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?

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

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

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**

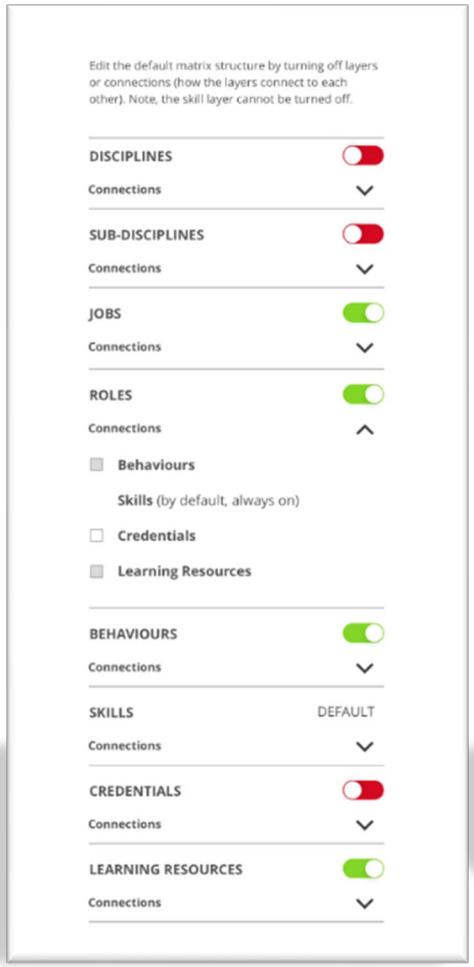
d. **Generate dynamic individual/group skill profiles for jobs/roles, etc.** that can be compared against the models above and utilized to **better match skilled workers to specific crews/assignments**, where relevant.

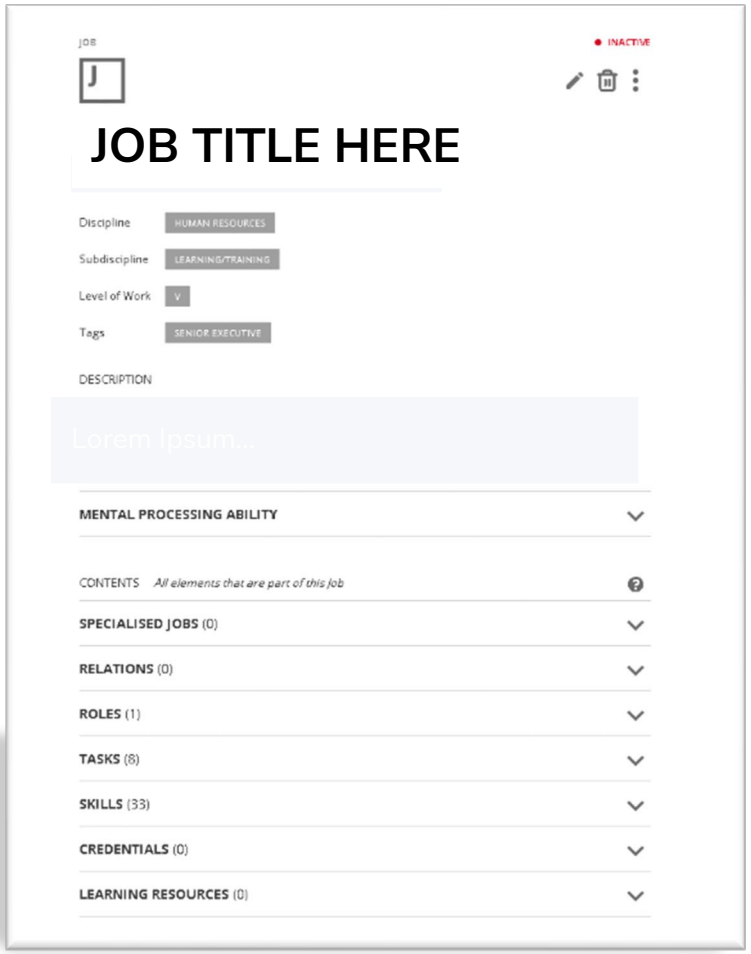
PROPOSED DELIVERABLES

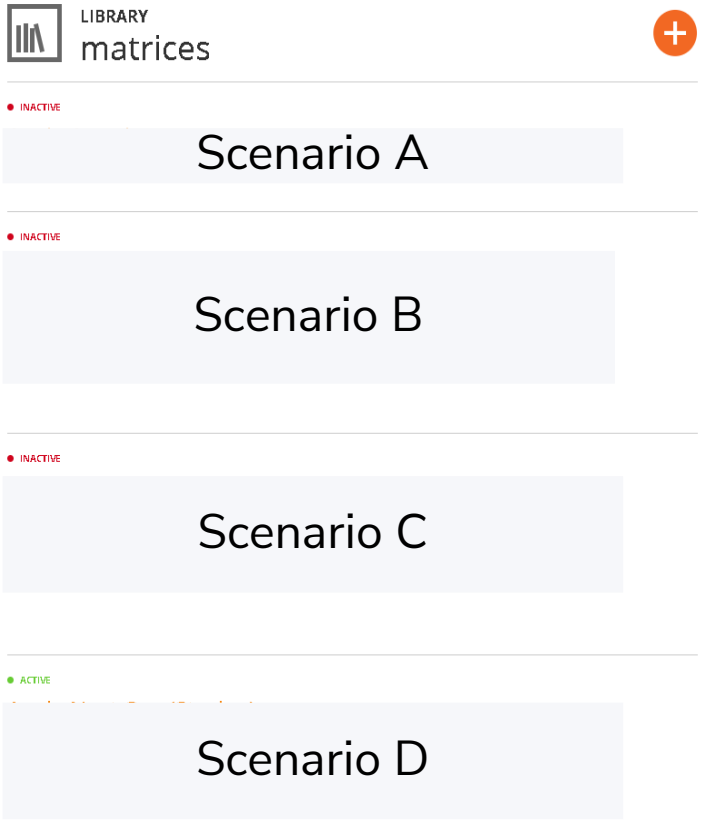
Tangible output of this project will be in the form of:

- **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**

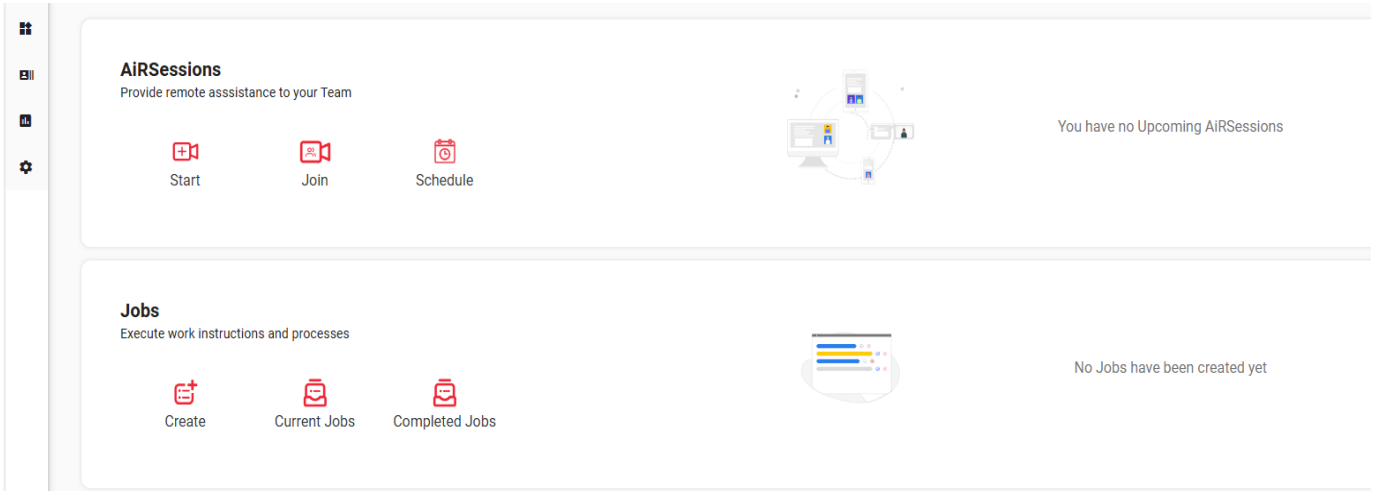
DYNAMIC MODELS & SCENARIOS



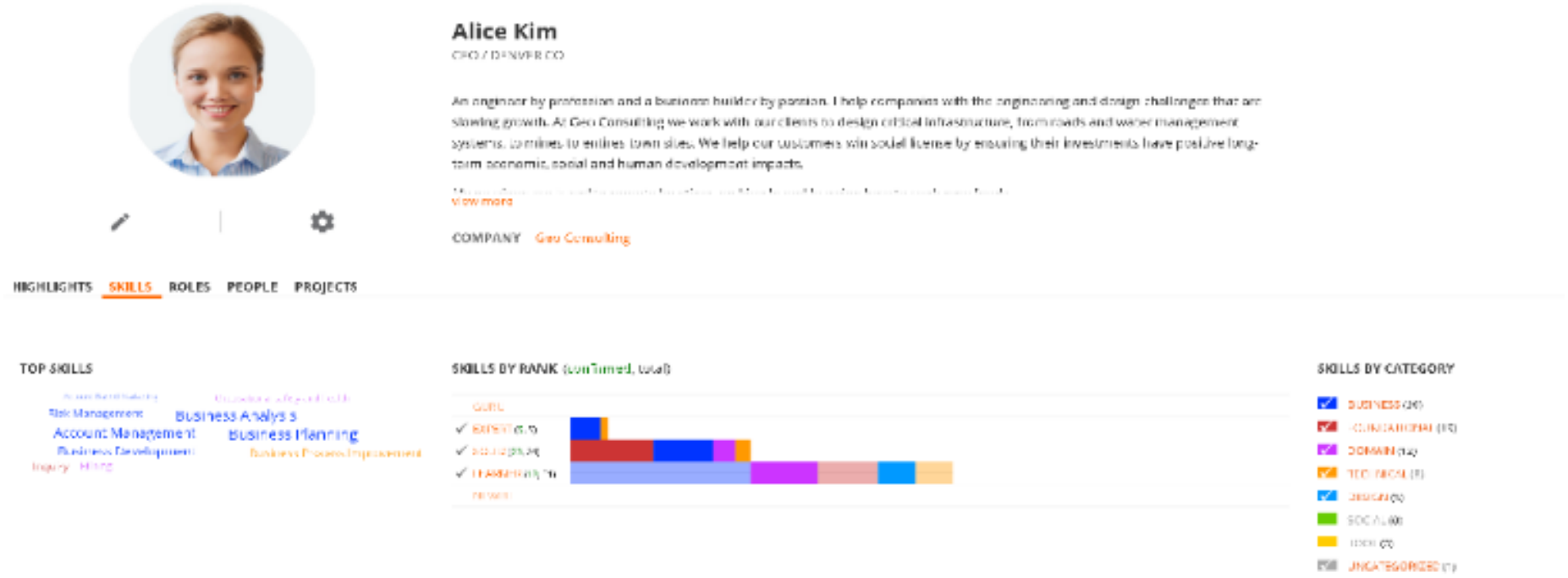




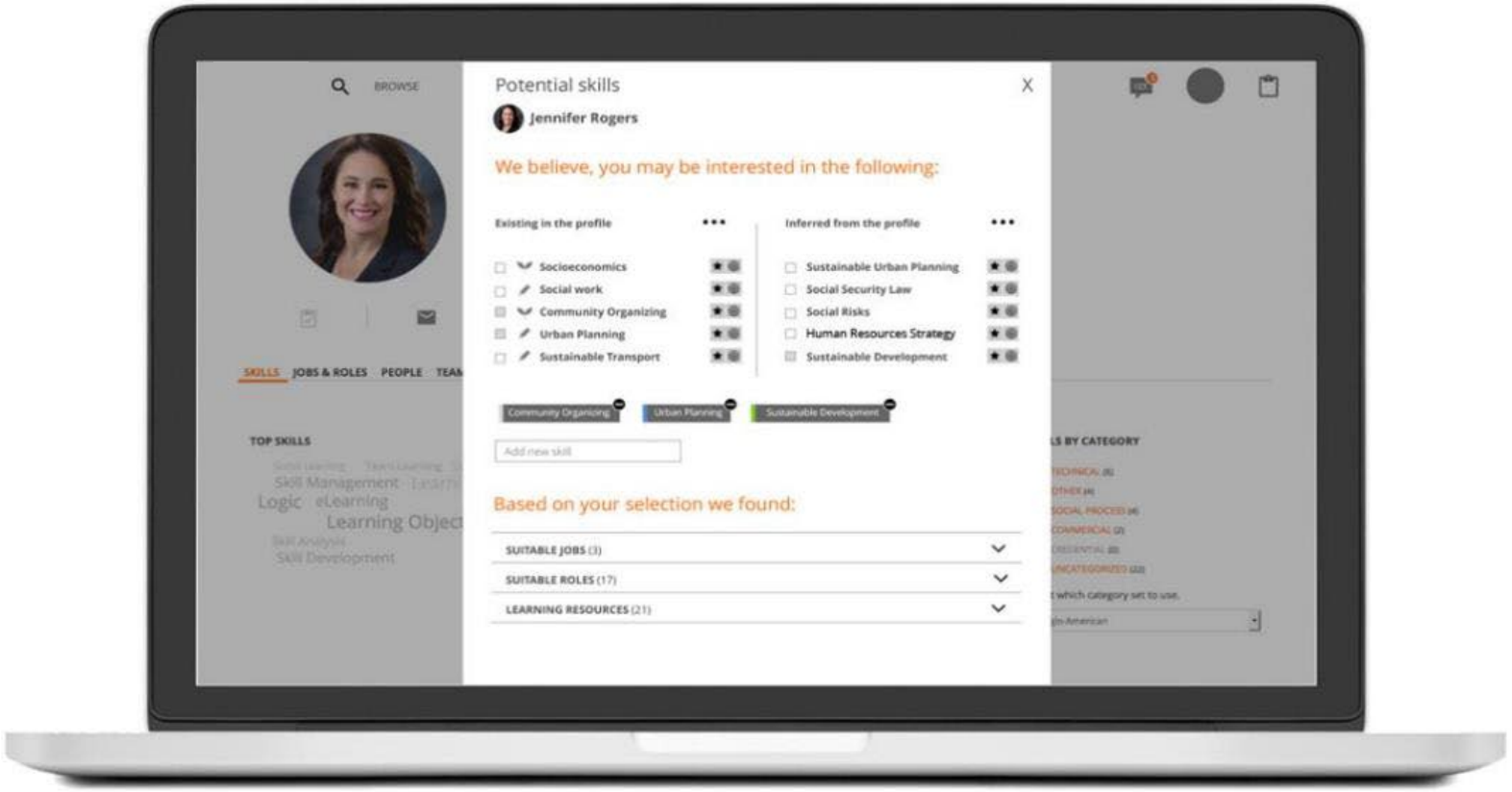
SKILL VALIDATION



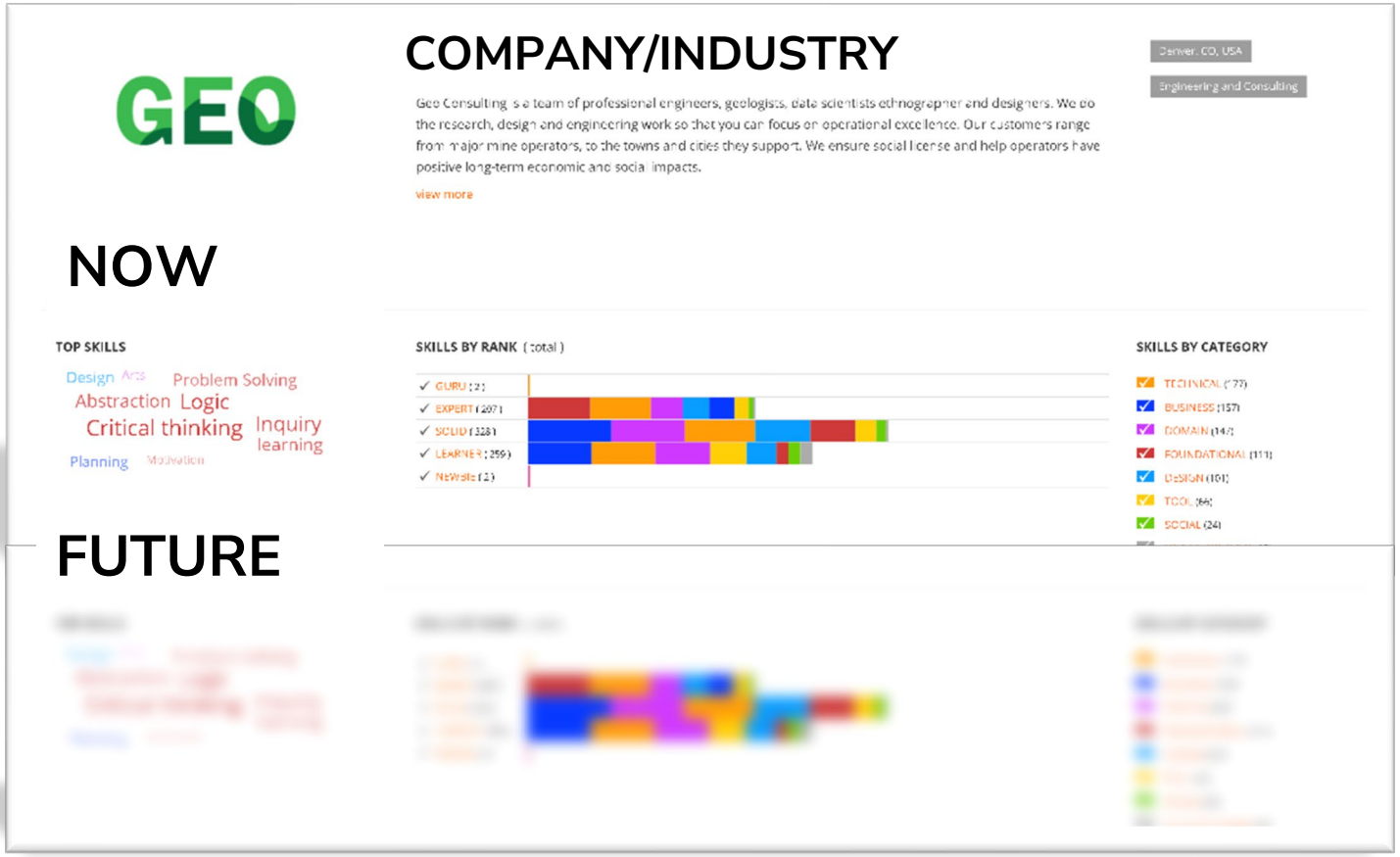
INDIVIDUAL/GROUP HEAT MAPS



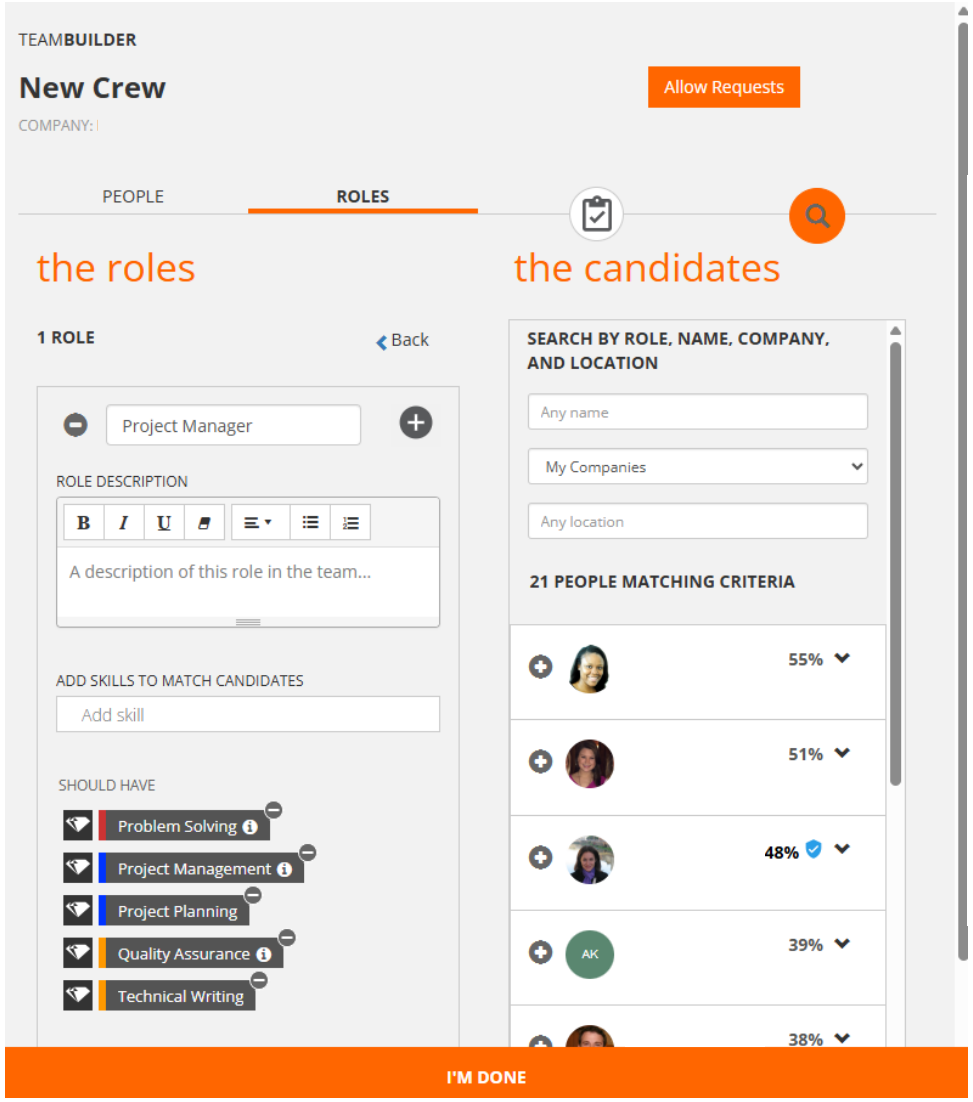
SKILL CLUSTERS & INFERENCES

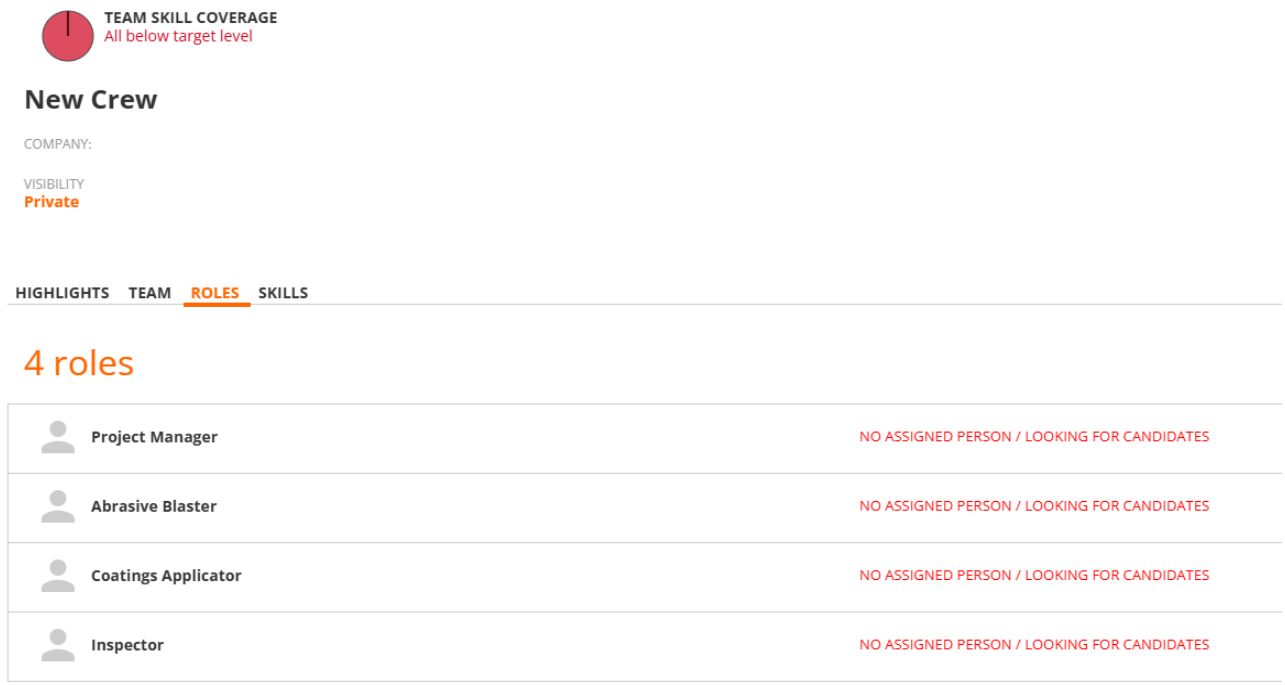


ORGANIZATIONAL/INDUSTRY VIEW



CREW BUILDER/FINDER





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 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
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Benefits: Provides real-time visualization of:

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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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