



Planning for the next US Global Class Research Vessel Town Hall

13 December 2018

Fall AGU Meeting, Washington, DC





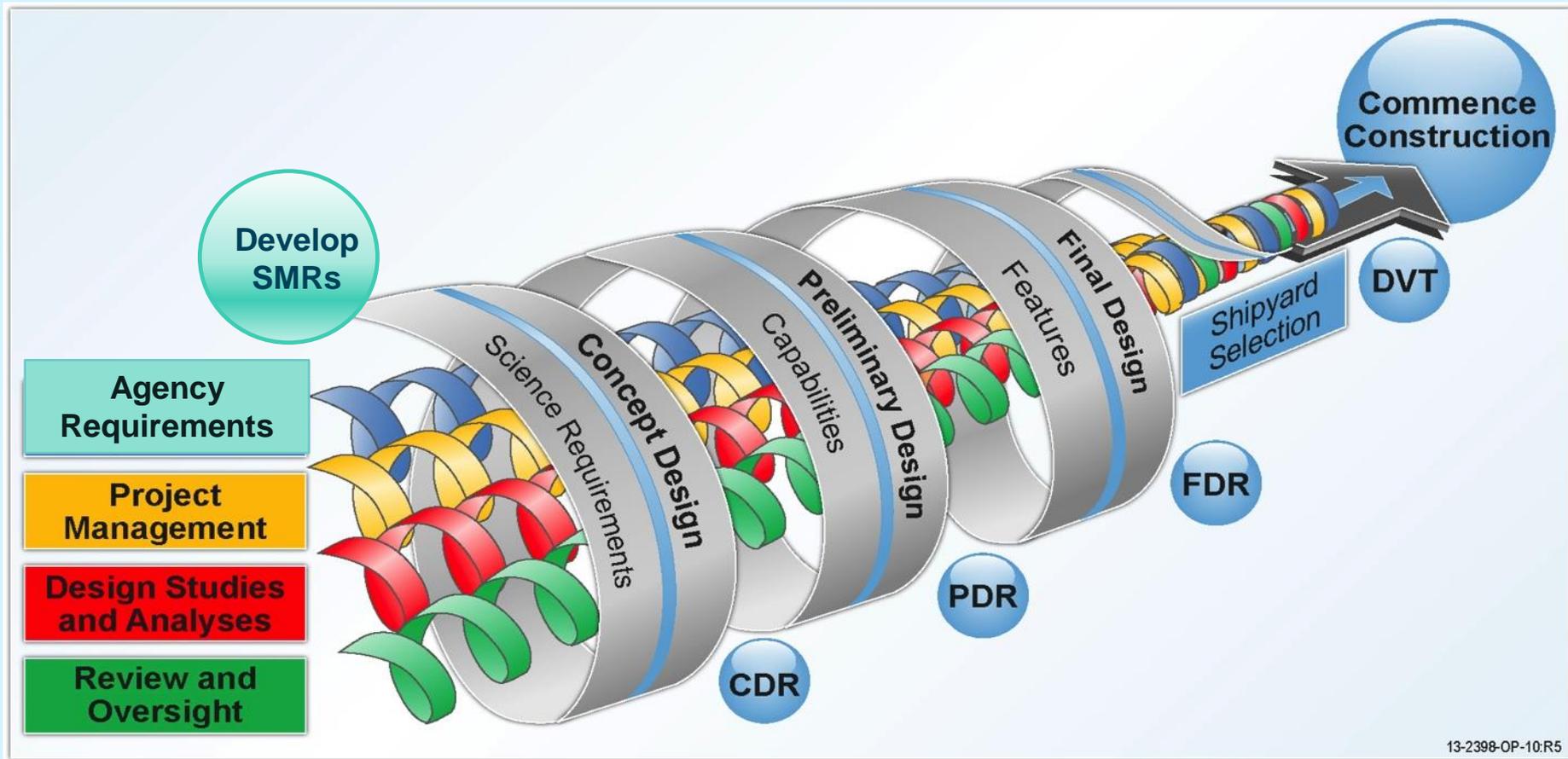
Fleet Improvement Committee of UNOLS is charged with assuring that the number, mix and overall capability of ships in the UNOLS fleet match the science requirements of academic oceanography in the U.S.



Establishing Science Mission Requirements (SMRs) is key at the initial steps of Research Vessel Design and Construction

SMRs lead to Design Specifications

“if it’s not in the specifications, it’s not in the ship”





Science Mission Requirements Overview

- The purpose of SMRs is to set down mission capabilities to be used as guidelines during the various design phases for a vessel class.
- A key concept is that ship systems are completely integrated with the science mission for these vessels.

000
GENERAL
REQUIREMENTS

100
HULL
STRUCTURE

200
PROPULSION
PLANT

300
ELECTRIC PLANT
& CABLING

400
COMMS,
NAVIGATION &
SHIP CONTROL

500
AUXILIARY
MACHINERY

600
OUTFIT &
FURNISHINGS

700
SCIENCE
MISSION
SYSTEMS

SWBS

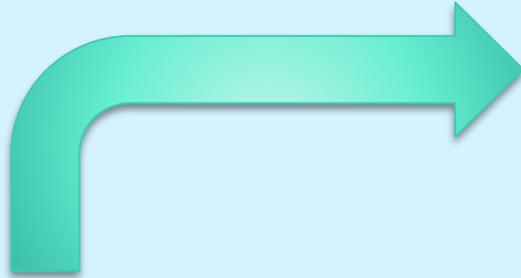


Sample mission profiles should be defined that will provide examples of how new vessels might be used.

e.g., size of moorings deployed, cruise durations...

It is possible that not all requirements can be fully realized in any one design. During later design phases priorities may be refined.





SMR Elements

**Vessel designs are
largely defined by:**

PAYLOAD

SPEED

ENDURANCE

HULL SHAPE

PROPULSION

- Accommodations and habitability:
 - Accommodations
 - Habitability
- Operational characteristics
 - Endurance & Range
 - Speed
 - Sea keeping
 - Station keeping
 - Track line following
 - Ship control
 - Ice strengthening
- Over-the-side and weight handling
 - Over the side handling
 - Winches & Wire
 - Cranes
 - Towing



SMR Elements

- Science working spaces
 - Working deck area
 - Laboratories
- Vans
- Storage
- Science load
- Workboats
- Masts
- On deck incubations
- Marine mammal & bird observations, etc.



Other SMR Considerations

- **Cost**
- **Energy Efficiency**
- **On the Horizon Technologies**
- **Operation & Maintenance**
- **Regulatory Requirements and Classifications**
 - **Polar code requirements**
 - **Air emissions**



Committee for Global Class Vessel Planning – Science Mission Requirements (SMR)

- Greg Cutter, Old Dominion U., Chair
- Byron Blomquist, U. Colorado, Boulder
- Suzanne Carbotte, Lamont-Doherty
- Zoltan Kelety, Scripps Institution of Ocean.
- Clare Reimers, Oregon State U.
- Ethan Roth, U. Alaska
- Jim Swift, Scripps Institution of Ocean.



Committee Charge: Develop a “Living” (easily modified) SMR for the next US Global Class Vessel

- Tasks: Define Science Drivers
 - Fleet Improvement Plan
(www.unols.org/document/unols-fleet-improvement-plan-2015)
 - Evaluation of existing fleet – service life, scheduling, costs
 - Existing and future individual PI to large program needs (Community Surveys, Town Halls, etc.)
 - Agency needs and funding



SMR Tasks: Data gathering

- Examine existing SMRs for US Global and Ocean Classes
- Gather information on international Global fleet – size, endurance, berthing, deck/lab facilities, build and maintenance costs, etc.



R/V Thompson, 1991



R/V Revelle, 1996



R/V Atlantis, 1997



R/V Sikuliaq, 2015

R/V Langseth, 2004





International Global Examples



UK: Discovery (2013), 327', 28 scientists



Australia: Investigator, 308', 40 scientists



France: Pourquoi Pas, 351', 40 scientists



Germany: Meteor, 320', 30 scientists



China (Xiamen): Tan Kah Kee:,255', 36 scientists





SMR Tasks: Data gathering (cont.)

- Survey existing Global Class users, and captains, engineers, marine operators, and technicians
- Survey the community and have open discussions via Town Halls such as this one



SMR Timeline

June 2017	Start process – define science drivers and gather data
Dec. 2017	Survey past Global users
Jan. 2018	Compile survey results
Feb. 2018	Town Hall at 2018 Ocean Sciences Meeting
Mar. 2018	Survey community (Link on UNOLS web site and sent to UNOLS email list)
Jun-Jul 2018	Compile survey results
Oct. 2018	Survey current Global captains, engineers
Nov. 2018	Compile survey results
Dec. 2018	Town Hall at 2018 Fall AGU Meeting
Feb. 2019	Draft SMR Ver. 1 and circulate to FIC
Mar. 2019	Circulate SMR Ver. 1.1 to UNOLS Council
Apr-Jun 2019	Compile all inputs and create “living” SMR Ver. 2.0



We're done talking, now we're listening and taking notes.
Thanks!