



Planning for the next US Global Class Research Vessel Town Hall

February 12, 2018
Portland, OR

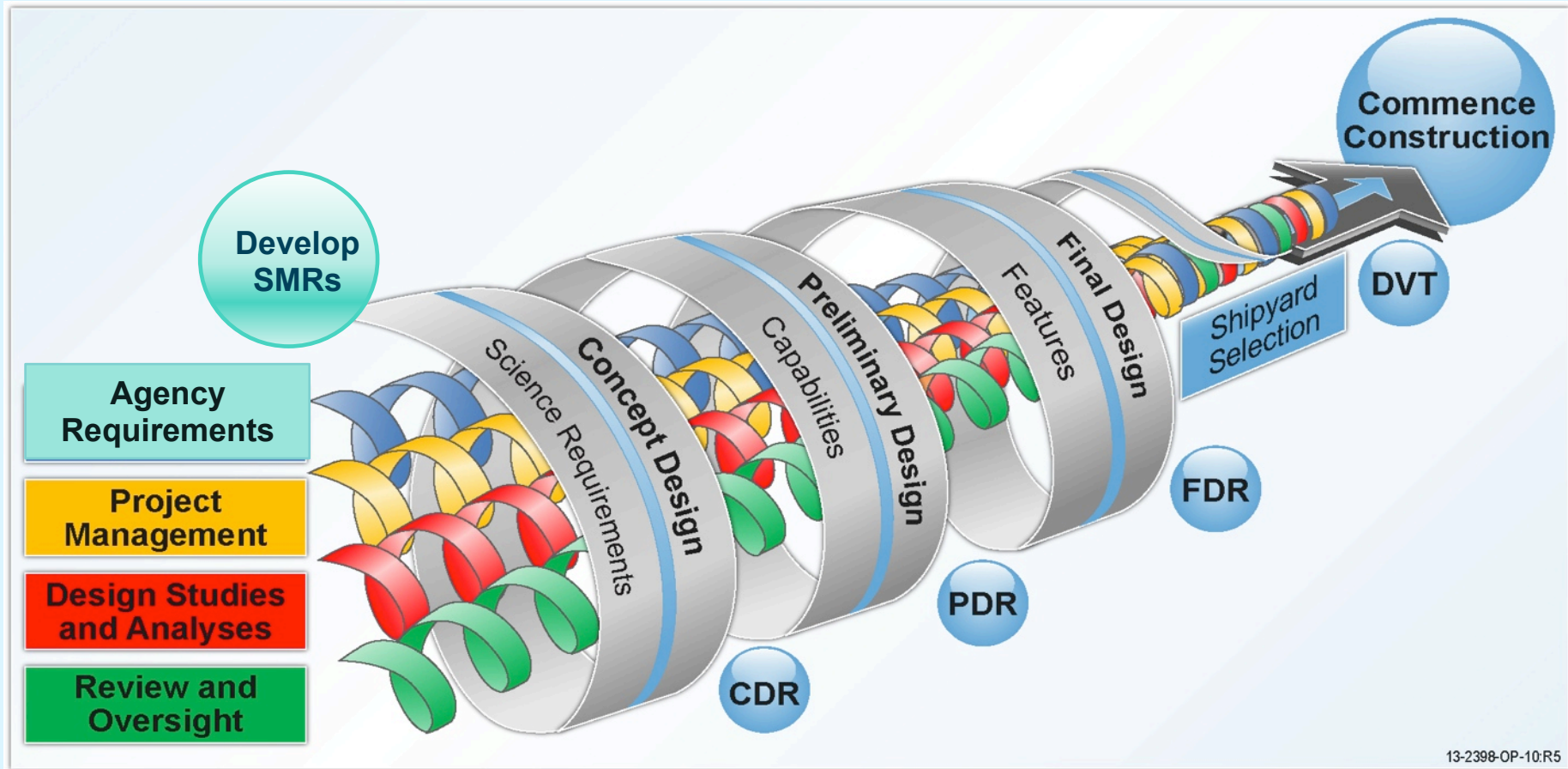




Establishing Science Mission Requirements (SMRs) is key at the initial steps of Research Vessel Design and Construction

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

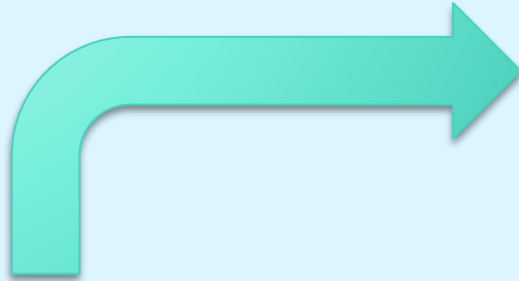


Sample mission profiles should be defined that will provide examples of how new vessels might be used.

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.....



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
- Clare Reimers, Oregon State U.
- 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 and engineers.
- 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, captains, engineers
Feb. 2018	Survey community (Link on UNOLS web site and to email list; other?)
	Town Hall at 2018 OSM
	Other Town Halls – need to reach “MG&G”
April 2018	Draft SMR Ver. 1.0
May 2018	Circulate SMR to Fleet Improvement Committee
June 2018	Circulate SMR Ver. 1.1 to UNOLS Council
July 2018	Compile all inputs and create “living” SMR Ver. 2.0



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