



SCIENCE AND
EDUCATION **FOR**
SUSTAINABLE
LIFE



RV Svea - experiences after the first 20 months of operation

By

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MAIN DIMENSIONS:

LENGTH O.A	69.50 m
LENGTH P.P.	64.20 m
BEAM	15.80 m
DEPTH TO 2. DECK	5.90 m
DEPTH TO 3. DECK	8.60 m
DEPTH TO 4. DECK	11.40 m
DEPTH TO 5. DECK	14.10 m
FRAME SPACING	600 mm

ACCOMMODATION FOR 28 PERSONS - 15 CREW
- 13 SCIENTISTS

CLASS: DNV *1A1, EO, ICE-1B, DYNPOS-AUTS, SPS, TMON
BWM-T, COMF-C(2)V(2), CLEAN
Optional: NAUT-AW



Designed by Skipsteknisk AS

Built by the Armon shipyard in Vigo

Specification of requirements

- Very environmentally friendly, Using HVO diesel, particle filtering etc.
- Low noise ICES crr209
- SLU Aqua - fish surveys, bottom and pelagic trawling, hydroacoustics, oceanography
- SMHI - oceanography, advanced laboratories
- Operations all year round mainly in the Skagerrak, Kattegat and the Baltic Sea but also the North and Norwegian Seas
- Flexibility for research projects, spacious aft deck for gear, cranes, winches, ROVs and container labs etc.



Timeline

- Procurement and Design phase April 2015 – August 2017 (as planned)
- Build phase (Armon Vigo) August 2017 - May 2019 (delayed 2 months)
- Delivery planned to May 2019 (actual delivery in July 2019)
- The vessel in full operation October 2019 as planned
- 1 year guarantee, May 2019 – May 2020 (extended to Nov 2020)



2018-08-18
launching



2019-07-04
handover



2019-08-20
arrival in Lysekil



2019-09-25
christening



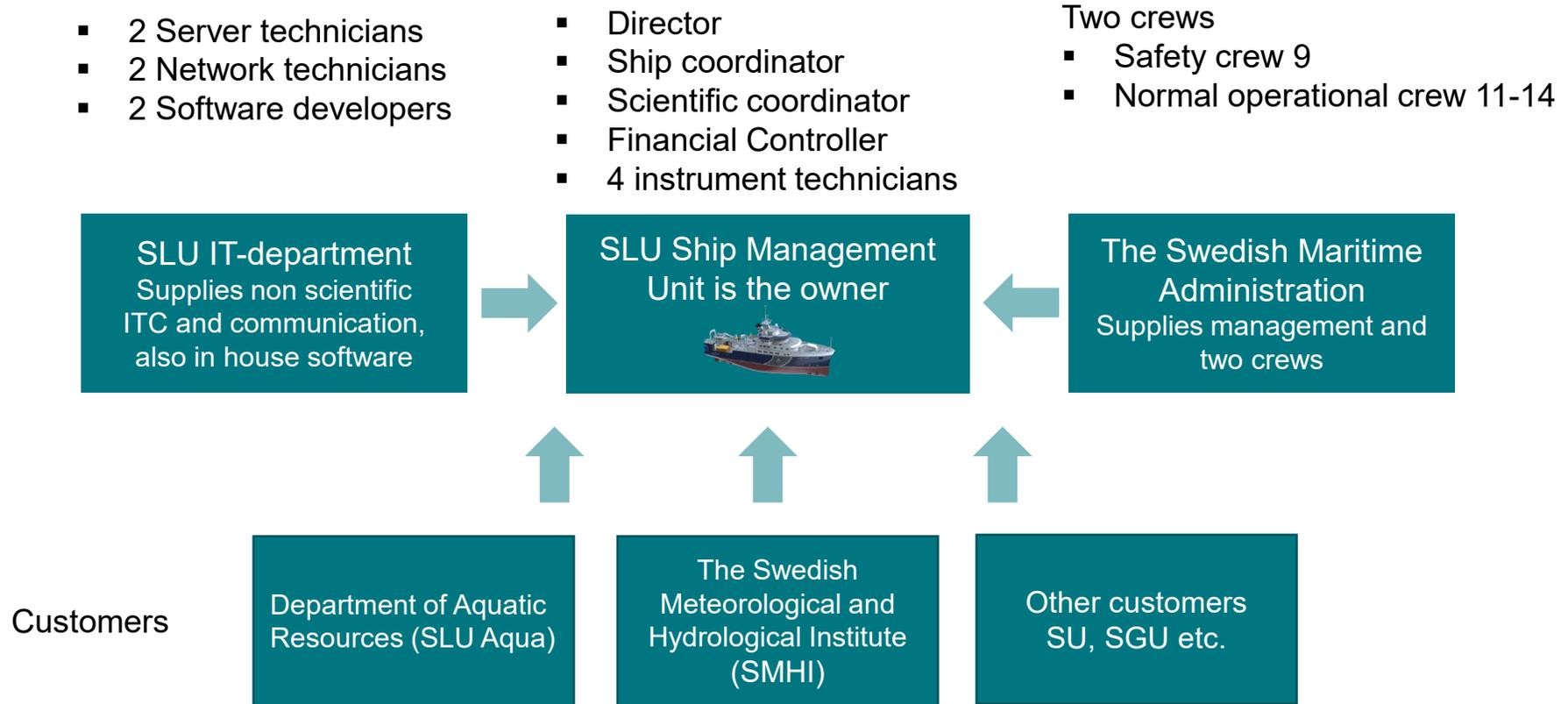
2019-10-08
first expedition



A joint project between authorities

- The Swedish Government decided that SLU should be owner and also responsible for the procurement and project
 - The Swedish maritime administration (SwAM) is responsible for the management and crewing
 - The two main users is the department of Aquatic resources (Aqua) at SLU and SMHI.
1. SLU have not built and operated a ship before
 2. The Swedish maritime administration are more used to icebreakers than research ships
 3. SLU Aqua and SMHI have not had access to a really advanced research ship before

The Organization and the stakeholders



Free capacity approximately
4-5 weeks/year



Success factors during the project and build

- SLU hired the best experts we could find in Sweden to run the project
- We invested heavily in quality control and operated a site office maned with between 5 -15 persons at Armon during the build
- We were aboard Svea almost every hour during the build
- Masters and chiefs from the future crews and scientists from Aqua and SMHI where involved during the entire build and also present in Vigo.
- We focused on designing the ITC environment early in the project

This meant that we could supervise build quality and work with Armon to rectify these and also implement changes that we saw was needed. Armon was flexible and as accommodating when we felt we needed adjustments to the specifications.



Things we would have done differently with hindsight - 1

- It takes not one but two years to get a new advanced ship fully operational after delivery. Calculate for this in terms of available time and money
- Withhold as large an amount of the payment as possible to get leverage towards the end of the project. You will need it
- Paint was a big issue, quality and preparations for painting
- We should have insisted on a more complete documentation with better quality
- Recruit the future instrument technicians early and involve them in the build
- We did not start working on the maintenance system (AMOS) early enough, for this you need to devote extra resources. Nor did we specify it clearly enough in the technical specification



Things we would have done differently - 2

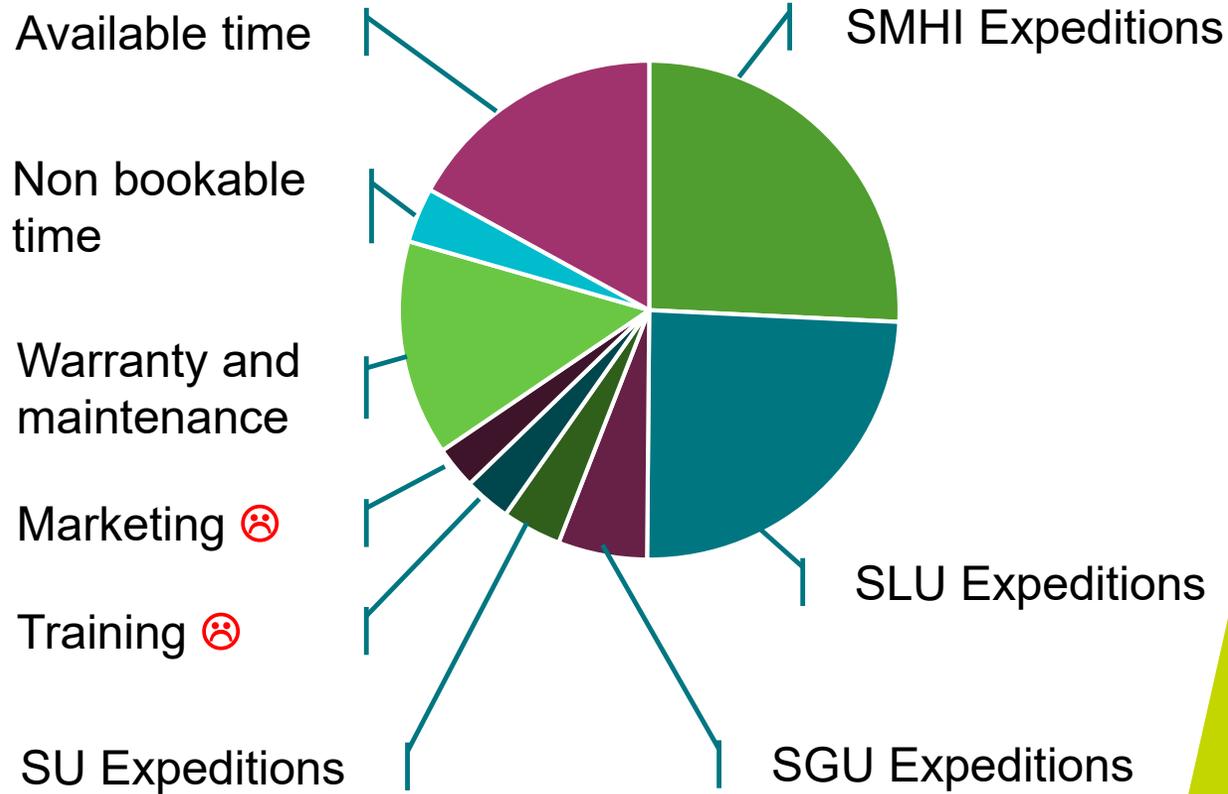
- SLU IT should have visited several modern research ships to get a better understanding of what is a normal naval ITC environment
- We should have involved researchers from other universities to get a second opinion about needed capability's
- The cooling system was not working properly in switchboard and winch drive rooms as well as the server rooms
- On the first voyage home the Siemens Blue Drive propulsion system broke down. With more testing this would not have happened
- We should have delayed delivery even further to be sure that all systems were working properly





20 months of operations

23 expeditions and 218 expeditions days in 2020

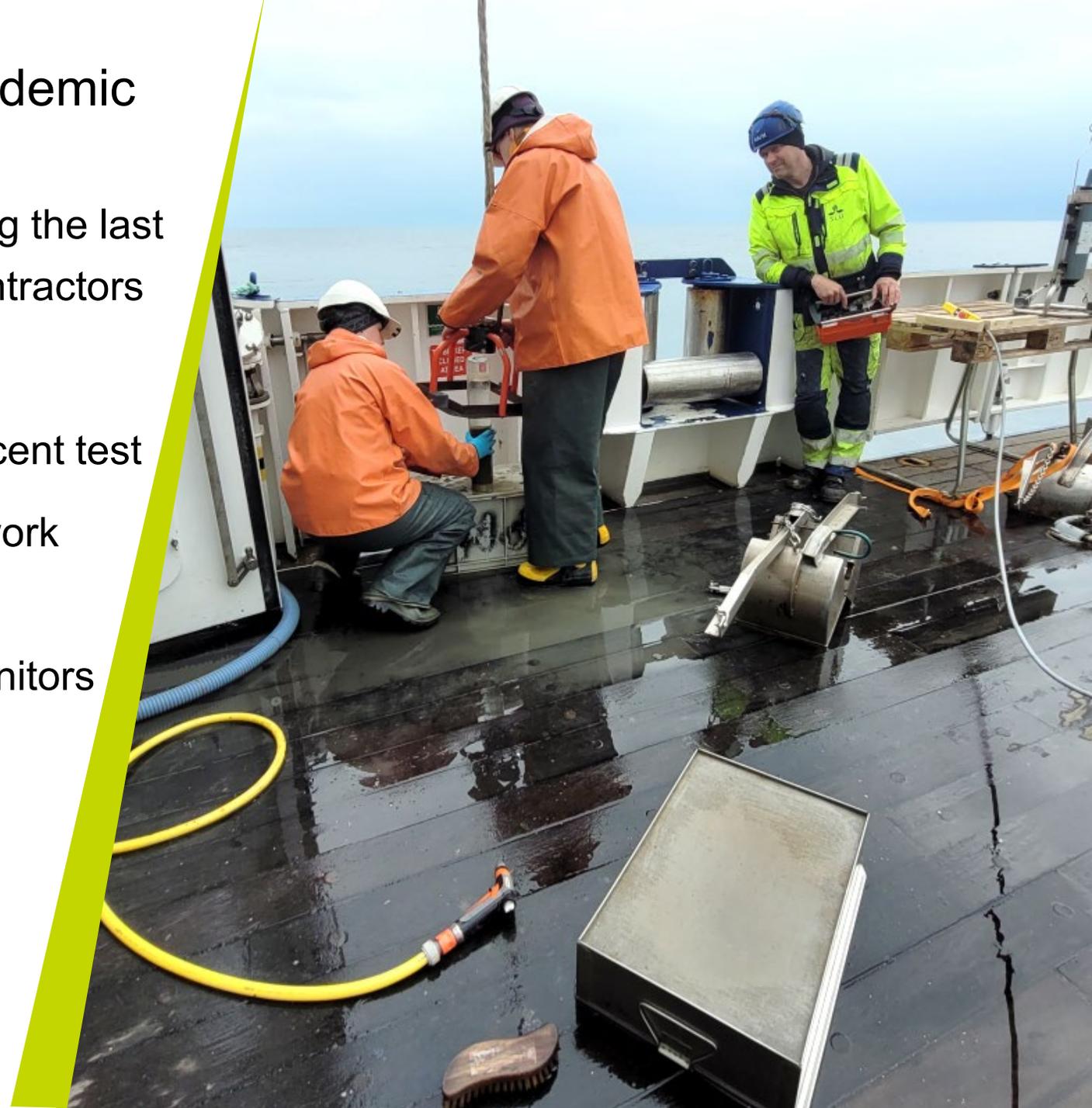


Operating during the Covid pandemic

We have operated with restrictions during the last year. The rules apply to all, including contractors

- No unessential personal aboard
- Nobody enters Svea without a very recent test
- You stay on Svea till your expedition/work is done, no living ashore in hotels
- Each Captain or Expedition leader monitors the health of the participants and their families before an expedition

We have had no instances of Covid aboard and lost no expedition days.



Life aboard

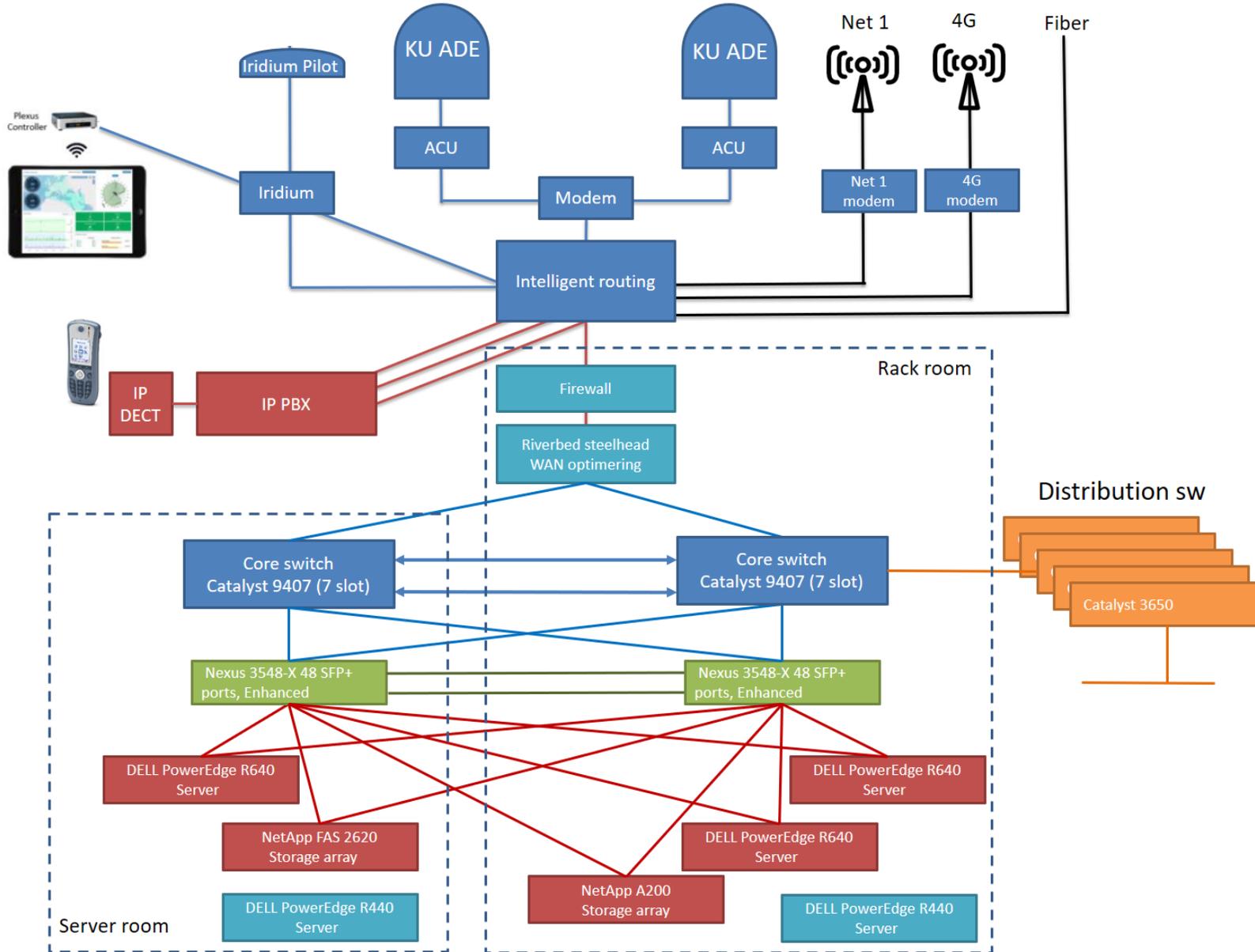


Infotainment system with satellite TV

Gym and sauna

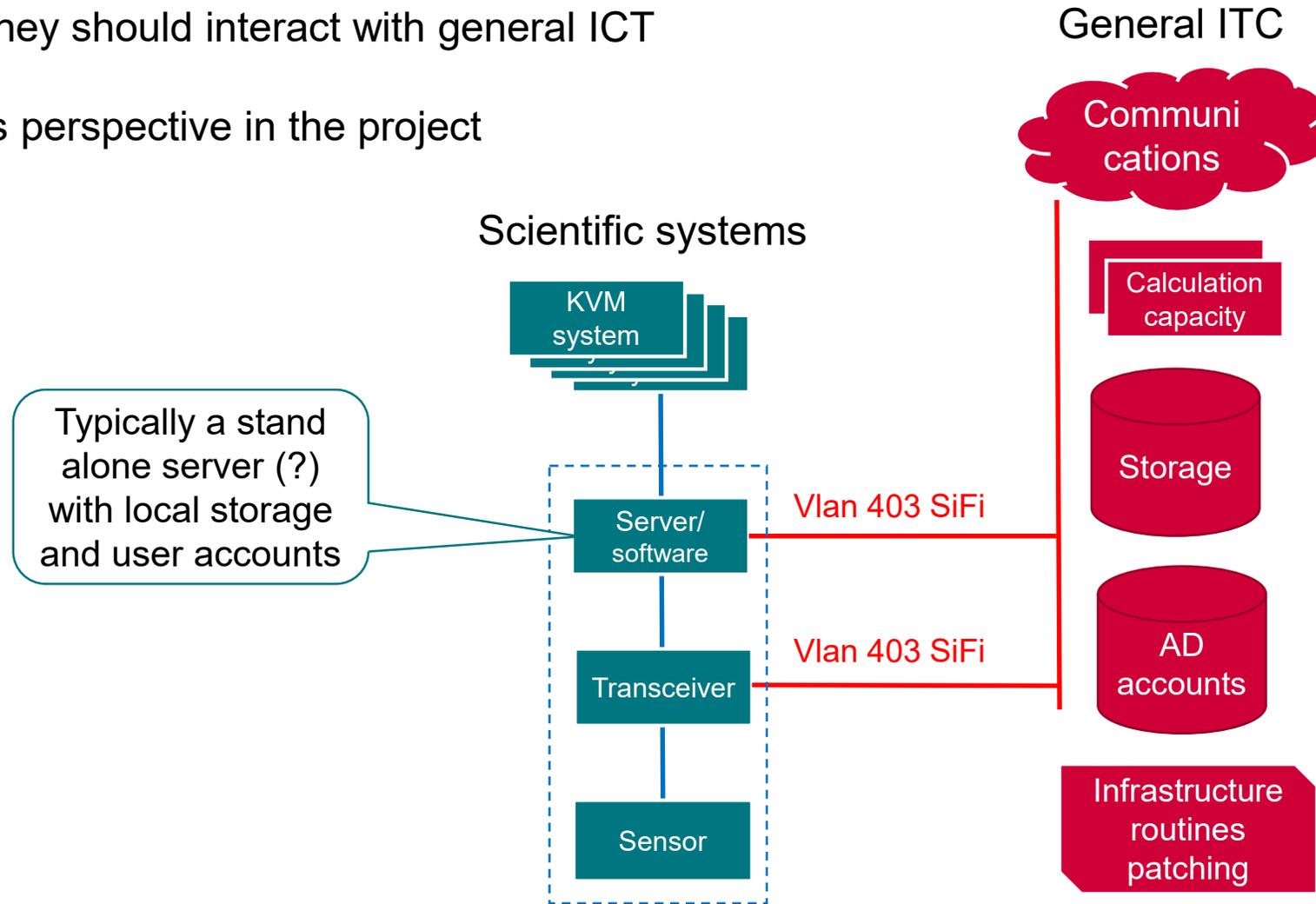


The general ITC setup



How do general ITC and the scientific systems interact?

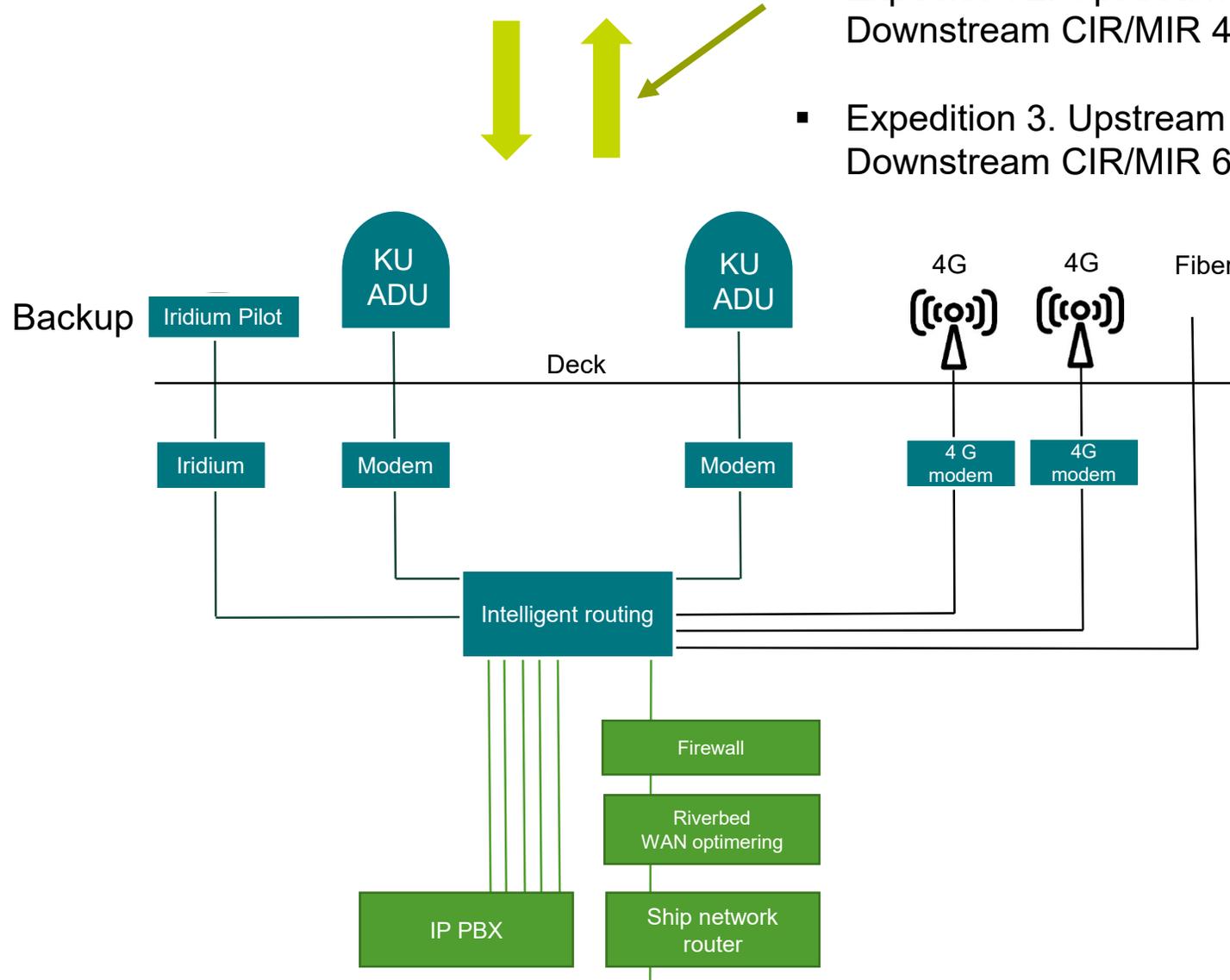
- Svea was delivered with many scientific systems, but they were all stand alone and no consideration had been taken as to how they should interact with general ICT
- No systems perspective in the project



ADCP Ocean Surveyor 150kHz
ADCP Workhorse Mariner 600kHz
DPS112
EA 440 – CTD Monitoring
EA 440 – Noise Monitoring
EK 80
FX80
HiPAP 502
K-Sync
MGC
MS70
OLEX
Post processing (Rack room)
RV80
SC90
Seapath 380
Seapos300
3710
SX93
TV80 with PX Sensors
SDB (Signal Distribution Box)
TD50
Macartney ROTV Focus
Macartney EK 80 (Microscope)
Macartney CTD & ROTV Triaxus
PC for microscope SLU
PC for video capture Armon
PC for video capture SLU
Moving Vessel Profiler (MVP), AML
Ferrybox 4H- JENA
Vaisala väderstation
Ramses, Trios
IFCB, Maclane
4H_sampler, 4H- JENA
ME70 inkl Bath option
Svea Fisk Lab
Svepa
MDM 500

Communications suite, what is normal?

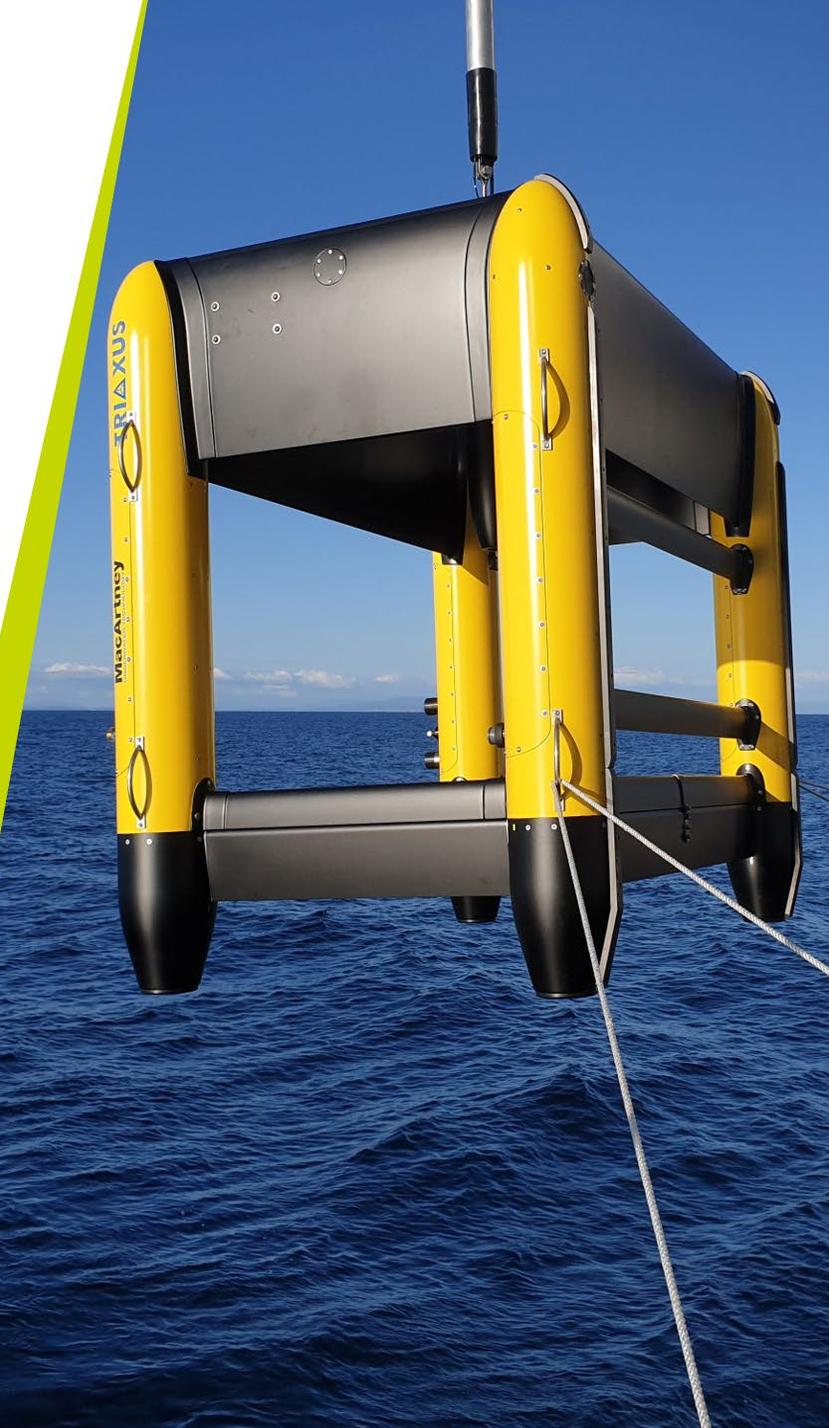
- Expedition 1. Upstream CIR/MIR 1 Mb/s
Downstream CIR/MIR 2/4 Mb/s
- Expedition 2. Upstream CIR/MIR 2 Mb/s
Downstream CIR/MIR 4/8 Mb/s
- Expedition 3. Upstream CIR/MIR 3 Mb/s
Downstream CIR/MIR 6/12 Mb/s



Looking to the future

- We are rebuilding 4 cabins to double berths so we can accommodate 32 persons aboard
- We are considering if Svea could be rebuilt so she can use a battery system for peak shaving
- We are looking at ways to reduce energy consumption aboard when Svea is in port
- We are looking into next generation Satcom, that is LEO satellites

And we have a list of improvements we want to implement. Presently it stands at 67



The final verdict

- We have succeeded in building the vessel we envisioned
- We have kept the time schedule
- We have kept project costs as planned
- She is liked by users and crew alike
- We have had very few “teething problems”
- All planned surveys have been successfully performed





Thank you for your attention

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