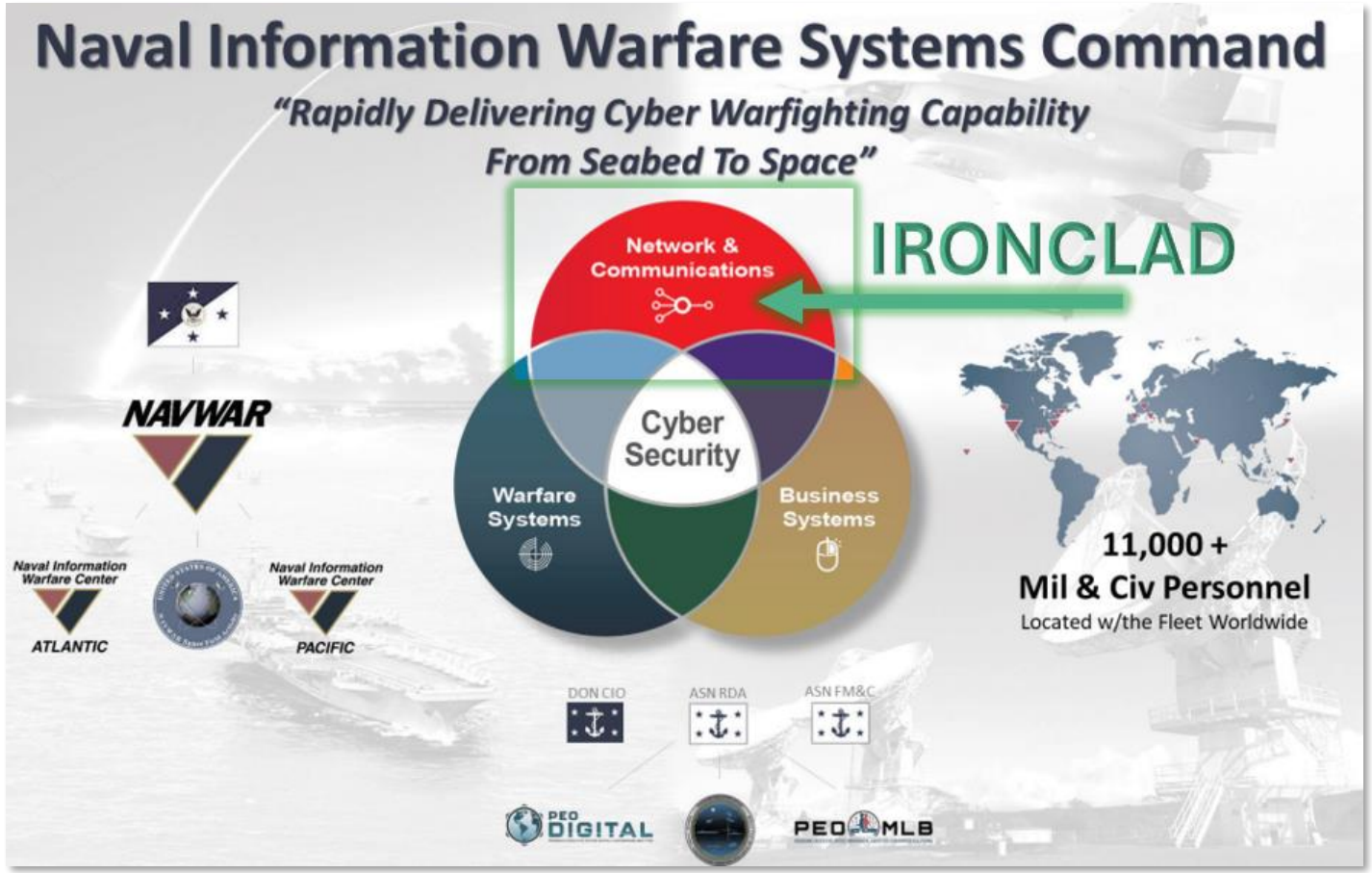
IRONCLAD Problem Statement



The Navy struggles with rigid, single-vendor systems, limited AI/ML scalability, and OCONUS connectivity issues, impacting mission readiness. Security vulnerabilities further hinder operations.

IRONCLAD solves these challenges by delivering a secure, scalable multi-cloud MLOps platform, enabling seamless AI deployment, enhanced connectivity, and strengthened operational resilience.

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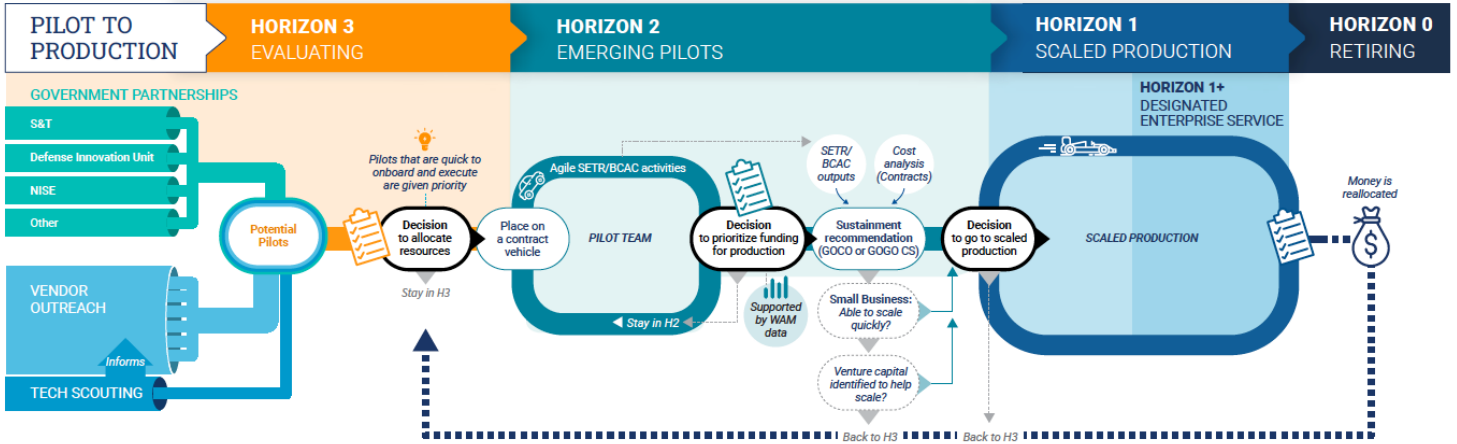
Alignment with PEO Digital Priorities and Commitments

Vision – Deliver a world class digital experience at the speed of mission

Mission – Provide a decisive information advantage through a modern, innovative, and secure digital experience – any data, any time, any where

IRONCLAD seeks to adhere and bolster the vision and mission of PEO Digital through it's talented and compatible partnership of Colvin Run Networks, Noctua Technology, and Google.

Our team strives to create cutting-edge and flexible technologies that aligns with the overarching tenant of "securely moving information from anywhere to anywhere".



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IRONCLAD Goals

Enhanced Decision-Making	Enhance decision-making tools to provide real-time insights and predictive analytics.
Operational Efficiency	Streamline deployment, monitoring, and management of AI models, improving operational efficiency and reducing time-to-deployment for new solutions.
Increased Security	Implement zero trust principles, strong IAM policies, and advanced security measures to enhance security of Navy operations.
Vendor Flexibility	Ensure the Navy is not locked into a single vendor, providing the ability to leverage the best technologies available across different platforms.
Scalability	Design to scale, ensuring capability for both current and future demands without compromising performance or security.

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IRONCLAD Use Cases

Drone Identification Vision Model
Rapidly identifies drones as friendly, foe, or commercial, enhancing situational awareness and real-time decision-making in maritime operations.

Translation Model for Coalition Communications
Enables seamless real-time translation for coalition missions, improving coordination and efficiency in multilingual environments.

Anomaly Detection Model
Detects unusual activities and patterns across large datasets, providing actionable insights to identify threats and enhance decision support.

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IRONCLAD Key Advancements

MULTI-CLOUD BENEFITS

Increased vendor flexibility and access to cutting-edge technologies.

ENHANCED SECURITY

Implementation of Zero Trust principles and strong Identity and Access Management (IAM) policies.

OPERATIONAL EFFICIENCY

Faster AI/ML deployment cycles with reduced time-to-deployment.

SCALABILITY

Designed to adapt to current and future Navy demands.

RESILIENCE

Improved connectivity and operational reliability in critical environments.

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IRONCLAD Takeaway

IRONCLAD: Transforming Naval operations by:

- Developing a secure, scalable multi-cloud MLOps platform
- Enhancing connectivity, operational resilience, and AI/ML capabilities
- Maintaining technological superiority

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How can we accelerate the US military's adoption of AI-driven solutions, ensuring mission readiness for the challenges of tomorrow?

IRONCLAD White Paper

IRONCLAD:
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January 2025

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US Navy Challenges and Urgent Call to Action

Background

The Navy is confronting significant limitations in network and connectivity capabilities for warfighters and other critical systems, impeding its ability to achieve strategic objectives and maintain operational superiority. According to a recent GAO report (GAO-23-105611), these challenges include inefficiencies in managing disparate systems and gaps in situational awareness, which are exacerbated by the complexity of integrating and operating across diverse mission environments.

Reliance on single-cloud environments further compounds these issues, exposing the Navy to risks of vendor lock-in and limiting its ability to dynamically allocate resources and optimize performance. This approach also falls short in addressing the increasingly sophisticated cyber threats outlined in the GAO report, which emphasizes the importance of zero trust security principles and compliance with federal cybersecurity standards to mitigate vulnerabilities in modern operational environments.

Colvin Run Networks is a small business serving the Navy since 2019 via the Small Business Innovation Research (SBIR) Program, working closely with NAVWAR to address these systemic limitations. Google, a global leader in cloud infrastructure and AI innovation, leverages its cutting-edge technologies to enable scalable, secure, and transformative capabilities. Noctua Technology, a leader in data engineering, AI/ML, and application and cloud development, brings deep expertise in delivering innovative, mission-critical solutions tailored to complex operational challenges. Together, this team offers a rapid, scalable, and impactful solution for Navy multi-cloud infrastructure.

Colvin Run Google Cloud NOCTUA TECHNOLOGY