



VSAT BANDWIDTH POOLING

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INTRODUCTION AND BACKGROUND

- Voyager IP contributing :
- Eurofleets WP 3:
 - Optimizing solutions for telepresence and real time data transfer
- Eurofleets WP 7:
 - Industry platform: identify innovation and technology initiatives, share and communicate.
- Today's 'Poll Survey's' to gather information for a report on market needs and innovation potential.



OVERALL TECHNICAL OBJECTIVES

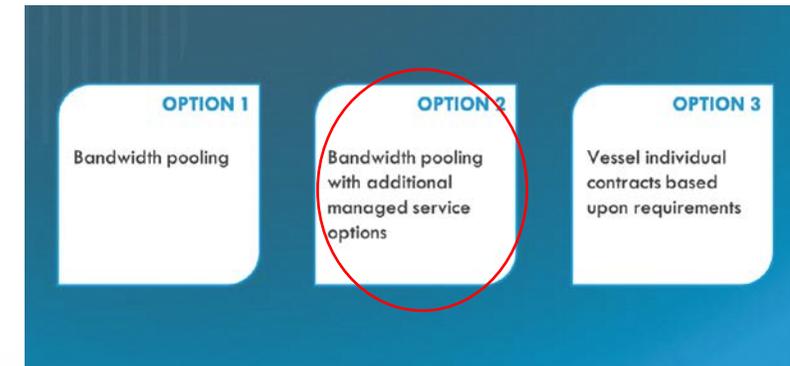
- Under WP 3.1.5 Optimizing solutions for telepresence and real time data transfer, VIP was to Establish whether its advantageous for research vessels to use a common platform for satellite communication services
- **Approach and Methodology**
- Survey of Vessels to establish penetration of VSAT, cellular and Bandwidth managed services management
- Report completed with recommendations



REPORT:

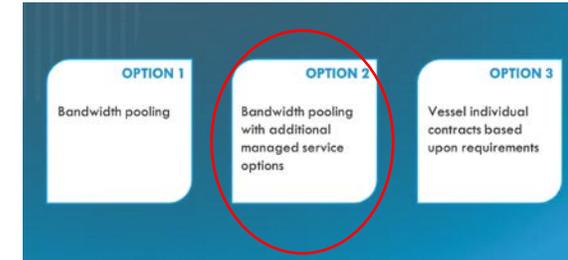
3 TECHNICAL OPTIONS IDENTIFIED

- **OPTION 1: Bandwidth Pooling**
 - This solution offers an overall Ku bandwidth pool, based on total fleet requirements, that all the vessels will be part of.
- **OPTION 2: Bandwidth pooling with additional managed services**
 - This solution is a follow on from the shared KU pool of bandwidth. Vessels would avail of the pooled bandwidth as they are operating within the same satellite footprint, but with the additional ability for vessels to work outside the primary pool footprint.
- **OPTION 3: Vessel individual contracts based on individual requirements.**
 - This solution is essentially how research vessels operate today. Each individual having its own defined profile or service, and across a multiple of service providers.





PREFERRED TECHNICAL SOLUTION OPTION 2: BANDWIDTH POOLING WITH ADDITIONAL MANAGED SERVICES



- So a simple concept, multiple vessels having access to each others bandwidth while not in use.
- All the vessels are active within the same satellite footprint and share a defined amount of bandwidth between them.
- All the vessels purchase the same service footprint eg. CIR 512kb/256kb MIR 1536kb/768kb. @approx. € 1000
- The allocation of the bandwidth is dynamically assigned through modulation and coding or managed based upon elements such as cruise criteria, requirements and itineraries.
- The stand out advantage is that there is always the option to avail of the un-used bandwidth when other vessels are not utilizing it.
- Contention from exterior sources or other vessels doesn't exist as the pool would be dedicated to the pool users only
- For example in a manged service a purchase of an MIR / CIR connection would look like this:
 - A Normal service would look like this:
 - CIR 512kb/256kb MIR 1536kb/768kb @€1000 p.m. over 36 months per vessel
 - However, using the pool facility with 5 vessels on a same profile, a vessel could access a service like this
 - CIR 512kb/256kb **MIR 5Mbs/2Mbs** @€1000 p.m. over 36 months per vessel(obvious benefits of access to much higher MIR)

| Approx spend of €1000 Managed Service per remote | |
|---|---------------|
| Vessel CIR down | Vessel CIR up |
| 512 | 256 |
| Vessel MIR down | Vessel MIR up |
| 1536 | 768 |

| Approx spend of €1000 Pooled service of 5 vessels | |
|--|---------------|
| Vessel CIR down | Vessel CIR up |
| 512 | 256 |
| Vessel MIR down | Vessel MIR up |
| 5000 | 2000 |



PILOT COMPLETED PRE COVID

- Technical Solution deployed
 - Currently R.V. Celtic Explorer and R.V. Celtic Voyager are operating in a dedicated shared pool of satellite bandwidth for communication.
 - **Some feedback from Stakeholders**
 - On a survey mission **Celtic Explorer** was able to host its debrief conference call ashore over the vsat link prior to returning home,a first time for such an activity.
 - On missions heading to the upper extremities north, Explorer traditionally loses VSAT. They were impressed they got coverage that far north when it had never been possible on previous managed services
 - In fact a zoom call was held with VIP staff, with no issues, see below notes from the vessel crew and P&O staff.
 - Next Steps:
 - Expansion of the Pilot post Covid

