



# Collaboration and Knowledge Interoperability (CKI) Program

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INGRoup Meeting

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# ONR Code 34

## ONR Warfighter Performance Dept.

- Code 341: Human and Bioengineered Systems Division
- Code 342: Warfighter Protection and Applications Division
- Code 343: Research Protections Division

### Code 34

#### Warfighter Performance Department

Human robotics propel naval services

This department enhances warfighter effectiveness and efficiency through bioengineered and biorobotic systems, medical technologies, improved manpower, personnel, training and system design.

#### Science and Technology Programs

- [Applied Instructional Research](#)
- [Biorobotics](#)
- [Human-Robot Interaction](#)
- [Marine Biofouling](#)
- [Multi-Echelon Command Decision Making](#)
- [Neural Computation](#)
- [Capable Manpower Future Capability](#)
- [Casualty Care and Management](#)
- [Human-Systems Integration](#)
- [Undersea Medicine](#)

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#### Warfighter Performance Vision

- Enhance individual and team decision-making and combat effectiveness by supplying the right information to the right people with the right skills at the right time in the right jobs
- Realize human-system efficiencies to enhance performance and reduce costs
- Create and deliver technologies inspired by biological systems
- Ensure the health and viability of our Warfighters afloat and ashore

#### Science & Technology Focus Areas

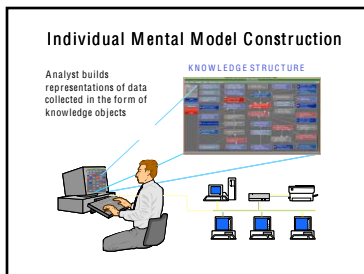
This department supports the [Naval Science & Technology Strategic Plan](#) in the following focus areas:

- [Warfighter Performance and Protection](#)
- [Fleet / Force Sustainment](#)
- [Information, Analysis, Communication](#)
- [Maritime Domain Awareness](#)
- [Power and Energy](#)

The mission of the Human and Bioengineered Systems Division is to direct, plan, foster, and encourage Science and Technology in **cognitive science, computational neuroscience, bioscience and biomimetic technology, physiology and biophysics, immunology, social/organizational science, training, human factors, and decision making** as related to Naval needs.

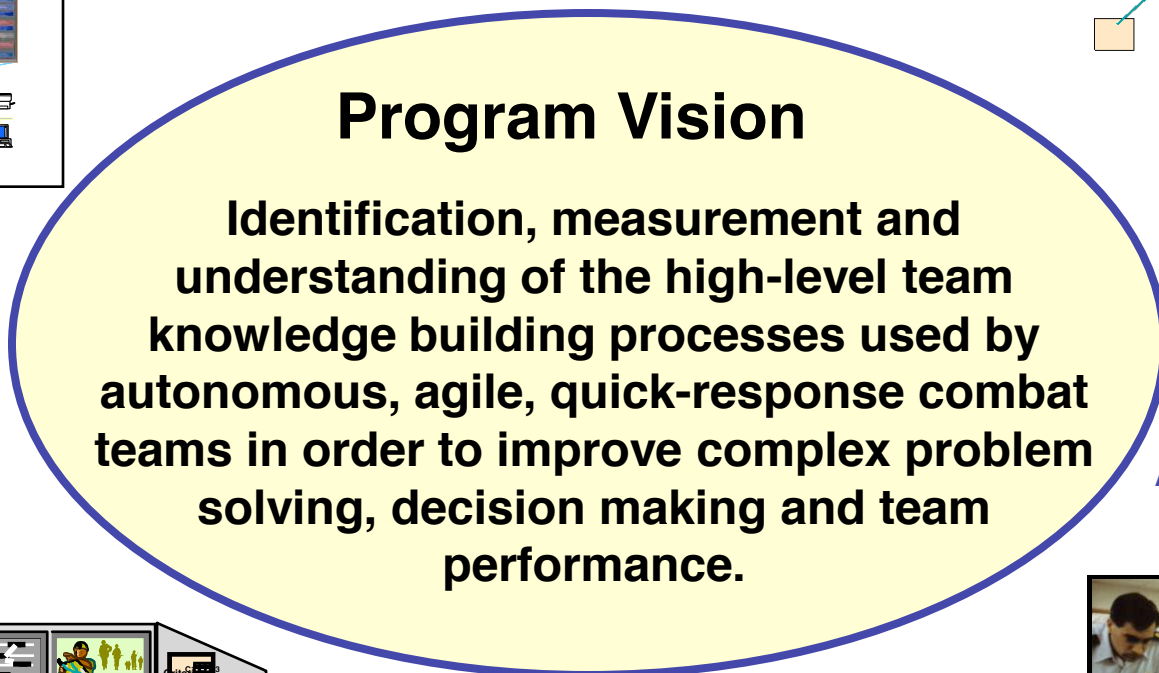
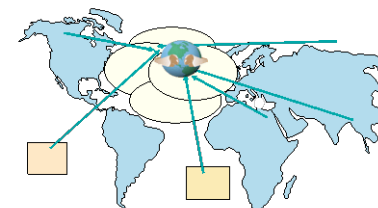
# Collaboration and Knowledge Interoperability (CKI) Program Vision

## Individual Knowledge Building



## Developing Knowledge Interoperability

*Work by teams whose members are separated by space and time.*



## Attaining Shared Understanding



## Team Consensus Development



# **Collaboration and Knowledge Interoperability (CKI)**

## **Objective and Focus**

**Develop cognitive science-based tools, models, computational methods, and human-agent interfaces to enhance collaboration, problem solving and decision making in Transformational Teams.**

## **Transformational Teams Characteristics**

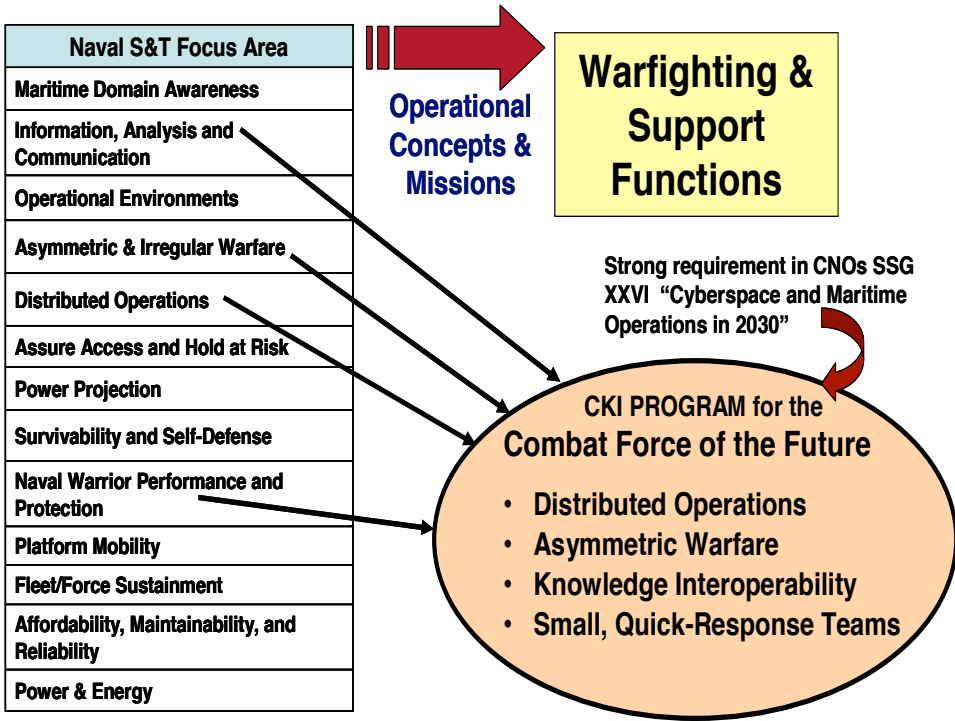
- **Unstructured, agile teams**
- **Distributed and asynchronous relationships**
- **Heterogeneous members (multidisciplinary, multicultural)**
- **Short duration, high stress problems**
- **Uncertainty in source information**
- **High volume, dynamic information**
- **Rotating team members**

# CKI Transition Targets and Domains of Interest

- Irregular and Asymmetric Warfare
- Distributed Ops
- HSI issues - decision-making teams

## Operational Examples

- Maritime interdiction operations
- Quick response intelligence analysis
- Navy SEALs operations
- Humanitarian aid / Disaster relief
- Strategic theatre-level PLANNING (MPAT)
- Special Operations (non-combatant evacuation operations)



# CKI PROGRAM STRUCTURE

