



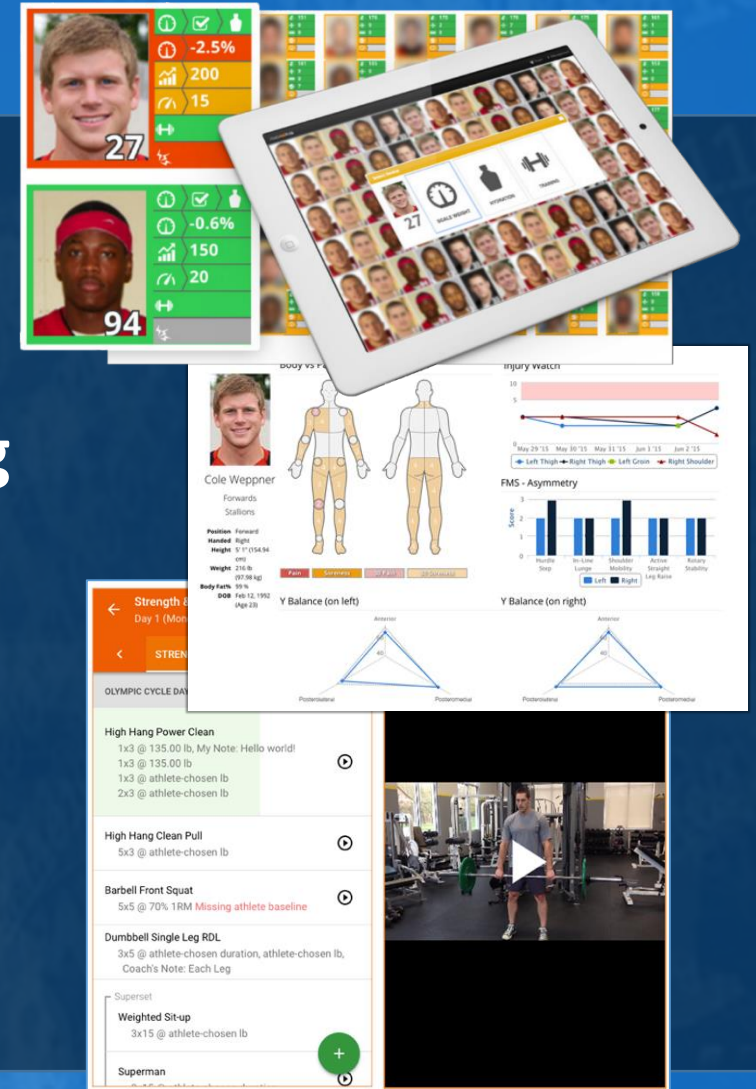
# Warrior Performance Platform for U.S. Navy

## Leveraging Best-of-Breed Human Performance Tracking and Analytics Technology to Enhance Navy's Physical Fitness, Wellness, and Nutrition Capabilities

2019 Human Systems Conference  
17 APRIL 2019

Kevin Dawidowicz – President /Founder  
CoachMePlus  
kevin@coachmeplus.com

Jake Repanshek – Director  
TIAG  
jrepanshek@tiag.net





# Cutting Edge Expertise



**TIAG brings a history of transformational leadership advancing military medical science and telehealth technology**

- Leads web application efforts at DoD’s National Center for Telehealth & Technology (T2)
- Delivers cutting-edge health IT solutions (e.g., VA’s open-source EHR)
- Developed the Army’s Research Management Enterprise System, providing autonomous big data management across numerous laboratories

**Delivering end-to-end individual training and readiness solutions for DoD, WP2 leverages TIAG’s demonstrated military experience and technical expertise**

- Quick, all-in-one-place information access empowers leaders to determine risk factors and take immediate action
- Warriors are operationally ready and less likely to sustain injuries that keep them out of the fight

## SAMPLE OF EXISTING CUSTOMERS

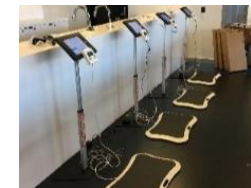
CIRQUE DU SOLEIL.



## INSTALLATION EXAMPLES



INDIANAPOLIS COLTS



UCLA BRUINS



BUFFALO BILLS

*“Just having the opportunity to talk to players based on what we saw today -- helped them.”*

**Brian Kelly**  
Head Coach  
Notre Dame Football

*“We are doing everything we can - to help prevent the injuries that can be preventable.”*

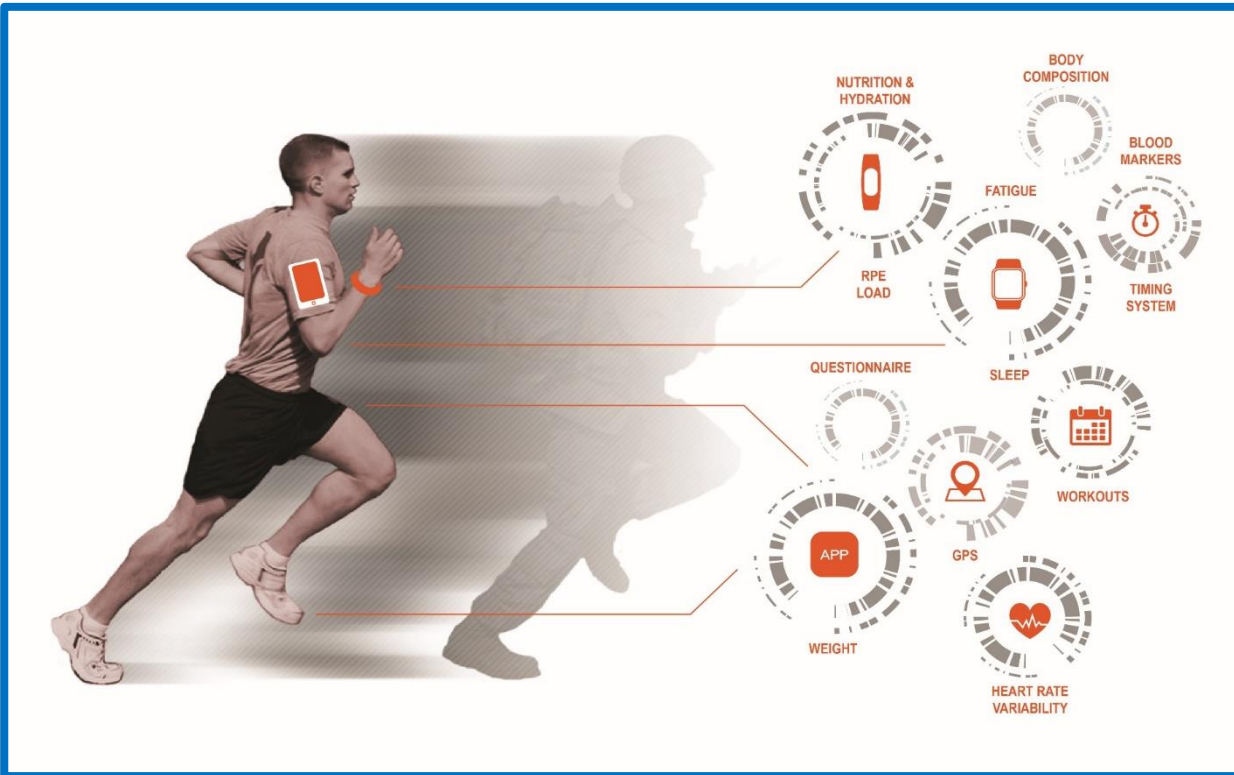
**Geoff Head**  
Sports Scientist  
San Francisco Giants

*“CoachMePlus is helping us ensure everyone is fully informed and prepared”*

**David Good**  
Strength Coach  
Nashville Predators



# Warrior Performance Platform



## Human performance tracking and analytics to enhance physical fitness, wellness, and nutrition capabilities.

WP2 monitors Warriors throughout the readiness cycle, informing key command decision makers to support mission and training adjustments. Provides the ability to uncover trends, develop insights, reduce risk, and customize training programs. Leaders measure human performance based on preparation, physical fitness, strength and capabilities.

## Centralized Collection of Human Performance Data

- Integrates data from virtually any available source
- Enables reporting and metrics at any level, from the individual to the enterprise
- Immediate and long-term data for “ready to perform” decisions
- Advanced analytic capabilities
- Secure, accreditation-ready platform

## Advancing Proactive Human Performance Management

- Centralization of data enables proactive decision making
- Automates manually intensive data collection and analysis
- Amplifies effectiveness of human performance initiatives
- Delivers information at the right time to the right person

## Speed of Information

- Rapidly discover and locate outliers
- Enable timely interventions
- Increase accountability
- Assesses key performance indicators of entire units and each individual Warrior’s capability to advance mission



# A Costly Problem



**10%**

of the total active  
Soldier force is **NON-  
DEPLOYABLE.**

**90%**

of Musculoskeletal  
Injuries (MKSI) are  
from **PHYSICAL  
TRAINING** or sports-  
related.

**80%**

of Musculoskeletal  
Injuries (MKSI) are  
considered **OVERUSE  
IN NATURE.**

**\$4B**

is spent each year  
**DUE TO INJURIES,**  
non-deployable  
Soldiers, accidents  
and other health-  
related costs.



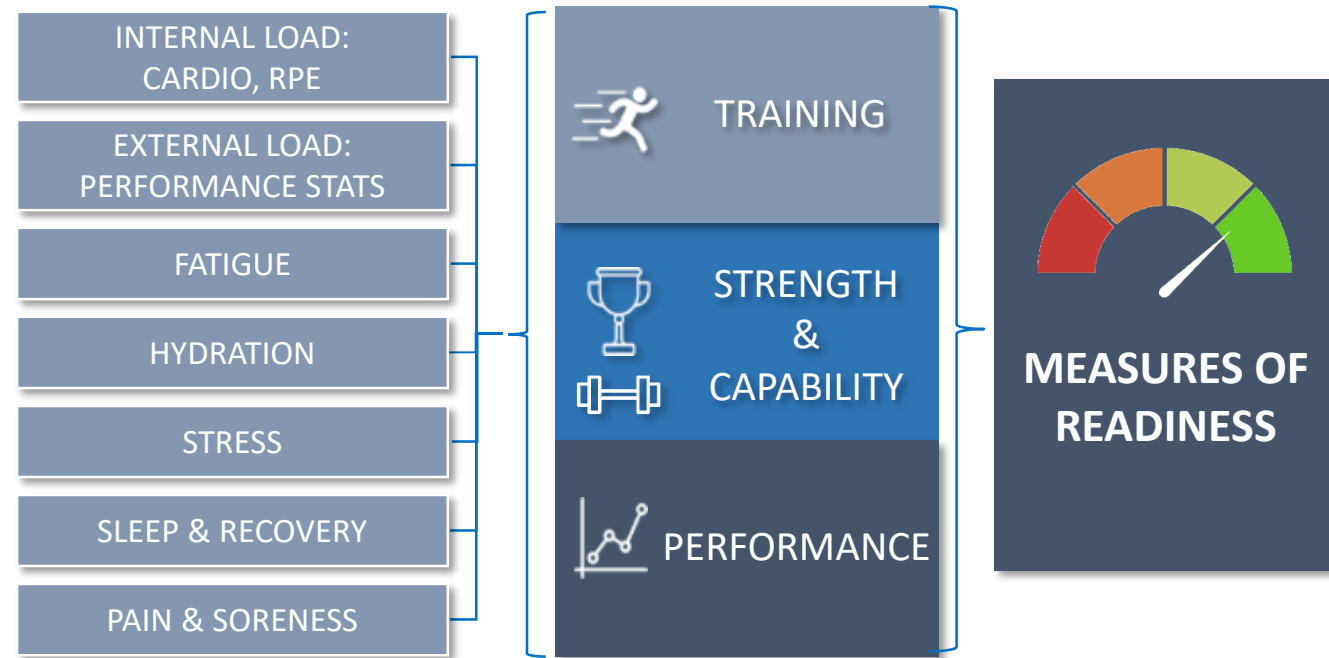
# WP2 Benefits



## BENEFITS DERIVED FROM MONITORING SOLDIERS

- **Enhance operational readiness** through improved fitness, wellness, and nutrition
- **Reduce stress-related injuries** through monitoring and timely intervention
- **Deploy training and fitness programs** targeted to specific populations
- **Employ “distance coaching”** and compliance monitoring
- **Centrally store and manage** human performance data
- **Automated reporting** at all levels, from the individual to the enterprise

## CONTRIBUTING FACTORS IN THE REDUCTION OF INJURY RISK



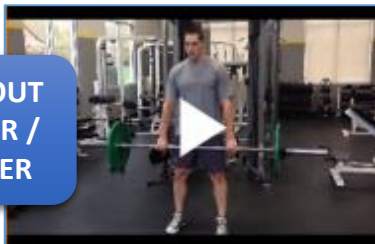


# Core WP2 Capabilities



## HOLISTIC HUMAN PERFORMANCE PROFILE

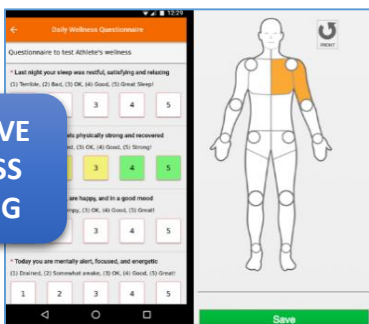
WORKOUT BUILDER / TRACKER



DASHBOARDS AND REPORTS

Name	Position	Height	Weight	Age	Hydration	Temp	Heart Rate	Maximal HR	Maximal HR	Maximal HR	Maximal HR	Maximal HR	Maximal HR	Maximal HR	Maximal HR	Maximal HR	Maximal HR
Maxwell, Alex	QB	181	8	23	6	38	140	190	190	190	190	190	190	190	190	190	190
Charles, Dan	QB	185	8	24	6	38	140	190	190	190	190	190	190	190	190	190	190
Clark, Dan	QB	185	8	24	6	38	140	190	190	190	190	190	190	190	190	190	190
Uhlen, James	QB	185	8	24	6	38	140	190	190	190	190	190	190	190	190	190	190
Locke, John	QB	184	8	23	6	38	140	190	190	190	190	190	190	190	190	190	190
Maxwell, Alex	QB	181	8	23	6	38	140	190	190	190	190	190	190	190	190	190	190
Maxwell, Alex	QB	181	8	23	6	38	140	190	190	190	190	190	190	190	190	190	190
Maxwell, Alex	QB	181	8	23	6	38	140	190	190	190	190	190	190	190	190	190	190
Maxwell, Alex	QB	181	8	23	6	38	140	190	190	190	190	190	190	190	190	190	190
Maxwell, Alex	QB	181	8	23	6	38	140	190	190	190	190	190	190	190	190	190	190

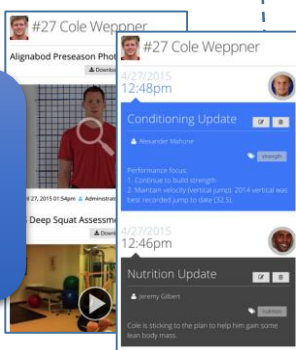
SUBJECTIVE WELLNESS TRACKING



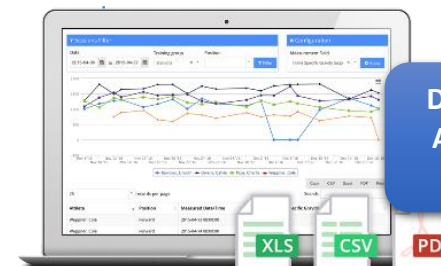
MOBILE AND TABLET ACCESS



PDFS, NOTES, VIDEOS, PHOTOS, DOCS



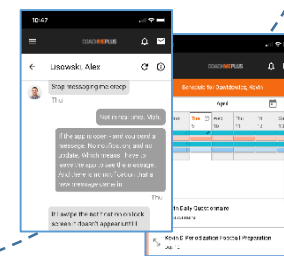
DATA IMPORT AND EXPORT API



WEARABLE DEVICE INTEGRATION



SCHEDULING, MESSAGING, NOTIFICATIONS



## APPLIED MONITORING

Not a One-Size-Fits-All Approach – How much should be tracked in a pilot deployment?



## POPULATION GROUPING

### GENERAL POPULATION

**GOAL: Behavior Change / Education**

- Hydration
- Workouts

### AT-RISK POPULATION

**GOAL: Remediation / Return to Duty**

- Sleep / Pain / Mood / Stress
- Fitbit / MyFitnessPal
- Workout Compliance / Body Comp
- Fatigue / Soreness

### SPECIALIZED POPULATION

**GOAL: Optimized Performance**

- Force Plate
- Range of Motion/Movement Screen
- Cardiac Load
- Velocity Based Training

## STAFFING REQUIREMENTS

### Limited Staff / High Automation

- Force multiplier
- Warrior self-selection of programming and content
- Warrior engagement through app notifications and automation

### Specialized Staff / High Customization

- Create efficiency with practitioners
- Explore multiple data and testing configurations
- Integrate with specialized hardware, software, military systems
- Leverage existing systems and expertise



# NAVY SBIR N171-079 PHASE II HUMAN PERFORMANCE SELF-SERVICE KIOSK & APPLICATION

**OBJECTIVE:** Develop a platform with interactive touch screen, such as a self-service Kiosk, that displays human performance information, serving as an education tool for the user of afloat and shore based galleys.

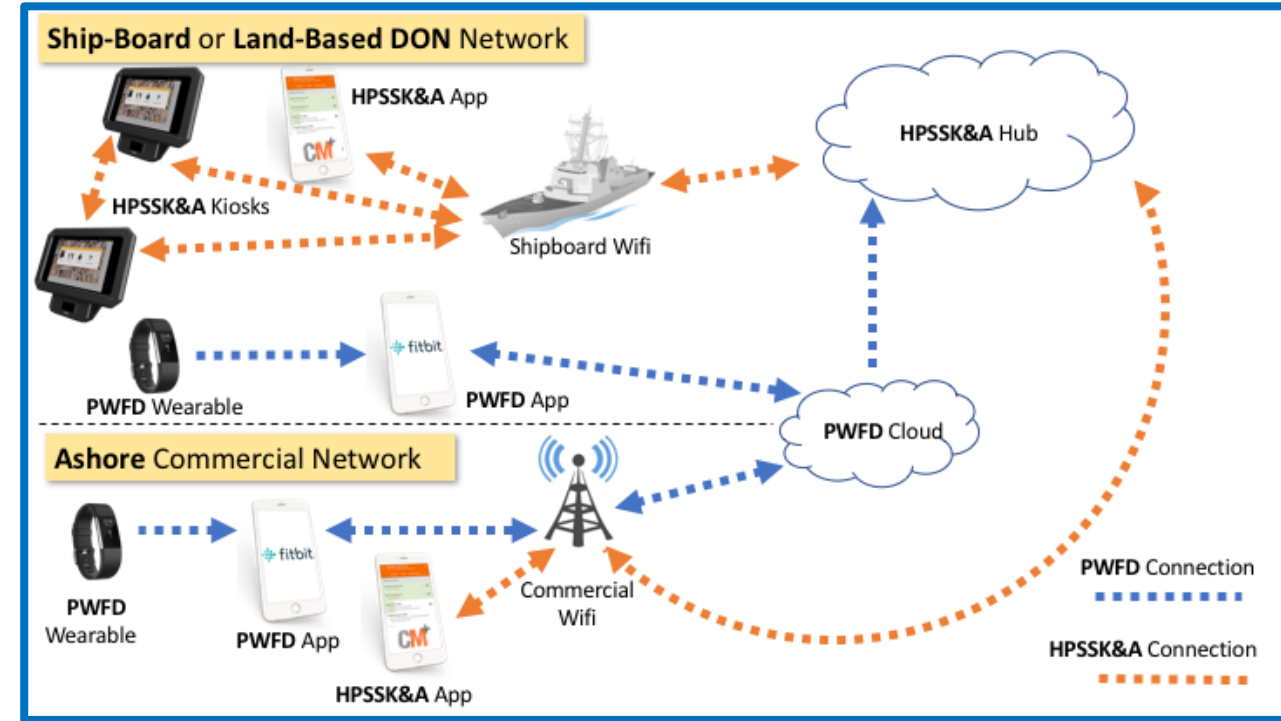
BASE: 16 AUG 2018 – 28 FEB 2020  
OPTION: 28 FEB 2020 - 27 NOV 2020

**NAVSUP**





- Prototype development is underway
- Builds upon core WP2 functionality, but adds:
  - Nutrition
  - Ruggedized touchscreen kiosk
  - Support for austere environments
  - Shipboard integration
  - Data source integrations (Naval Operational Fuel and Fitness System, MyPlate and Go for Green)
  - Full cybersecurity accreditation
- Supports app-based access from personal mobile devices, as well as data integration from select wearables
- Focus on automated, “self-service” capabilities to reduce need for manual intervention at scale
- Initial operational testing scheduled for FY20



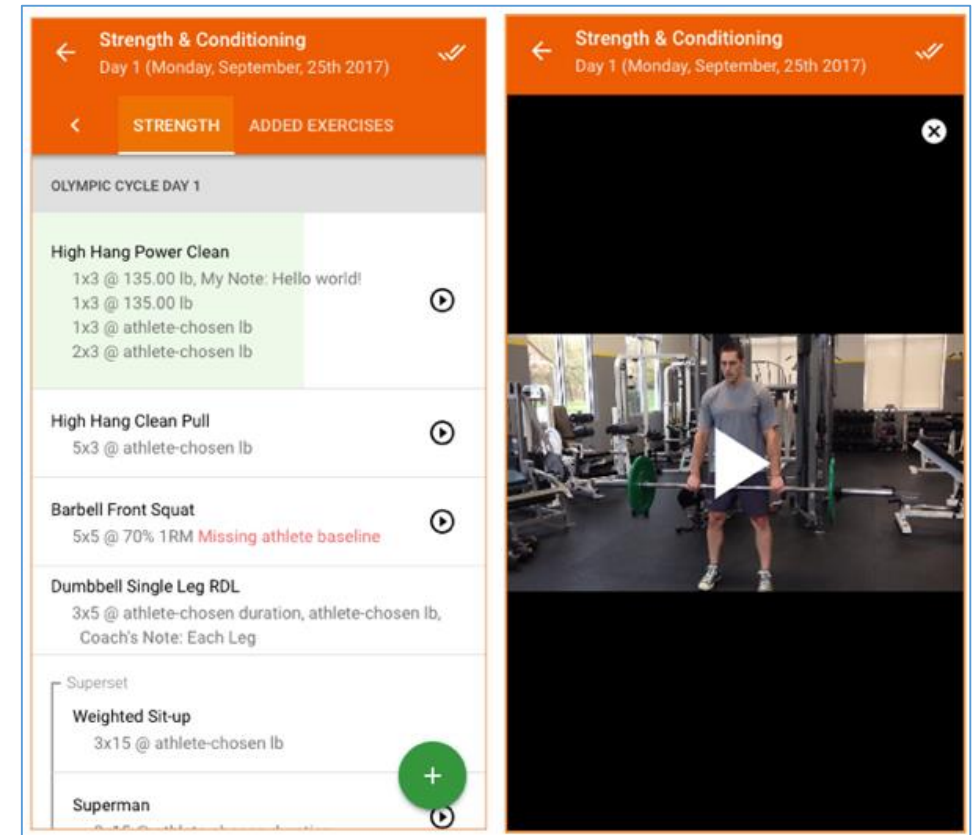


# SBIR PHII N171-079



## Task 3: Develop a Physical Training Module

- Programming can be configured and assigned for the individual based on Sailor's goals, environmental or physical limitations or restrictions.
- Sailors can select any exercise from the library and add activities to their day, including NOFFS programming.
- Review their completed exercises and review trends of the data over selected periods.
- Achieve the Sailor's fitness goals as well as determining the nutritional needs and proper recovery protocols to enhance readiness and performance.
- Monitoring the Sailor's physical activity will help the Sailor assess how the performance was achieved, as no two Sailors react the same to physical stress.



WP2 with Exercise with Video



# SBIR PHII N171-079

## Task 3: Develop a Wellness Module



- Provide the Sailor with an intuitive interface for capturing subjective information.
- Trend the Sailor against himself or herself before we look at the data as a population
- Main subjective data points
  - ✓ Sleep
  - ✓ Mood
  - ✓ Stress
  - ✓ Soreness / Pain
  - ✓ Fatigue
- Educate the Sailor on why we are tracking the data, including showing them data trends.
- Intervention occurs and is communicated during meaningful changes in the results.

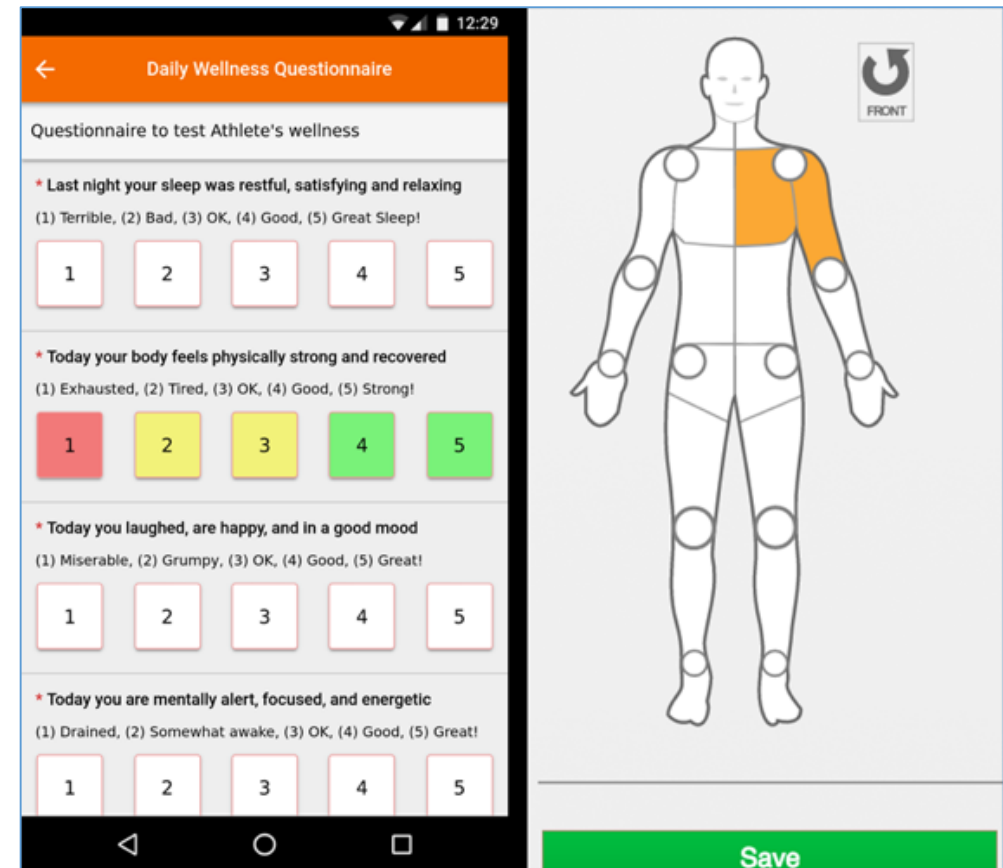


Figure 2.3: Wellness Demonstration

- Data Integration
  - Naval Operational Fuel & Fitness System (NOFFS)
  - Navy Go for Green (G4G)
  - Recipes from The Armed Forces Recipe Service (AFRS) and Joint Culinary Center of Excellence (JCCoE)
  - United States Department of Agriculture (USDA)
  - Caloric, Micronutrient, Macronutrient and other key indicators from databases
- Providing educational content through the 3D Human Anatomy and the Library will engage the Sailor and encourage compliance through compelling animations, videos, documents and interfaces which keeps the Sailor tracking in the right direction towards their fitness goals.

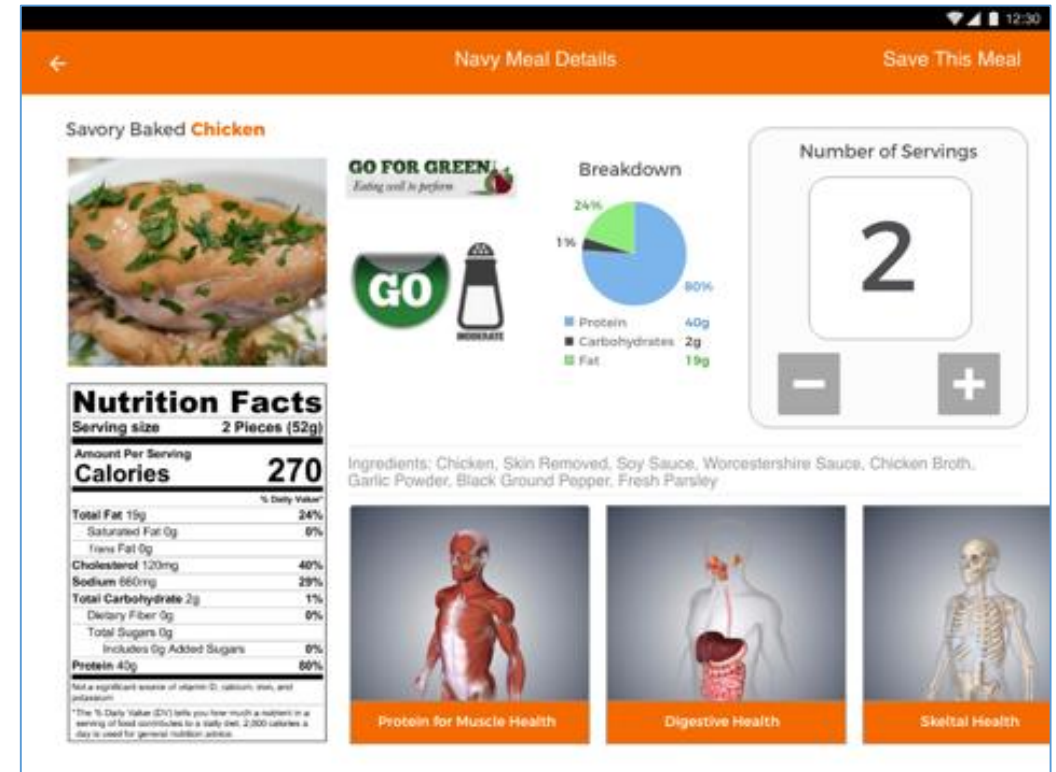
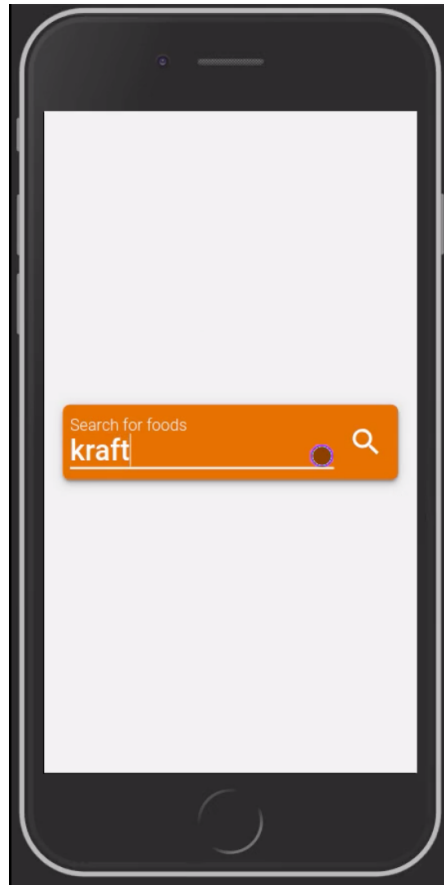


Figure 4.8: Meal Detail sample

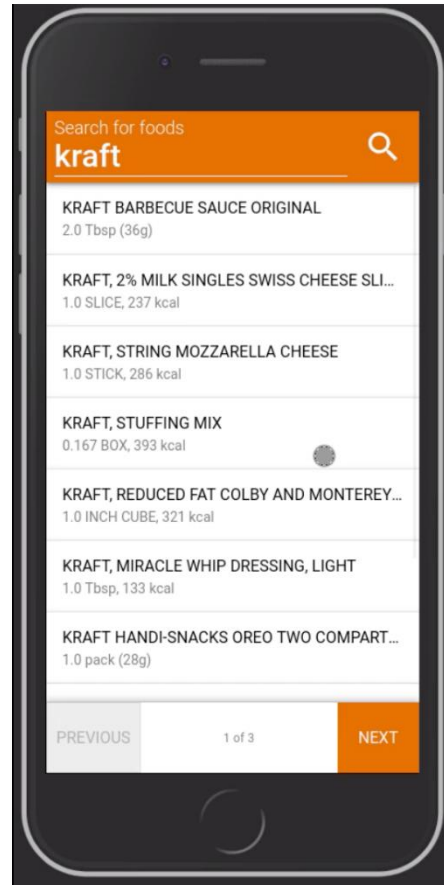


# USDA Data integrated with Search and Selection Functionality

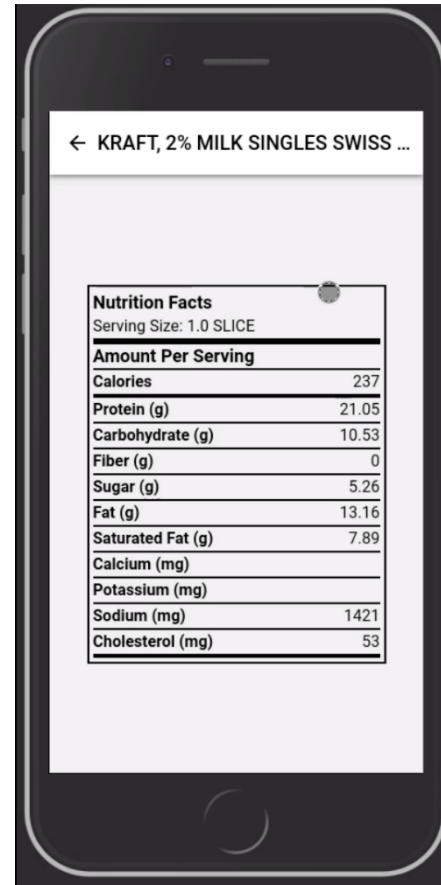
Next steps = Go For Green, NOFFs Data



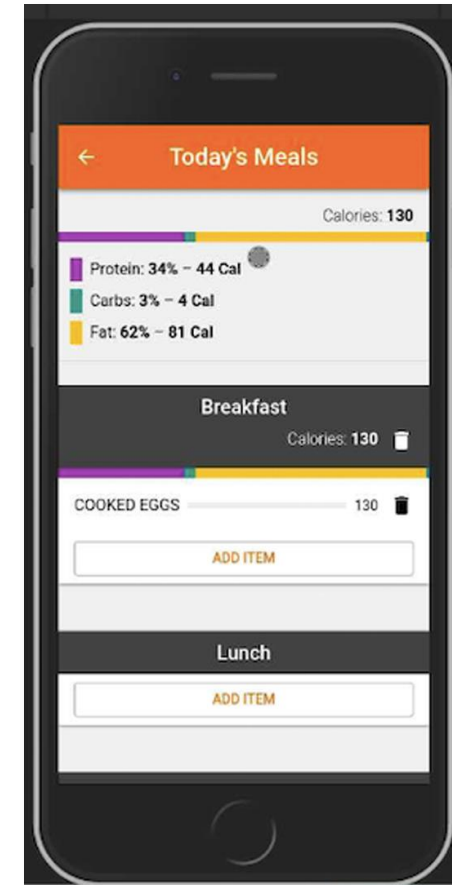
Search



Results



Select and Review



Daily Review

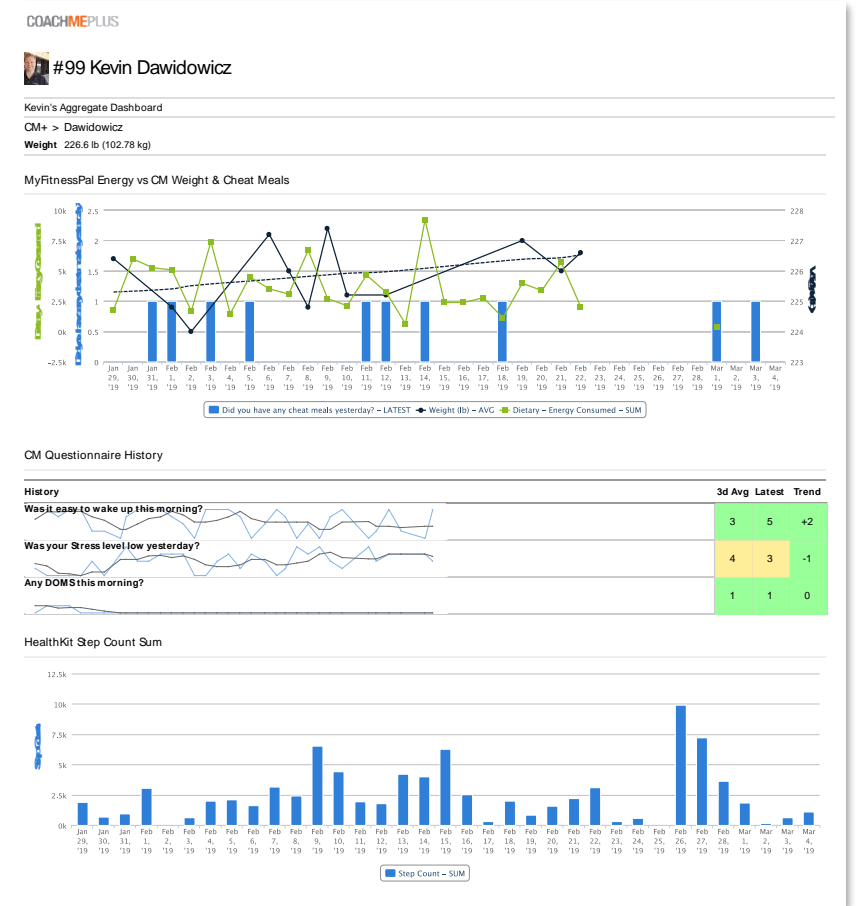
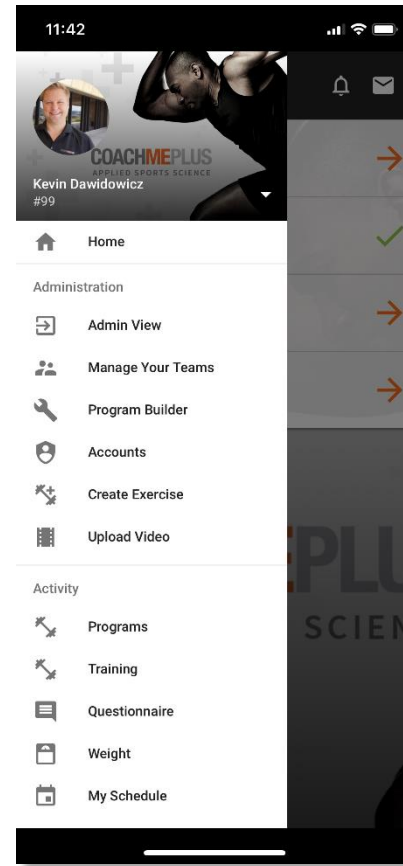
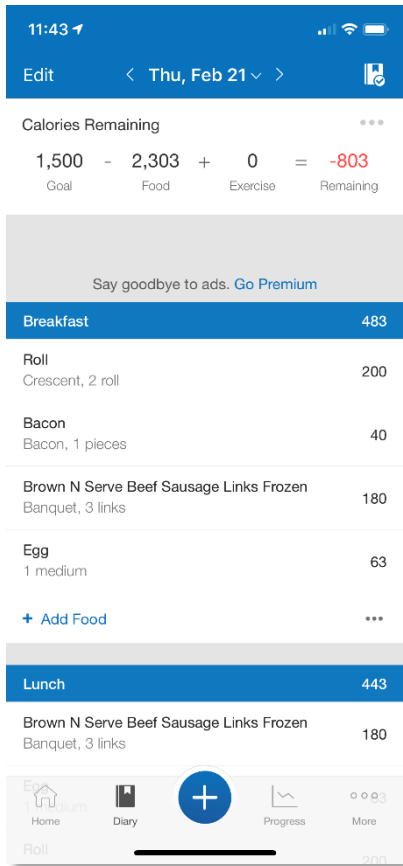


# SBIR PHII N171-079

## Functional Integration Demonstration (1<sup>st</sup> Iteration – 01 JAN 2019)



[Backup Slide]



Real-time data integration into single REDI Profile for Sailor.





# SBIR PHII N171-079

## Task 6: Wearable Device Integration



- Select the most effective method for delivering individual performance, activity, wellness, fatigue, sleep, and other data into the Sailor's REDI profile.
- Integrate the live data web-enabled backend technologies with the selected wearable devices, either through API or other method.
- Manage unsynchronized PWFD data in a shipboard environment.
- Implement latest Pentagon guidance on GPS-enabled devices

Deliverable	Description
<b>Wearable Device Integration</b>	
<b>Task 6 (Base)</b>	
6.1	PWFD Selection Process for Software Prototype
6.2	PWFD Data Integration Software Development
6.3	PWFD Data Integration Synchronization Development
6.4	PWFD Demonstration of Data Integration Prototype
6.5	PWFD Develop Interfaces and Workflows
6.6	PWFD Demonstration of Interfaces and Workflows
<b>Task 14 (Option)</b>	
14.1	PWFD Live Environment Hardening and Prototype Iterations
14.2	PWFD Demonstration of Live Integration, Interfaces and Workflows





# SBIR PHII N171-079



## Task 7: Physical Kiosk Hardware Development

- Internet capability for operating in a rugged and often less than favorable shipboard environment.
- Available memory to support 10,000 Sailors' data
- Design the kiosk to work with mobile devices, including smartphones and tablets
- We present a Demonstration of Live Environment Prototype in a secure live data environment

Deliverable	Description
<b>Physical Kiosk Development</b>	
<b>Task 7 (Base)</b>	
7.1	Physical Kiosk Concept Selection
7.2	Physical Kiosk Prototype Development
7.3	Physical Kiosk Prototype Testing / Modification
7.4	Demonstration of Initial Physical Kiosk Prototype
<b>Task 15 (Option)</b>	
15.1	Live Environment Hardening and Prototype Iterations
15.2	Demonstration of Live Environment Prototype







# SBIR PHII N171-079

## Challenges and Ways Forward



[Backup Slide]

### Challenges

- Cybersecurity Considerations
  - Cloud hosting/SaaS model
  - Personally Identifiable Information
  - Protected Health Information
  - Reciprocity between organizations
- Synchronization in Austere Environments
  - Shipboard
  - Theater
- Authentication alternatives
- Adoption/Buy-In

### Future State

- Advanced Analytics / Machine Learning
  - Predictive vs. Reactive
- Mental/Behavior Health Applications
  - Post-traumatic Stress Disorder (PTSD) Event Detection
  - Traumatic Brain Injury Assessments
- External Integrations with Systems of Record
  - MHS GENESIS? DMDC?
- Cross-service compatibility



# QUESTIONS

