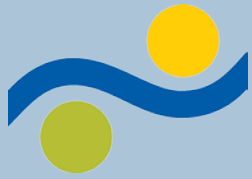


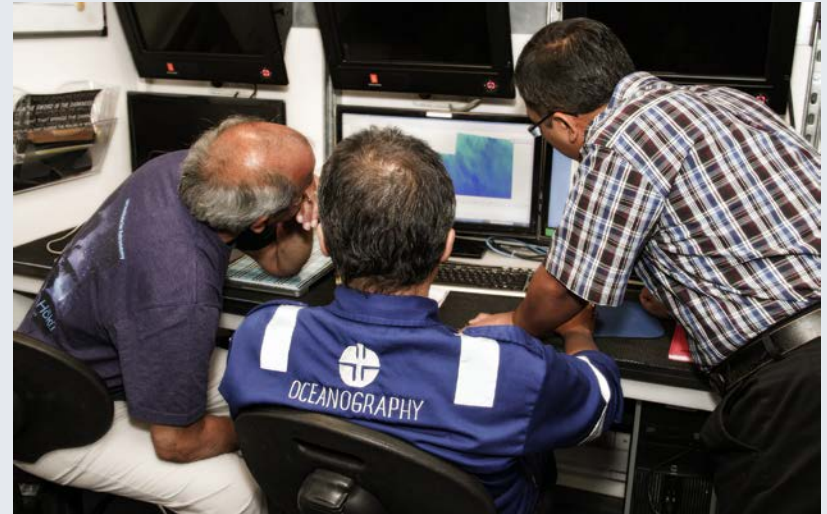
# Ship Based AVIT Modernization

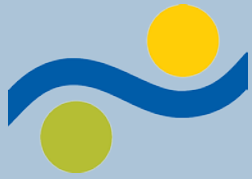




# Internet at Sea

- 2x VSAT Antennas
- C Band
- Worldwide coverage
- Automatic switch-over to signal blockage
- TX power to go up to 20 Mbps uplink
- Shoreside media server





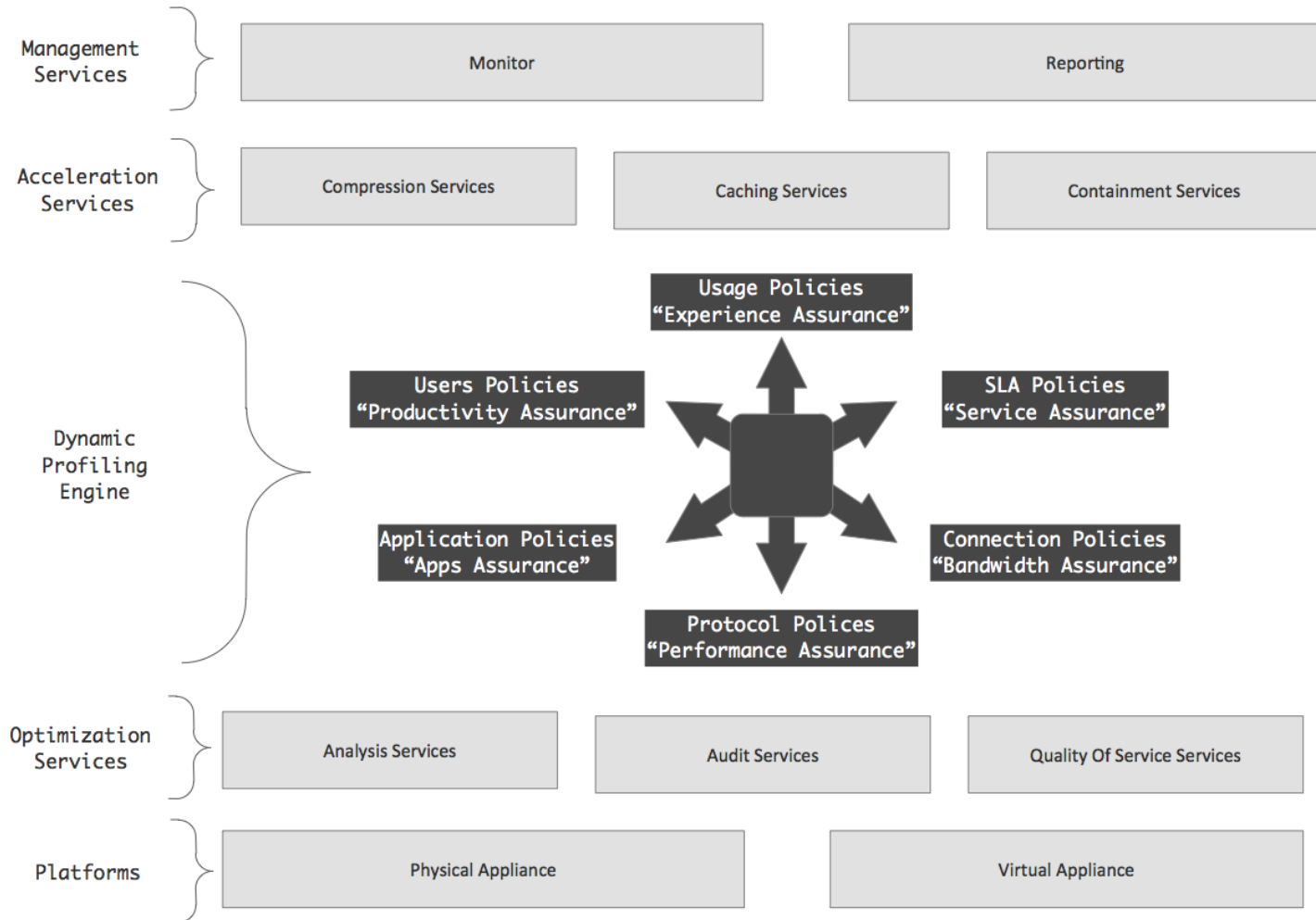
# Internet at Sea

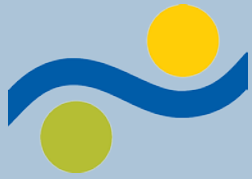
- Maximizing the speed and efficiency of applications over the network
- Traffic-shaping/ WAN optimization technologies
- Automatic Report Delivery
- Historical Reporting
- Real-time Monitoring
- Rich Reporting





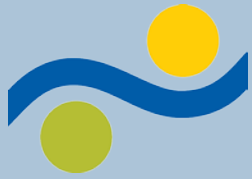
# Bandwidth Management





# Bandwidth Management

- Network Orchestrator
  - *Exinda*
- Shoreside IT administrator can allocate aboard ship the available bandwidth as needed and prioritize traffic based on multiple criteria such as:
  - *application, traffic type, origination point, account, account group, and/or segmented network subnet.*
- Web caching to significantly reduce internet traffic generated when visiting popular web content by multiple users.
- Priority applications or devices to be allocated internet bandwidth on demand. When demand is over, allocated bandwidth is released and available to the rest of the network.



# Real-Time Connectivity

- Private, secure VPN tunnel between Ship and Shore
- Enable remote support from shore engineers and science collaborators

*Adonis, DNV-GL, Noris, IT Manager connects to the ship over VPN. Response time and features are much better & faster than standard remote support systems such as Teamviewer, Bomgar or LogMeIn.*

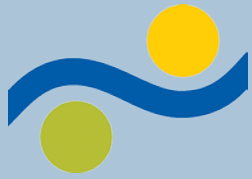
- Live acquisition to SOI website

[R/V Falkor status](#)

- VPN clients access science sensors in real time

*NOAA Scientific Computer System*

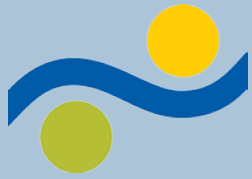
*...Collect, process, display, archive*



# Video Router

- 64 Port HD Digital Matrix switcher enable ultra high fast 1080p video routing from 64 sources to 64 monitors  
*SD, HD, UHD, 2K, 4K*
- HID control of any source at any location
- Internal streaming to Android and iOS devices
- Modulation over Advanced Television Systems Committee (ATSC) to any TV/monitor or projector of the ship
- Customizable layout for all outputs depending on science cruise objectives

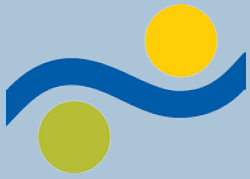




# Video Recording & Streaming



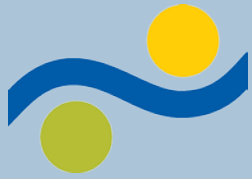
- 2x encoders for live streaming from any of the video router sources.
- Conference / Library Room to broadcast presentation and support video conference calls.



# Video Conferencing

## Remove Ship/Shore Physical Boundaries

- HD PTZ Dome Cameras
  - *Bosch*
- Digital Mixers for all Microphones
  - *Shure*
- Wireless Microphones
  - *Shure*
- Single Touch Start for Crew & Scientists
  - *Triton Technical*
- 12GB RAM, 1TB Recording, Xeon Processor
  - *Lenovo workstation*



# Supercomputing Hardware

- R/V *Falkor* is the first ship with cloud-based high-performance computing system...Nebula.

*RAM 640GB, Storage 120TB*

- Capable integrated hardware and software appliance providing distributed computation, storage, and network services in a scalable unified system.
- Enables data storage and processing capabilities [never before available to scientists at sea.](#)





19700 labels

have been tagged so far. Thanks to citizen researchers with iDivers, we've added many more. Click "Get Started" to help out!

project# citizenSOI201503

explore • associate • interpret • marine imagery

**squidle**

explore • associate • interpret • marine imagery

**About the Project**  
What is this all about? Who is involved? Why should you care?  
[Click for more](#)

**How to...**  
Tutorials and videos that provide step-by-step on how to use the system.  
[Click for more](#)

**Diving Deeper**  
Check out more details about the project and for more info about automated tools designed to make life easier.  
[Click for more](#)

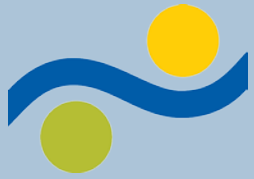
**Get started!**  
Welcome! You've just jumped straight to working with the data using the association interface.  
[Click to start](#)



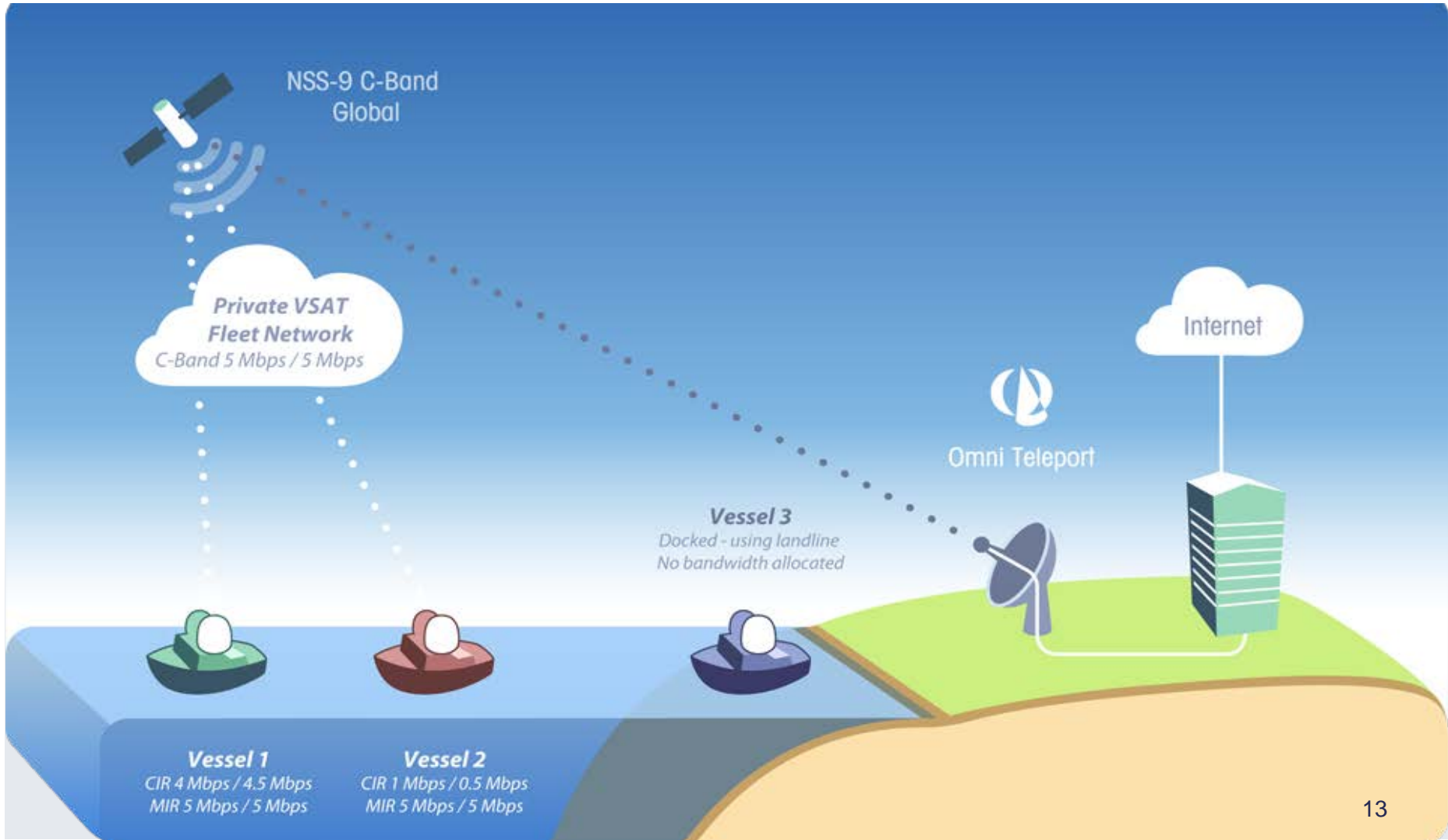


# Bandwidth Community Sharing

- Data rates (CIRs and MIRs) can be allocated based on a science cruise mission need.
- Any unused bandwidth by a ship remains in the bandwidth pool and becomes available to other ships thanks to dynamic bandwidth allocations system.
- Bandwidth is not shared with any third parties.
- Automatically allocates unused bandwidth from ships that are docked without scientists to those cruises that are underway with heavy bandwidth needs.



# VSAT Across the Community



**Thank You**

