



**Expeditionary and Irregular Warfare: The High Water Speed Challenge**

**Focus Area Forum**

# **Amphibious High Water Speed Science and Technology Strategy**

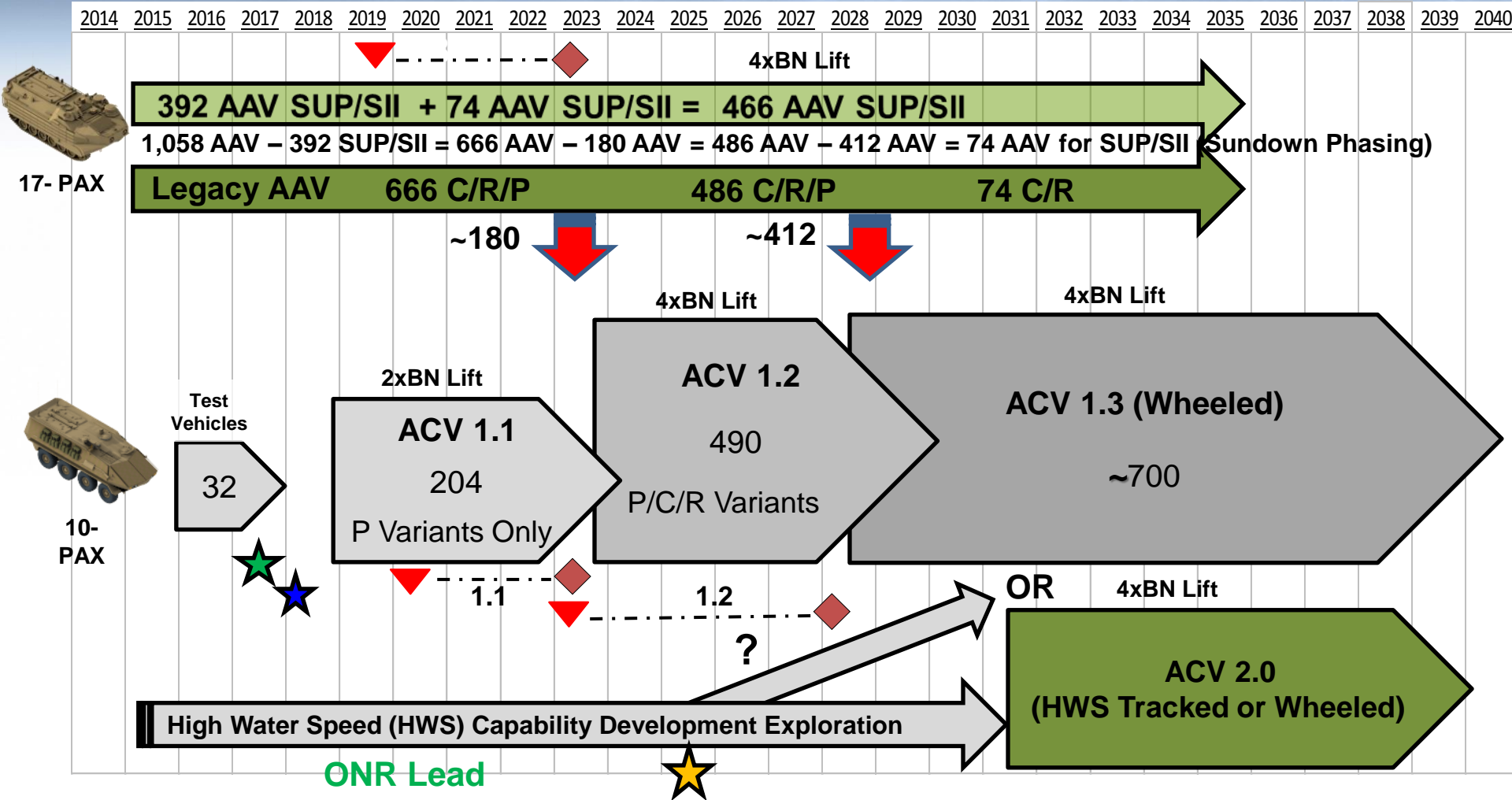
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# USMC Amphibious Combat Vehicle (ACV) Ground Combat Tactical Vehicle Strategy



▼ = Planned Initial Operating Capability

◆ = Planned Full Operating Capability

↓ = Divestiture

★ = 1.2 CDD Development JROC Staffing

★ = Assess ACV 1.1 Water Mobility

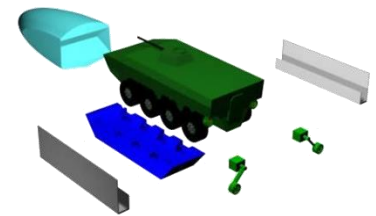
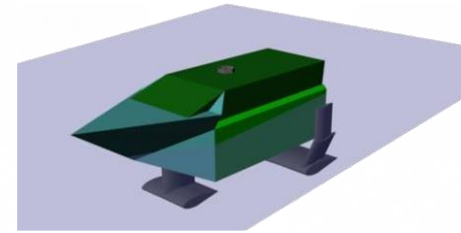
★ = HWS Decision

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# Amphibious High Water Speed S&T Approach

- ONR will lead the HWS Capability Development Exploration phase
- The focus is on a “self-deployed high water speed amphibious vehicle” to enable seamless ship to objective maneuver
  - Explore new and novel “high water speed” technologies and concepts
    - Is a lower cost, more reliable and survivable HWS self-deployable vehicle possible?
    - Our aperture is wide open
  - Other considerations to inform ACV high water speed decisions:
    - Enhance Low Speed Platforms
      - Can we make the ACV 1.X a “higher” water speed vehicle?
    - Research Add-on, Jettisonable Technologies

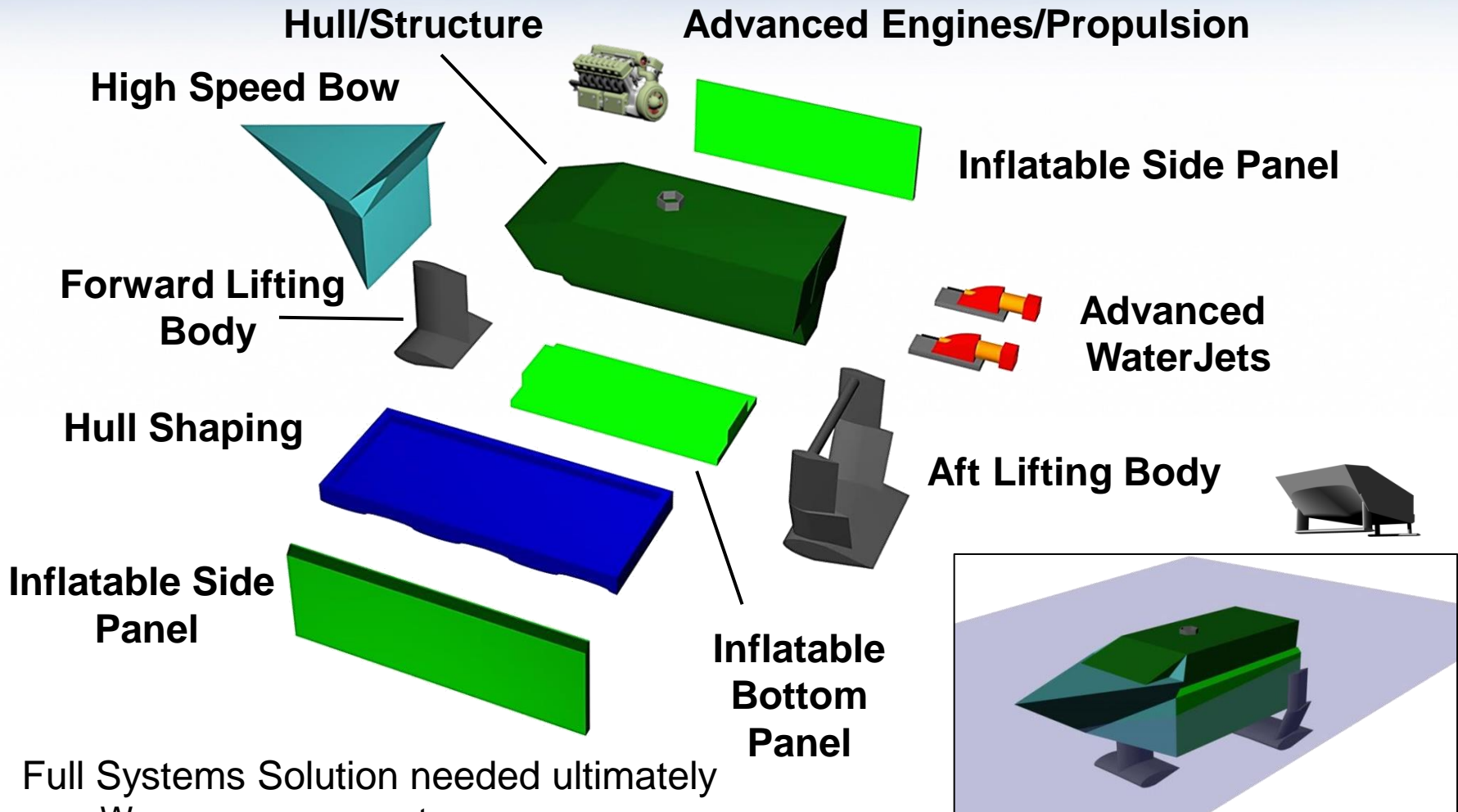




# “High Water Speed” Technology Development\*

Clean sheet of paper. Notional technologies shown:

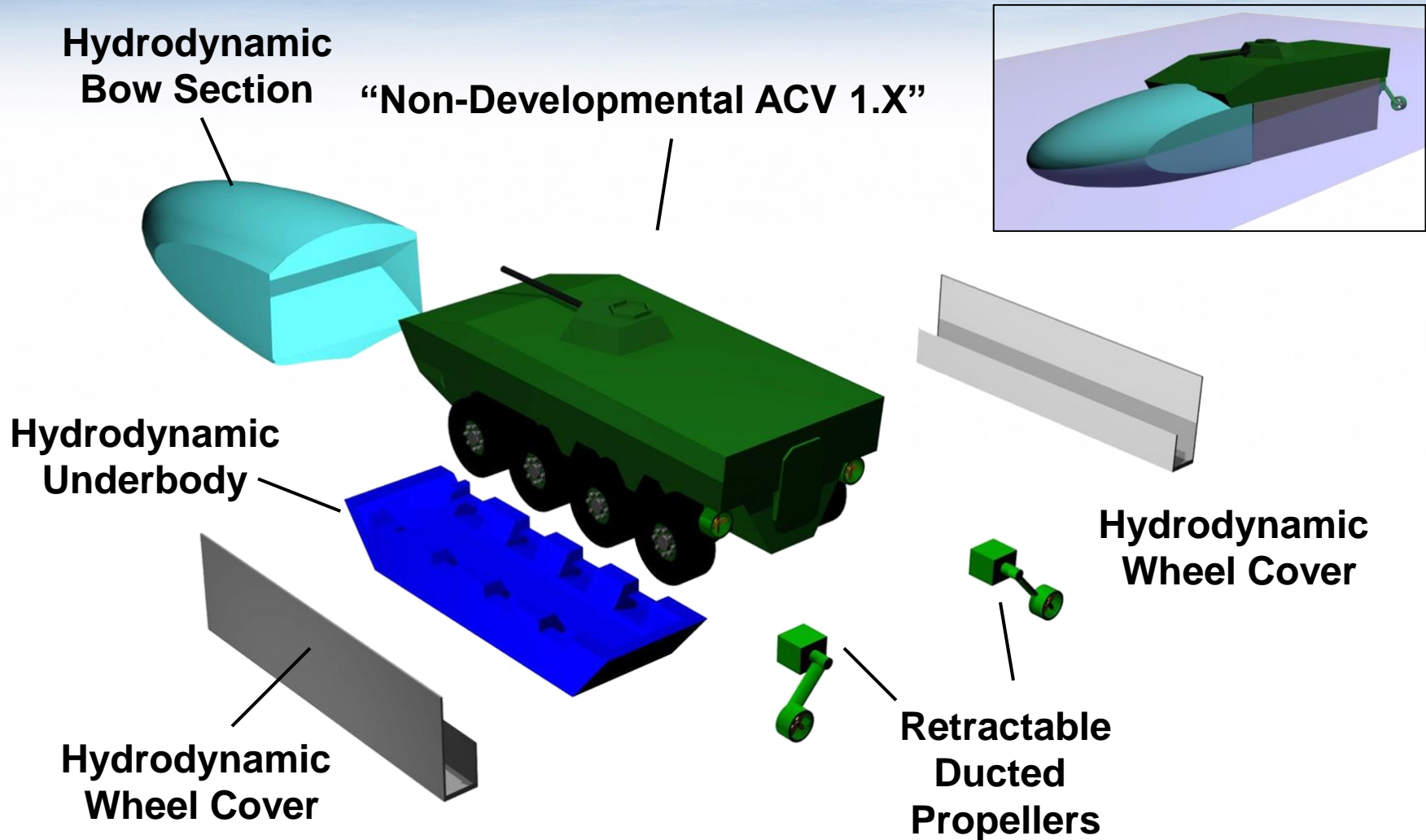
\* Focus of Effort



- Full Systems Solution needed ultimately
  - Weapons, comms, etc

# Other Considerations: “Higher” Water Speed in Support of ACV 1.X

Sampling of technologies to be considered:



## Other Considerations: Add-on, Jettisonable Technologies, etc

- Strap-on / Jettisonable Systems
  - Vehicle attachments for hydro and/or propulsion enhancements
  - Needs to be low cost and minimize shipboard space
  - Reusable?
  - Disposable?
  - Bio-degradable?



- Other ideas?





# S&T Strategy

**New and novel  
HWS Concepts /  
Technologies \***

**Enhance Low  
Speed Platforms**

**Add-on  
Jettisonable  
Technologies**

**Phase 0  
(2015)**

Understand the operational environment, establish the design parameters and trade space, and develop S&T strategy

**Phase I  
(FY16-17)**


Conduct S&T research, technology trade studies, and M&S

**Phase II  
(FY17-19)**

Identify most promising technologies to mature further

**Phase III  
(FY20-23)**

Design, fabricate and demonstrate full scale capability

 = Decision Points

**Output: Provide data, analysis, and results of  
demonstrations to the Marine Corps**

\* Focus of Effort



# Phase 0 Progress

- Reviewing EFV requirements documents and lessons learned
- Continue Marine Corps functional project office efforts
- Established Gov't Integrated Product Teams (IPTs)
  - General Officer/SES, Management, Technical SMEs
  - Ensure Stakeholder Engagement (Requirements, Acquisition, Fleet Forces, S&T)
- Conducting Global Outreach
- Hold a Technology Forum with Industry and Academia
- Continue to build an S&T Strategy
  - This forum is one of many inputs into our strategy development





# How you can help

- We want the nation's best and brightest devoted to this tough problem
- We ask universities, industry, and government labs to focus on basic and applied research that can lead to technological breakthroughs
- Desire new, radical approaches and concepts
  - Think outside the box
- Look for partnerships/collaborative opportunities between academia, industry, and government
  - Collectively, let's crack this nut!



# Plan for the Remainder of the Day

- Visit Poster displays at lunch
- After lunch (1300 start), discuss “High Water Speed S&T Opportunities”
  - Panel members will deep dive into specific areas aligned with our Technical IPTs:
    - Hull Form and Propulsor Hydrodynamics
    - Powertrain/Power Generation/Fuel Efficiency/Autonomy
    - Survivability/Materials/Structures
    - Human Factors/Habitability
  - Each session will describe the operational environment, lessons learned, state of the art, and technical challenges
- Path Forward and Wrap Up