

# ACCELERATED WORKFORCE READINESS

VIA DYNAMIC WORKFORCE  
MODELING & SKILL VALIDATION

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NSRP Workforce & Compliance Panel  
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*Protecting the assets that protect our freedom*

The Association for Materials Protection and Performance (AMPP) is a global, industry-driven non-profit dedicated to corrosion prevention and mitigation, uniting over 36,000 members. We protect critical assets in three key markets: military and commercial maritime, onshore and offshore energy, and civil infrastructure.

Our urgent challenge:

**Rebuilding the U.S. Maritime Industrial Base for National Security and Economic Prosperity**



# WHAT'S AT STAKE?

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## Diminished national security and fragile maritime economy

Corrosion weakens naval fleets, shipyards, and military assets – costing billions in damage and lost readiness:

- **\$500 billion** – Annual U.S. Economic Cost of Corrosion
- **\$20 billion** – DoD Corrosion-Related Costs in 2016
- **266 MISHAPS** – Army & Navy Aviation Incidents (1983-2013)
- **Up to \$500K** – in damages per incident

*Every \$1 invested in corrosion protection saves \$16 in maintenance and replacement costs.*



# AMPP'S INDUSTRY CONTRIBUTIONS

**Extend Lifespan, Cut Costs:** AMPP's expertise reduces maintenance costs and extends ship life.

**Innovate Shipbuilding:** Our research drives new materials solutions, enhancing vessel durability.

**Recruit, Train, and Upskill a Vibrant Maritime Workforce:** AMPP trains and certifies professionals to address labor shortages and strengthen industry knowledge.

**Strengthen National Security:** Our corrosion prevention keeps military and commercial vessels mission-ready.

**Set Global Standards:** AMPP creates internationally-recognized corrosion prevention protocols for consistency and efficiency.

**Fuel Economic Growth:** By reducing repairs, AMPP boosts the shipbuilding sector's contribute to U.S. economic strength.

**AMPP provides the expertise, training and standards that keep naval and commercial fleets mission-ready while reducing costs and extending asset life.**



# PROJECT DESCRIPTION

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Corrosion weakens naval fleets, shipyards, and military assets – costing billions in damage and lost readiness. While a qualified workforce to protect our critical infrastructure is paramount, workforce shortages persist, with Hampton Roads Workforce Council noting recently that “regional gains in employment have outpaced growth in the working-age population” and that “labor supply gaps are most pronounced for entry-level and middle-level positions.”

Compounding this issue is the increasing pace of innovation and the changing nature of the jobs/work itself. Workforce skill composition targets are changing more rapidly than we can keep up with/plan for.

**This project aims to create a series of AI-facilitated, dynamic workforce models that inform critical skill gaps against a series of intended/unintended scenarios and/or horizons, as well as recommend the most efficient strategies to mitigate these gaps now and in the future.**



# PROJECT GOALS & OBJECTIVES

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This project seeks to:

- a. Create a sustainable mechanism that constantly “listens” and “interprets signals** from our existing knowledge base, from emerging standards working groups, from industry event proceedings, from journals and publications, and from the market at large
- b. Construct a series of current-state and forward-looking workforce composition models** that can be used broadly across the shipbuilding industry
- c. Identify skill acceleration techniques and strategies to mitigate these skill gaps**
- d. Generate dynamic individual/group skill profiles for jobs/roles, etc.** that can be compared against the models above and utilized to **better match skilled workers to specific crews/assignments**, where relevant.



# PROPOSED DELIVERABLES

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Tangible output of this project will be in the form of:

- **Series of dynamic competency models, aligned to a scenario-planning approach**
  - Maintained/refreshed by AI-enabled insights, informed by latest in standards, publications, innovation, etc. for different scenarios and/or horizons that could play out over specific timeframes
  - For each dynamic mode:
    - Key workforce jobs associated with corrosion protection and performance
    - Required competencies, skills, tasks, and roles required to successfully perform work
    - Current state view of industry-wide skill gaps, mapped to individual and/or group skill profiles (can be named or anonymous)
    - Linked credentials and learning pathways to accelerate mitigation of skill gaps
- (if desired) **Ability to design/model ideal crew compositions associated with desired skills within each scenario/horizon's model**





# DYNAMIC MODELS & SCENARIOS

Edit the default matrix structure by turning off layers or connections (how the layers connect to each other). Note, the skill layer cannot be turned off.

DISCIPLINES

Connections

SUB-DISCIPLINES

Connections

JOBS

Connections

ROLES

Connections

Behaviours

Skills (by default, always on)

Credentials

Learning Resources

BEHAVIOURS

Connections

SKILLS

DEFAULT

Connections

CREDENTIALS

Connections

LEARNING RESOURCES

Connections

J

INACTIVE

JOB TITLE HERE

Discipline

HUMAN RESOURCES

Subdiscipline

LEARNING/TRAINING

Level of Work

V

Tags

SENIOR EXECUTIVE

DESCRIPTION

Lorem Ipsum...

MENTAL PROCESSING ABILITY

CONTENTS

All elements that are part of this job

SPECIALISED JOBS (0)

RELATIONS (0)

ROLES (1)

TASKS (8)

SKILLS (33)

CREDENTIALS (0)

LEARNING RESOURCES (0)

LIBRARY

matrices

INACTIVE

Scenario A

INACTIVE

Scenario B

INACTIVE

Scenario C

ACTIVE

Scenario D



# SKILL VALIDATION

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CFO / DENVER CO

[View more](#)



## SKILLS

## ROLES

## PEOPLE

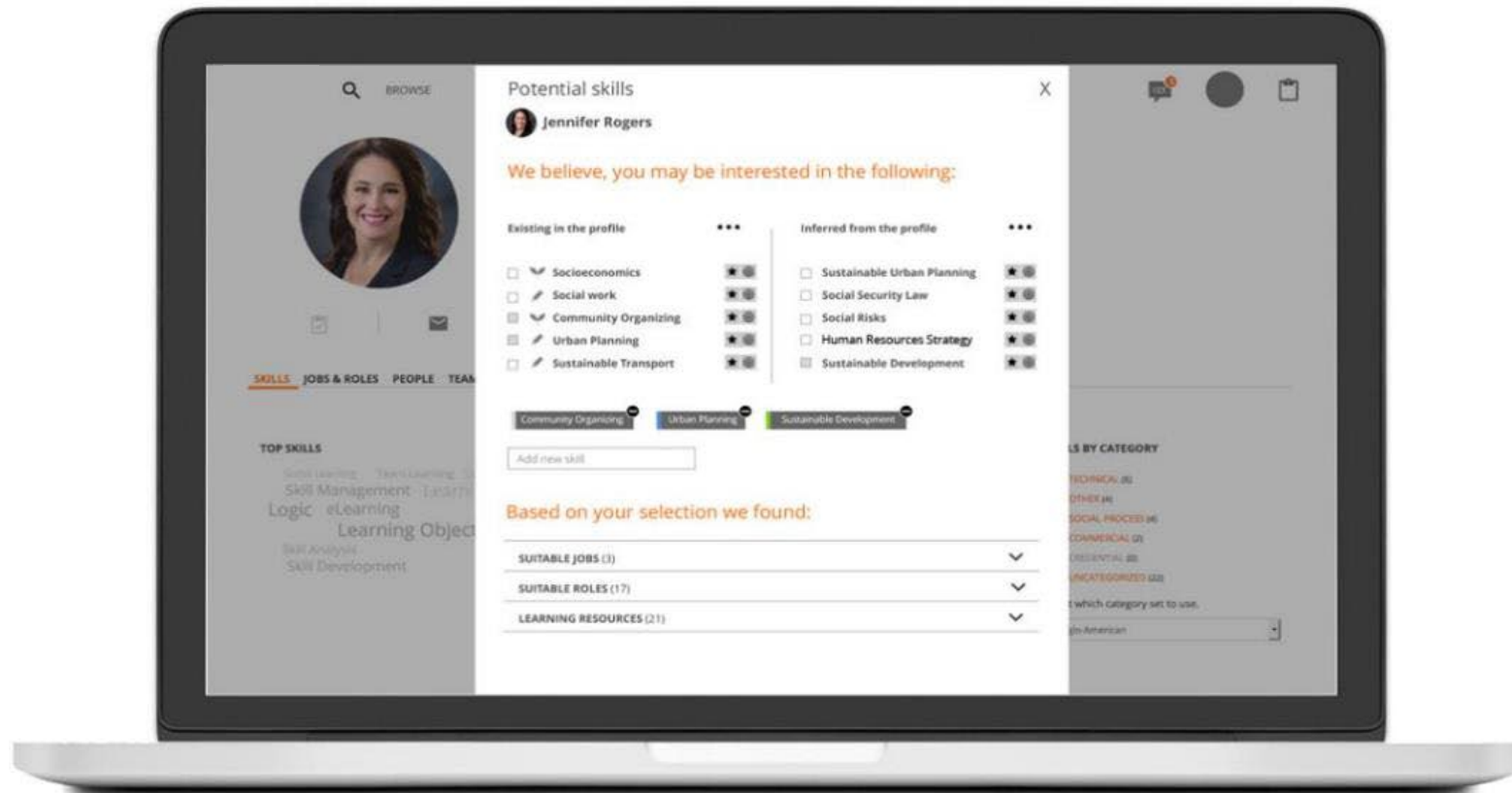
## PROJECTS

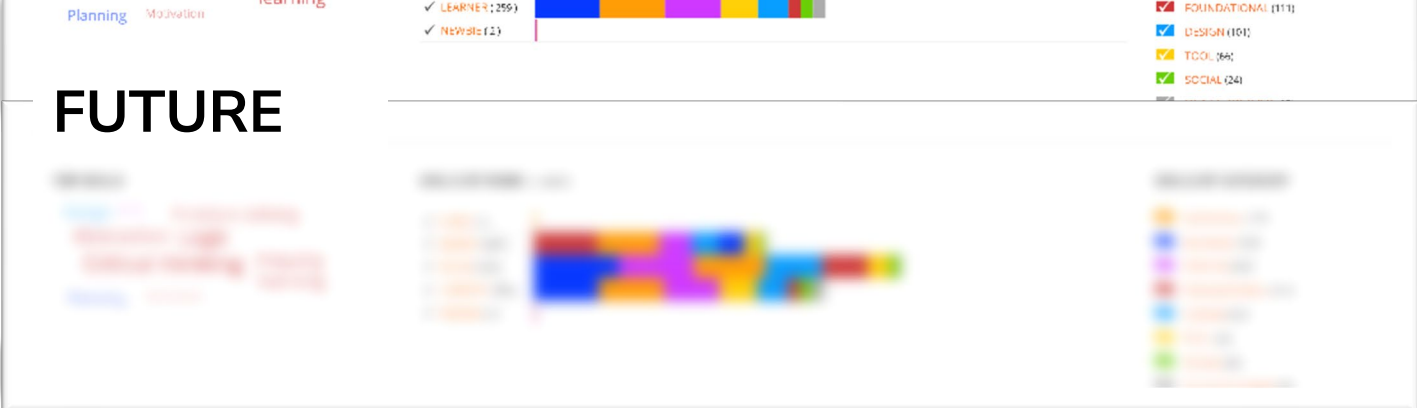
Risk Management      Business Analysis  
 Account Management      Business Planning  
 Business Development      Business Process Improvement  
 Inquiry    800.722

Year	GURL	GURL+GEM	GEM
2017	10	20	10
2018	0	20	20
2019	0	10	20
2020	0	0	20
2021	0	0	10

- ☒ BUSINESS (24)
- ☒ CONSPIRACIES (10)
- ☒ DOMAIN (14)
- ☒ TECHNOLOGY (8)
- ☒ DESIGN (6)
- ☒ SOCIAL (40)
- ☒ IDEAS (6)
- ☒ UNCATEGORIZED (7)

# SKILL CLUSTERS & INFERENCE





# CREW BUILDER/FINDER

TEAMBUILDER

New Crew

COMPANY: |

Allow Requests

PEOPLE

ROLES

the roles

the candidates

1 ROLE

Back

-

Project Manager

+

ROLE DESCRIPTION

B

I

U

A description of this role in the team...

ADD SKILLS TO MATCH CANDIDATES

Add skill

SHOULD HAVE

Problem Solving

-

Project Management

i

Project Planning

-

Quality Assurance

i

Technical Writing

-

SEARCH BY ROLE, NAME, COMPANY, AND LOCATION

Any name

My Companies

Any location

21 PEOPLE MATCHING CRITERIA

+

55%

▼

+

51%

▼

+

48%

▼

+

39%


▼

+

38%

▼

I'M DONE

 TEAM SKILL COVERAGE  
All below target level

## New Crew

COMPANY:

VISIBILITY  
Private

HIGHLIGHTS TEAM ROLES SKILLS

## 4 roles

	Project Manager	NO ASSIGNED PERSON / LOOKING FOR CANDIDATES
	Abrasive Blaster	NO ASSIGNED PERSON / LOOKING FOR CANDIDATES
	Coatings Applicator	NO ASSIGNED PERSON / LOOKING FOR CANDIDATES
	Inspector	NO ASSIGNED PERSON / LOOKING FOR CANDIDATES

Accelerated Workforce Readiness via Dynamic Workforce Modeling & Skill Validation

# BENEFITS

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Provides real-time visualization of:

- Where skill gaps are located
- Which skill development opportunities are best suited for accelerating skill gap closure within an existing population
- Where skill clusters exist that would suggest largest potential for skill acceleration with non-linear, non-traditional methods (simulation, over-the-shoulder remote coaching)
- Heat maps of where skills acquisition is growing and where skills may be degrading
- Portable attestation/validation of capability from industry efforts



# Accelerated Workforce Readiness via Dynamic Workforce Modeling & Skill Validation

## PROJECT INFORMATION

**Prime/Lead:** Association for Materials Protection and Performance (AMPP)

**Team Members:** Various shipyard partner(s), maritime skills development provider(s), technology partner(s)

**Academic Member:** VDMC/ODU

**Duration:** 9 Months

**Financial/Cost:** Available upon request

## DELIVERABLES/BENEFITS/ROI

**Deliverables:** Tangible output of this project will be in the form of:

- Series of dynamic competency models, aligned to scenario planning approach
  - Maintained by AI-enabled insights, informed by latest in standards, publications, innovation, etc. for different scenarios and/or horizons that could play out over specific timeframes
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**Benefits:** Provides real-time visualization of:

- Where skill gaps are located
- Which skill development opportunities are best suited for accelerating skill gap closure within an existing population
- Where skill clusters exist that would suggest largest potential for skill acceleration with nonlinear, nontraditional methods (simulation, over-the-shoulder remote coaching)
- Heat maps of where skills acquisition is growing and where skills may be degrading
- Portable attestation/validation of capability from industry experts

**ROI:** Reduced time to competency, increased workforce readiness/availability & mobility, increased asset reliability/availability

## ISSUE / OBJECTIVE

**Description:** Corrosion weakens naval fleets, shipyards, and military assets – costing billions in damage and lost readiness. While a qualified workforce to protect our critical infrastructure is paramount, workforce shortages persist, with Hampton Roads Workforce Council noting recently that “regional gains in employment have outpaced growth in the working-age population” and that “labor supply gaps are most pronounced for entry-level and middle-level positions.” Compounding this issue is the increasing pace of innovation and the changing nature of the jobs/work itself. Workforce skill composition targets are changing more rapidly than we can keep up with/plan for. This project aims to create a series of AI-facilitated, dynamic workforce models that inform critical skill gaps against a series of intended/unintended scenarios and/or horizons, as well as recommend the most efficient strategies to mitigate these gaps now and in the future.

**Project Goals and Objectives:** This project seeks to a) create a sustainable mechanism that constantly “listens” for signals from our existing knowledge base, from emerging standards working groups, from industry event proceedings, from journals and publications, and from the market at large that will in turn b) construct a series of current-state and forward-looking workforce composition models that can be used broadly across the shipbuilding industry. This project will also c) identify skill acceleration techniques and strategies to mitigate these skill gaps while simultaneously d) generating dynamic individual/group skill profiles for specific jobs/roles, etc. that can then be compared against these models and utilized to better match skilled workers to specific crews/assignments, where relevant.

### Business Objectives:

- To facilitate scenario-based workforce planning that leads to acceleration of skill acquisition, both in the existing workforce but also for new recruits
- To decrease upskilling time and thus increase both the availability of a skilled workforce but also the availability of critical infrastructure, as a result.

### Technology Objectives:

- To utilize deep learning models that consistently grow and shape new workforce models
- To leverage existing platforms and knowledge bases to ensure models stay current/forward-looking
- To validate efficacy of existing skill acceleration strategies and suggest possible alternative

**Cost Share:** TBD - Plans to leverage existing Marine Skilled Trades Alliance grant from DoL, as well as recent Gates Grant awarded for creation of portable skills/competency frameworks and learning pathways, as well as other committed funds, where possible.



THANK YOU!

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