NAVSEA 21st Century Education, Engagement and Technology Initiative Concept Study : American Heritage Defense Alliance (21-CEETI/AHDA) Pilot Program

Story Line (work in progress)

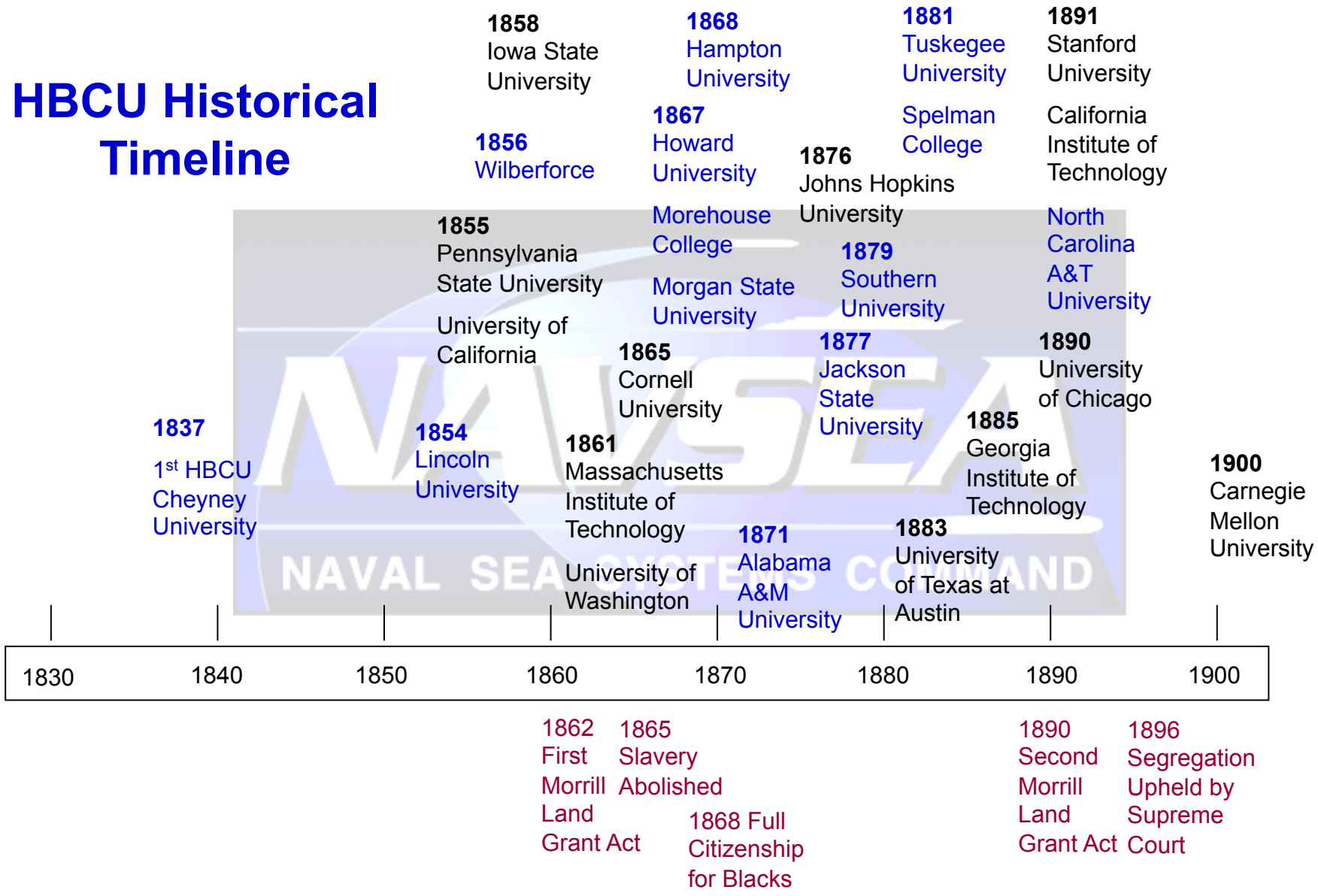
Sponsored by:

Mr. John James - NAVSEA 04 Deputy
Mr. Vic Gavin - PEO LMW Executive Director
(who are developing concepts for improving HBCU/MI standing within Navy programs)

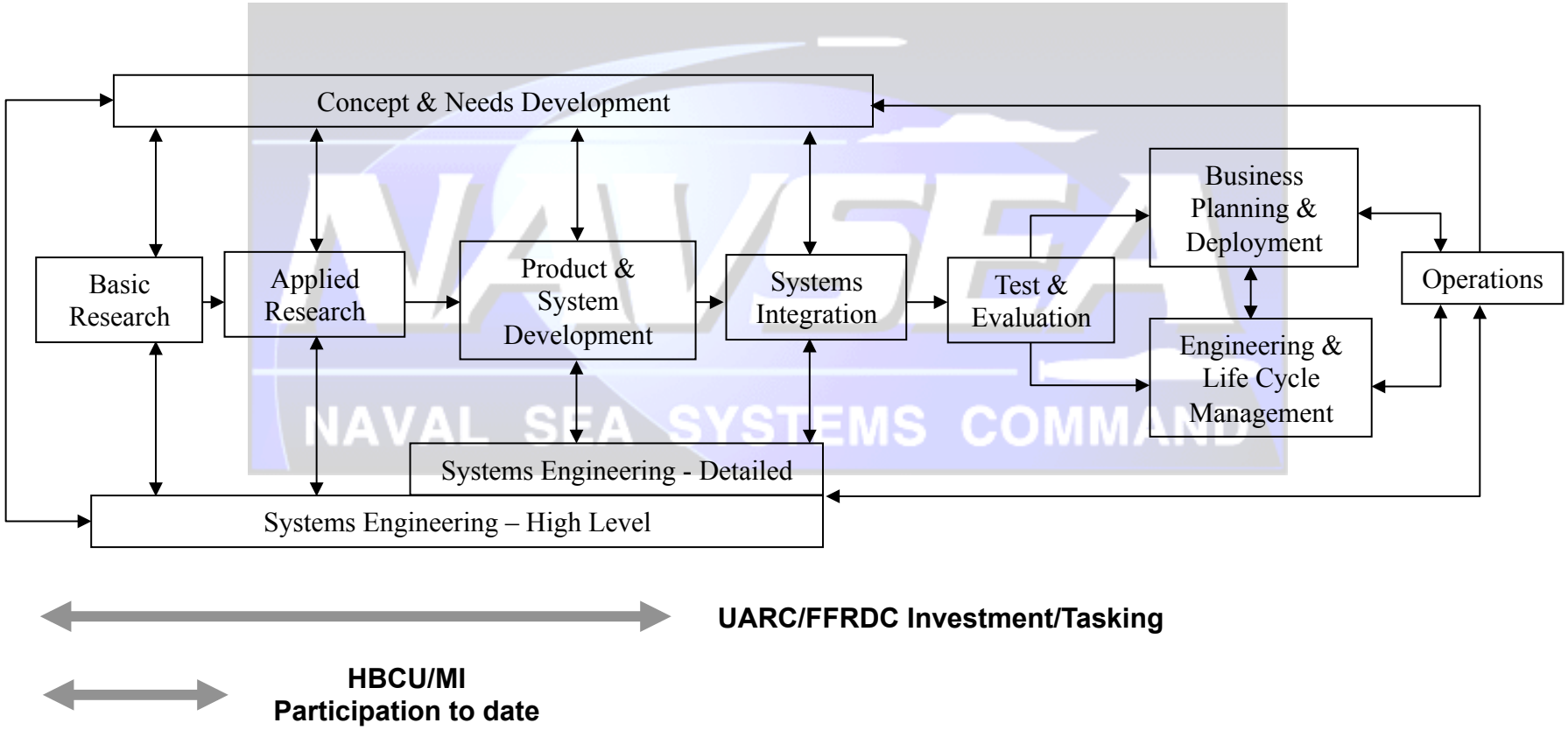
University Technology Transfer

- Morrill Act of 1862 created "land grant" colleges, that were directed to apply technological developments to enhance U.S. Agriculture
- Second Morrill Act of 1890 Created "land grant colleges" comprised of additional institutions that served predominantly black student populations, with similar objectives
- Technology Transfer occurs not only via the licensing of discoveries for commercialization, but also via:
  - Employment of Students by Companies and Government Agencies
  - Conferences and Journal Publications by Researchers
  - Immigration of Subject Matter Experts from one country to another
- Navy UARCs creation dates back to the 1940's as part of the war effort
- Lessons Learned: UARCs have proven to be effective trusted agents for technology realization for critical missions of government

HBCU Historical Timeline



HBCU/MI Have Never Received Investment and/or Tasking to Participate in Full-Fledged Technology Realization for Critical Government Missions



Criteria for Pilot Program Partnership

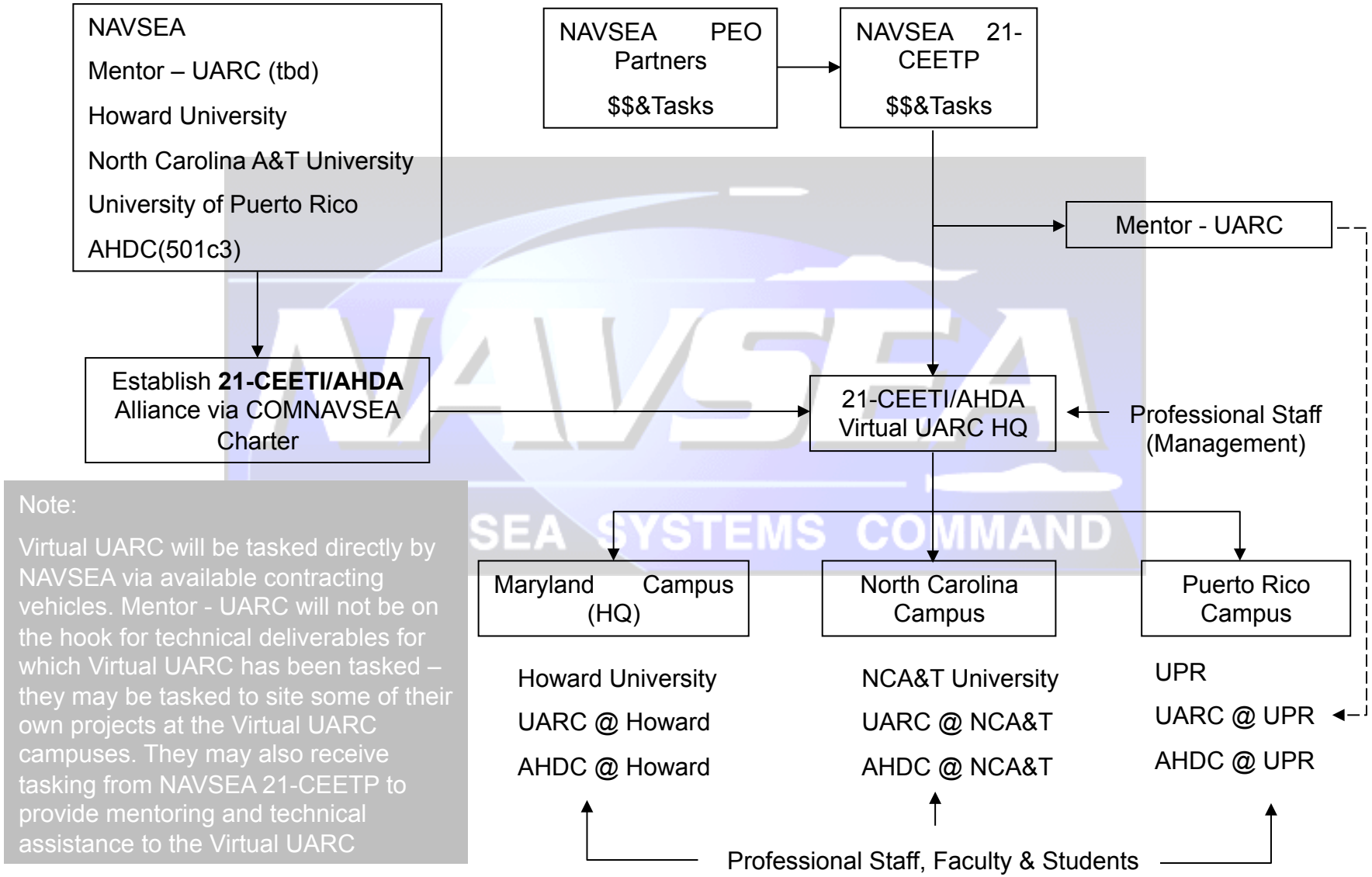
NAVSEA Partners: Representatives of Program Executive Officers for NAVSEA Research, Development and Acquisition Directorates.

Mentor-UARC Partner: Major NAVSEA UARC with desire for outreach to minority institutions.

HBCU/MI Partners (Pilot): Top Three Historically Black Colleges and Universities and Minority Institutions (HBCU/MI) that: (1) Offer accredited degree programs in multiple fields of the physical sciences and engineering; (2) Demonstrated applied research capabilities and facilities in Navy-related areas such as advanced materials, computational sciences, and electronic devices and engineering systems; (3) Have competitively won major research centers in science and/or engineering; (4) Have initiated the development of an applied research infrastructure.

Non Profit Corporate Partner: 501(c)3 Research Corporation with extensive knowledge of HBCU/MI capabilities, DOD Research, Development and Acquisition, and track record of studying concepts for potential HBCU/MI Participation in Navy Programs at the UARC level.

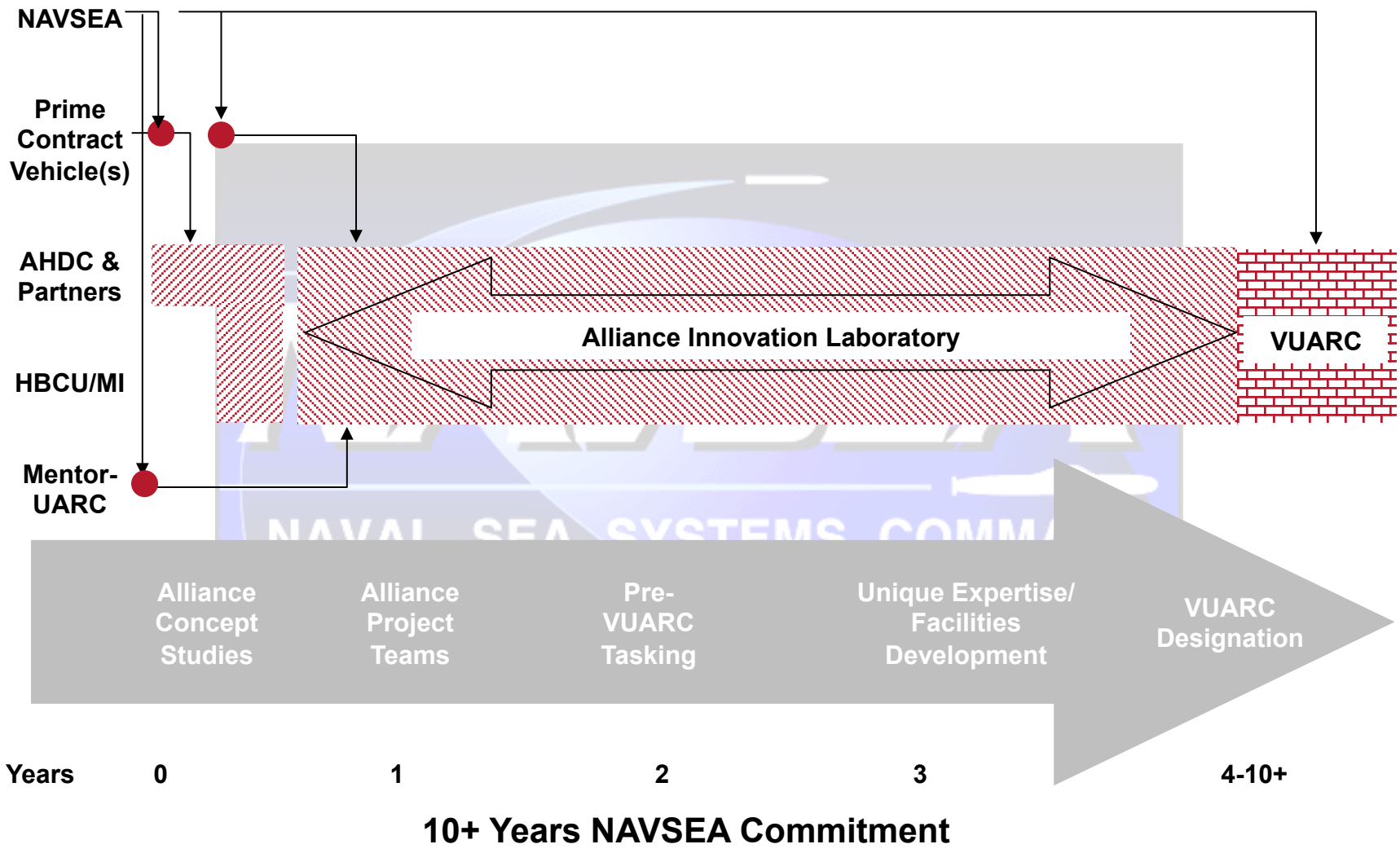
21-CEETI/AHDA Pilot Program Concept Model



Note:

Virtual UARC will be tasked directly by NAVSEA via available contracting vehicles. Mentor - UARC will not be on the hook for technical deliverables for which Virtual UARC has been tasked – they may be tasked to site some of their own projects at the Virtual UARC campuses. They may also receive tasking from NAVSEA 21-CEETP to provide mentoring and technical assistance to the Virtual UARC

Evolution of Virtual UARC (VUARC)



10+ Years NAVSEA Commitment

21CEETI/AHDA Innovation Laboratory – Ideas for Start Up Projects (1 of 3)

Wireless Ship/Submarine Control

- Cables for ship/submarine control are heavy and expensive to maintain.
- All but a single power transmission cable in a ship or submarine could be eliminated with secure wireless communication technology
- Future ships with distributed power sources could eliminate the power cable itself altogether
- Ship/submarine survivability could be significantly enhanced when the control signals cannot be interrupted by cable damage.
- Systems Engineering design studies of wireless ship/submarine control could be performed unobtrusively across a college campus as an innovation laboratory project.

21CEETI/AHDA Innovation Laboratory – Ideas for Start Up Projects (2 of 3)

Corrosion resistant coatings derived from molecular engineered materials

- Corrosion is a major problem for ships and submarine structures
- State of the Art coatings are based on 1960's paint technology
- Molecular engineered materials have been developed with promising anti-corrosion capabilities
- Systems Engineering Studies of industrial scale Fabrication and Characterization of molecular engineered materials for anti-corrosion coatings for ships/submarines could be the focus of an innovation laboratory project

21CEETI/AHDA Innovation Laboratory – Ideas for Start Up Projects (3 of 3)

Corrosion resistant composite structures for next generation ship/ submarine

- Molecular engineered fibers for composite structures could be made corrosion resistant
- Ship/Submarine structures of the future could be based on such corrosion resistant fiber composite structures
- The need for coatings could be eliminated altogether (Marine animals never need coatings, why should ships and submarines?)
- Molecular engineered nanofibers have been developed with promising anti corrosion capabilities
- Systems Engineering Studies of industrial scale Fabrication and Characterization of molecular engineered nanofibers for composite structures could be the focus of an innovation laboratory project

Alliance Charter Concepts

- Alliance Charter to allow:
  - HBCU/MI, Mentor UARC and AHDC to form Partnership
  - Partnership to be administered as separate entity from constituent members
  - Partners to site project activities at HBCU/MI facilities
  - Participating HBCU/MI Faculty to be hired as professional staff (Alliance Fellows)
  - Students to be hired as technical support staff (Alliance Interns)
  - Additional Professional Staff to be hired as needed by Partners per task distribution and expertise
- Contract action during Pre-VUARC period between NAVSEA-designated Prime Contractor and Partnership
- Partnership to be mentored by Mentor UARC with aim to attain designation of VUARC between Years 4-10.
- Subsequent Direct tasking and funding between NAVSEA and VUARC

Concept Study Working Group

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