



# *Department Overview Brief*

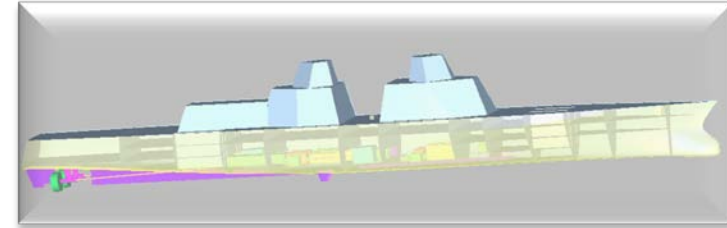
Statement A



**Steve Ouimette,**  
*(Acting) Department Head*

## Mission:

- *Provide full-spectrum Naval Architect and Engineering expertise and tools to design, engineer, and integrate surface, combatant craft, and undersea vessels as total systems*
- *Enable sub-system improvements by assessing their effectiveness and affordability at the system level and from a total life cycle perspective*
- *To conduct hydromechanics research, development, testing, and evaluation for the U.S. Navy, government agencies and marine and related industries*



**What we do:**

***Perform research, engineering and naval architecture on surface and submarine vessels, combatant craft, and unmanned systems in the areas of hull forms; propulsion; platform dynamics; hydrodynamics; and conceptual, preliminary, & contract design including analysis of alternatives, specifications, technology assessment, and general arrangements***

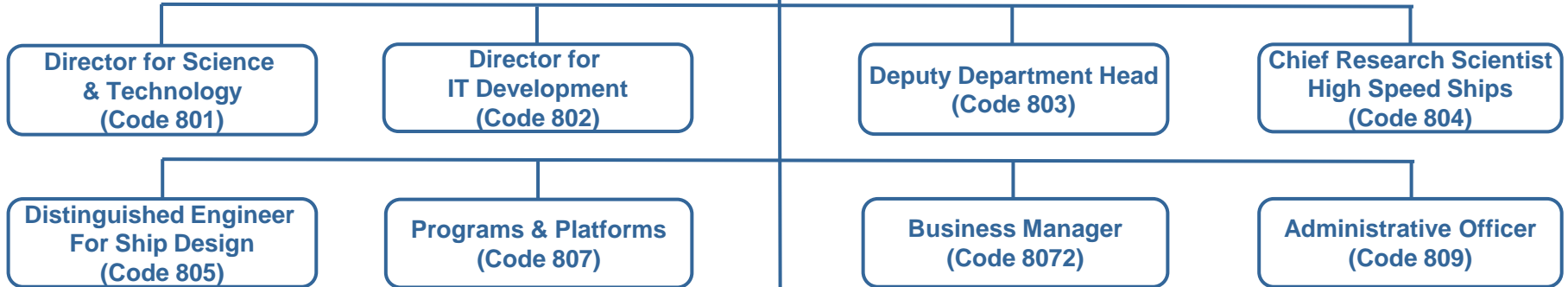
**What we Provide:**

- A variety of computational tools and model / full scale testing to develop and evaluate ship, submarine, and propulsor concepts and designs***
- Direct support to the Fleet by conducting full-scale trials and solving operational problems in the areas of hydromechanics***
- Cradle to grave total engineering and lifecycle support for small boats and craft***
- Naval architecture and engineering services to acquisition programs***

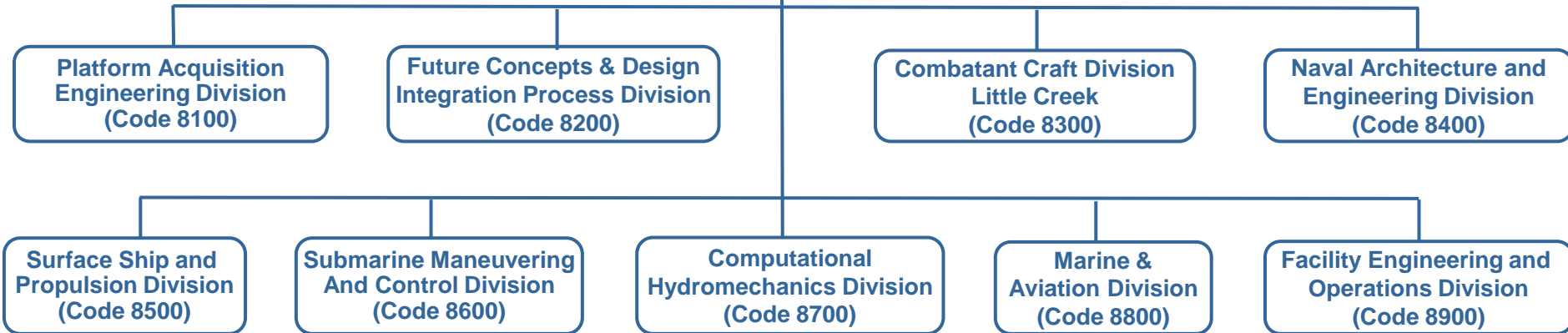


**Naval Architecture and Engineering  
Department Head (Code 80)**

**Support Staff**



**Technical Divisions**





- **Ship, Submarine & Aircraft Carrier design management support**
- **Program life cycle cost estimates (PLCCE), and cost/benefit analyses for the total ship, ship systems, craft and boats**
- **Ship and ship systems technology needs, documents, and technology readiness level assessment (TRLA)**
- **Early stage ship design tools and processes (ASSET, LEAPS, etc.)**
- **Ship, submarine and advanced naval capability concepts & technologies**
- **Product data acquisition, integration methods & technologies**
- **Full spectrum, full life cycle support of all boats and crafts**
- **Ship general arrangement products (drawings, product model configurations, etc.)**
- **Systems engineering & weights and stability analyses for ship systems and equipment**
- **Platform & Mission System RMA**



- **Submarine Maneuvering and Control Systems Design and In-Service Engineering from Fly-by-wire**
- **Hull Resistance (Surface/Sub) Evaluation and Design Support**
- **Seakeeping Performance Prediction and Assessment**
- **Propulsor Design (Surface/Sub)**
- **Wave Loads (Surface/Sub)**
- **Computation Fluid Dynamics Predictions and Development**
- **Full Scale Trials**
- **Towed arrays and towed vehicle design and evaluation**
- **Ship/Aircraft interface design**





# ***Combatant Craft Division***

## **Full Spectrum**

- Naval Architecture
- Design & Engineering
- Survivability
- Transportability
- Human Systems Integration
- Test & Evaluation
- Logistics
- Life Cycle Management
- Industrial Support

## **Full Life Cycle**

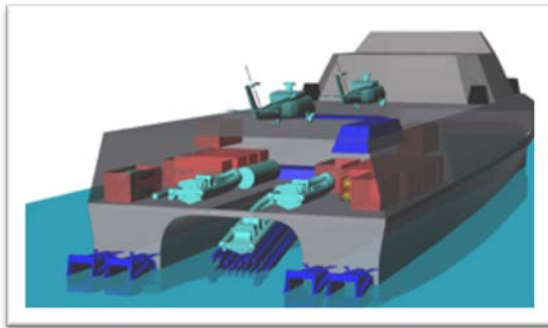
- Craft Research & Development
- Craft Acquisition
- Craft Sustainment

# **Total Systems Engineering**

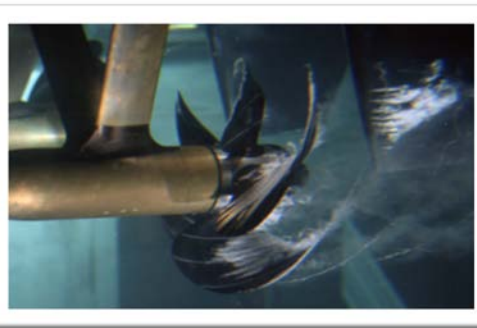
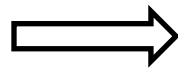


## Naval Architecture of Ships, Submarines, Boats, Craft, and other Naval Systems

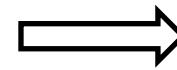
Early concept/design development and trade-off studies through cost analysis, detailed hydrodynamic and propulsor design, maneuvering and ship control, model testing, internal arrangements, ship systems integration, full-scale trials and operational support



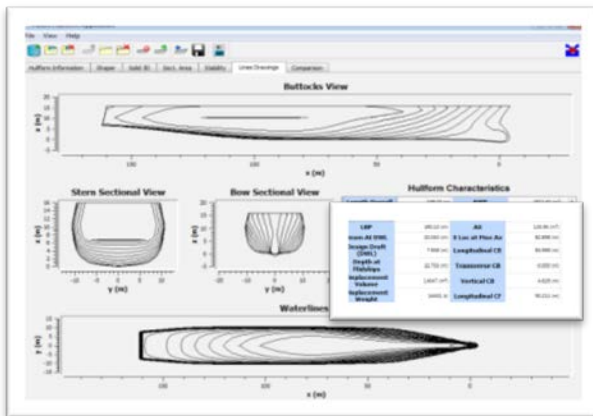
Concept development  
and early stage design



Small scale test and  
evaluation

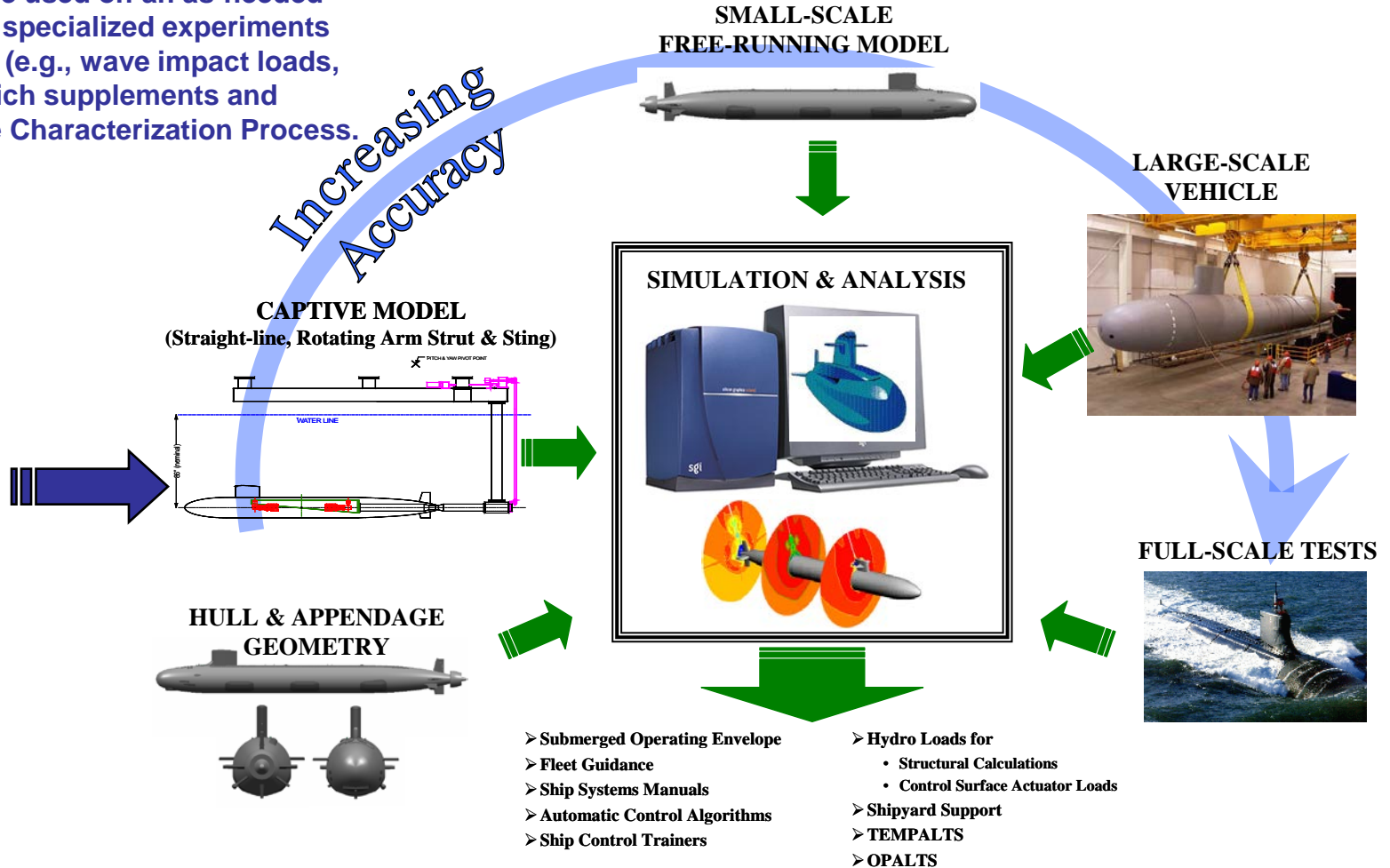


Full scale tests,  
evaluation and trials






Other facilities are used on an as-needed basis to conduct specialized experiments that provide data (e.g., wave impact loads, torques, etc.) which supplements and complements the Characterization Process.



## Many Large & Small Business Partners

- 
- **AMSEC**
  - **AECOM**
  - **WARTSILA**
  - **ABBOTT ON CALL \***
  - **CSRA**
  - **DRAPER**
  - **VENCORE**
  - **CDI MARINE**
  - **SEAWARD SERVICES**
  - **PROFESSIONAL SOFTWARE ENGINEERING \***
  - **QUADELTA \***
  - **GIBBS & COX**
  - **FRICTION STIR LINK \***

\* Denotes Small Business

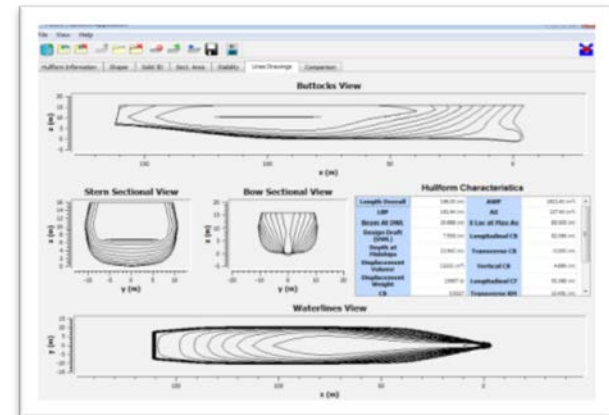
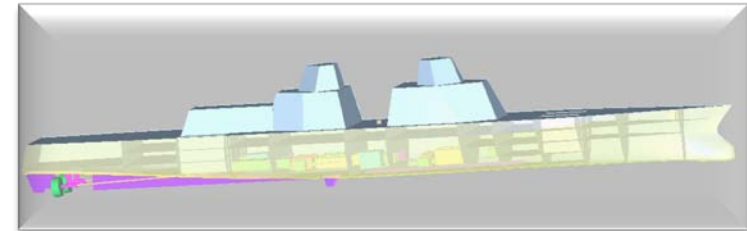
**Plus Many More.... We Value Industry Help**

## Projected Areas for Future Growth



We Need Your Ideas and Creativity  
to Solve Our Technical Challenges !





# Combatant Craft Operating Worldwide



Highlighted Future Growth Area: All Phases of Life Cycle Support for Combatant Craft; R&D, Design, and In Service Engineering. Exciting New Technology Challenges for Fully Unmanned, Autonomous Craft

## Many More Projected Future Growth Areas...

- 
- Unmanned Systems – Air, Surface, and Underwater
  - Computation Fluid Dynamics Predictions and Development
  - Ship Cost Estimating and Analysis
  - Full Scale Trials, Maneuvering, Stability, Control, Motions, Stability and Seakeeping
  - Propulsor Design (Surface/Sub), Model Fabrication, Welding
  - Systems Acquisition Planning, Platform Support, Program Management
  - Life Cycle Design, Engineering, Maintenance, Testing
  - Ship/Aircraft Interface Design, Towed Vehicle Design
  - Shipboard Energy Efficiency Improvement – Full Spectrum of Support



## Dept 80 - Naval Architecture & Engineering

### ★ Projected Service and Materials Contracts (FY17 – FY18)

| Brief Description   | Est. Value | Anticipated Announcement Date (QTR / FY) |
|---|------------|--|
| Barge Maintenance & Support in Hawaii                       | <\$10M     |  |
| Flexible Infrastructure                                     | <\$1M      |  |
| Advanced Electronics for Combatant Craft                    | \$10-\$30M |  |
| Ocean Waves Research  | \$5-\$20M  | 4th QTR FY17                             |
| Engineering Services for Propulsor Design and Manufacturing | \$10-\$30M | 4th QTR FY17                             |
| Intelligent Systems for Combatant Craft                     | \$10-\$30M | 4th QTR FY17                             |
| Environmental Ship Motion Forecasting (ESMF)                | \$10-\$30M | 4th QTR FY17                             |
| Combatant Craft Maintenance/ R&D, Norfolk, VA               | \$50-\$70M | 4th QTR FY17                             |
| Administrative Support at Little Creek, VA                  | \$20-\$40M | 1st QTR FY18                             |
| Engineering Services for West Bethesda                      | \$20-\$40M | 1st QTR FY18                             |

## Dept 80 - Naval Architecture & Engineering

### ★ Projected Service and Materials Contracts (FY17 – FY18)

| Brief Description                                  | Est. Value  | Anticipated Announcement Date (QTR / FY) |
|--|-------------|--|
| Model Design and Fabrication for West Bethesda     | \$20-\$40M  | 1st QTR FY18                             |
| Ship Cost Estimating                               | \$10-\$30M  | 1st QTR FY18                             |
| Engineering Services for Combatant Craft           | \$50-\$100M | Adv Notice Released                      |
| Boat Inventory Management/ ILS for Combatant Craft | \$10-\$30M  | Adv Notice Released                      |
| Alteration Installation Team (AIT) Services        | \$10-\$30M  | Adv Notice Released                      |