

# The role(s) of Public Private Partnerships (PPPs) in seaborne marine research infrastructure

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# What is Public Private Partnership?

Public Private Partnership (PPP) in the Western European context:

”A mechanism for spreading risks, gaining off-balance sheet financing and increase innovation in the design, construction and operation of infrastructure based projects”

(Chris Skelcher, The Oxford Handbook of Public Management)



# PPP – Pro's and Con's

- **Pro's**

- Efficiency
- Innovation
- Lower investment cost
- Lower operating cost
- Flexibility
- Less public risk
- Competitive process

**= More bang for the buck!**

- **Con's**

- Lack of transparency
- Less democratic control
- Less public jobs
- In reality outsourcing
- Higher cost in the end
- Private companies are in for the profit, public agencies are focused on the citizen's best interest

**= Public DBFO is better!**

DBFO = Design, Build, Finance, Operate



# Overview of EC initiatives in the field of PPPs

**European Technology Platforms (ETPs)** : Industry-led stakeholder fora charged with defining research priorities in a broad range of technological areas. For the marine/maritime sector :

- **Waterborne ETP** : <http://www.waterborne-tp.org/>
- **European Aquaculture Technology and Innovation Platform (EATiP)** : <http://www.eatip.eu/>

**ETPs can lead to EC implementation initiatives :**

- 6 [Joint Technology Initiatives](#) (JTIs) : - Fuel Cells and Hydrogen (FCH), Aeronautics and Air Transport (Clean Sky), Innovative Medicines (IMI), Nanoelectronics Technology 2020 (ENIAC), Embedded Computing Systems, (ARTEMIS), Global Monitoring for Environment and Security (GMES).
- 3 [Public Private Partnerships](#) (PPP) : Energy-efficient buildings, Factories of the future, Green cars

## How can these tools be used for PPP(s) on Marine Research Infrastructures issues ?



## Marine Research Seaborne Infrastructure – **Financial challenges context**

- Research Vessels (RVs), under water vehicles (ROV, AUV etc) and scientific instruments (sonars, multi beam echo sounders, giant piston corers, towed vehicles etc) are **extremely expensive to DBFO (Design, Build, Finance, Operate)** and often competes with other research areas for infrastructure funding
- A modern RV can have an investment cost of 50-200 M€, a daily operating rate of 15-30 K€, and an annual upgrade need of 150 – 500 K€. In addition comes DBFO cost for scientific instruments, equipment and under water vehicles.
- PPP can therefore be an attractive model to renew an RV fleet in times when Government investment funds are tight



## Marine Research Seaborne Infrastructure – **Human Resources challenges context**

- To Design, Build and Operate RVs and its scientific payload **require highly competent and skilled staff**, both in the land based organization and on board the vessels
- The shipping industry, oil and gas industry and the IT industry are competing for much of the same people as the marine research community, but **the industry can offer much better salaries** and other benefits than a Government funded research institute
- **Recruiting and retaining staff is therefore a growing concern** for many RV operators, in particular regarding design and development of new RVs and associated equipment



# So is PPP the answer?

## The answer is a definite maybe!

- For RVs procurement?
- For RVs operation?
- For RVs use?
- For Under Water Vehicles (UWVs)?
- For Scientific instruments and equipment?



# Is PPP the answer?

## Regarding RV procurement

- **The financing of a new vessel** should in principle be cheaper if the Government can "cash finance" the procurement since there will not be any financial expences (interest on loans etc). A private investor also has to include his own financing cost (either from borrowing money or using his own funds ) to build the vessel.
- In addition, any private company has to have a reasonable "return on his investment" and make a profit on his daily operations in order to survive in the long run and to pay out dividend to his owners.
- Only a cash strapped Government should choose a privately owned vessel instead of a public owned one in order to get the short-term lowest investment cost.



RV "Helmer Hanssen", former "Jan Mayen". Privately built , owned and operated up to 2011. Taken over by University of Tromsø in 2011. Operated by a private company.





# Is PPP the answer?

## Regarding RV operations

- **Through long term contracts** : Privately or public owned and privately operated RVs on long term contracts with public research institutions are quite common, and the impression is that private companies are about as qualified, effective and/or costly to DBFO as government RV operators. E.g "Maria S. Merian", "Celtic Explorer" and "Sonne"
- **For short term jobs** : Renting commercial vessels for short term jobs on the "spot market" shows that the price is comparable to government RV rates even they are usually not fully equipped/adapted for advanced scientific research. E.g IMR renting of modern fishing vessels such as "Libas", "Brennholm" and "Christina E."
- In general **the actual operating cost of a vessel is (or should be) the same** regardless of if it is privately or publicly operated since the main cost elements are salaries, fuel and maintenance.
- Regarding the choice of private or public vessel operator it should be a matter of cost effectiveness and what is regarded as the most practical solution.



# Is PPP the answer?

## Regarding RV use, utilization is priority one !

### Public RVs should therefore be at sea, not alongside the pier!

- The most important factor is if the vessel is used "continuously" in order to get the daily rate as low as possible since the majority of the expenses are fixed cost.
- The second most important factor is to use the vessel and equipment to the extent possible before the vessel and/or its equipment becomes obsolete to get a reasonable cost/benefit result from the investment.
- Cruises funded by private companies, with combined private/public (scientific) objectives could contribute to the maximum use of public R/Vs and UWVs. *E.g. deep-sea exploration cruises required by oil offshore and seabed mining companies.* The problem could be the public requirement for long term planning of cruises (one to two years) and the private sector's need for flexibility

### Basic rule: A day lost can never be regained !



# Is PPP the answer?

## Regarding use of commercial and fishing vessels in support of science

- Commercial vessels can be used as "gap fillers" for cruises that can be executed equally well regarding data collection, acoustic mapping of fish stocks, CTD data, water samples, plankton samples etc as a research vessel.
- Many modern ocean going fishing vessels are equipped for offshore and/or research tasks as a supplement to its regular fishing activities since many of them have much spare time due to quota limitations and efficient fishing . They are often able to operate CTDs, ROVs, plankton nets etc

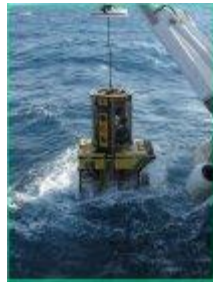
E.g. Institute of Marine Research rents fishing vessels for certain fishery related activities approx 1000 days per year.



# Is PPP the answer?

## Regarding Under Water Vehicles (UWVs)

- UWVs such as ROVs and AUVs are in heavy use both industrially and scientifically
- They are very expensive to buy, use and keep "up to speed" with user needs, new technology etc
- The industrial use of AUVs and ROVs is much heavier than for marine science and the industry is often a more demanding customer, have more "operating hours" on their equipment and have more trained staff than the marine research community regarding UWVs



# Is PPP the answer?

## Regarding Under Water Vehicles (UWVs)

- It is therefore a question if the marine research community should play a secondary role in this field and let the industry take the lead regarding technology development, ownership, services etc and instead of Government DBFO of UWVs, rent from commercial companies when an UWV is needed on a cruise?
- Joint ownership of UWVs between Government and industry could be difficult due to different planning cycles (months vs weeks) and insurance (self insured vs insurance policy)



Hugin  
AUV



Bathysaurus  
ROV



# Is PPP the answer?

## PPP for scientific instruments and equipment

- The functional lifetime of marine research instruments and equipment can be anything from decades for mechanical equipment such as trawls, grabs, box corers, plankton nets etc to just a few years for hydro acoustical systems such as sonars, multi beam echo sounders, towed vehicles, ROV tools, landers, oceanographic instruments etc
- It is crucially important that there are a very strong and close cooperation between the marine research community and industry regarding design, development and testing of new marine research instruments and tools in order to maintain the necessary innovation and development of such instruments

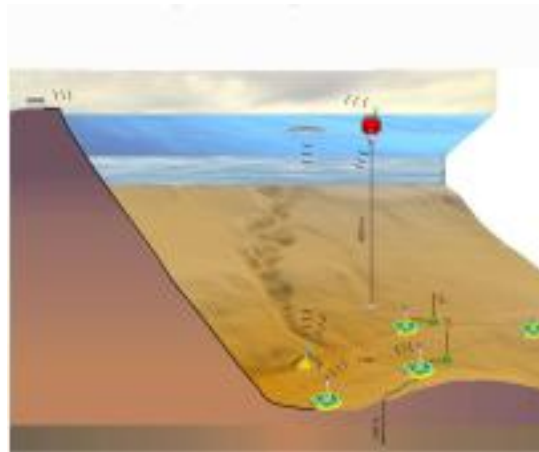
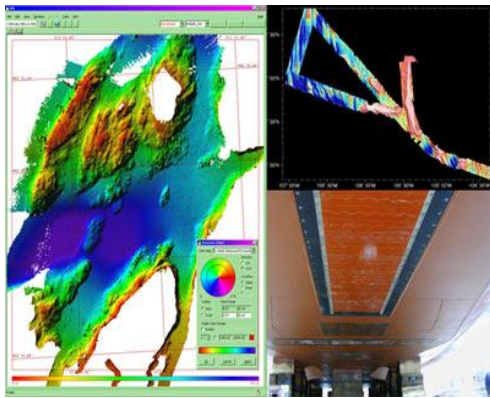




# Is PPP the answer?

## PPP for scientific instruments and equipment

- The biggest challenge for this is probably the public procurement rules and regulations which require competition, transparency etc which potentially could "scare away" the industrial partners from participating in conceptual designs, prototyping etc since that could exclude them from the production contract at a later stage



# Is PPP the answer?

## Conclusions

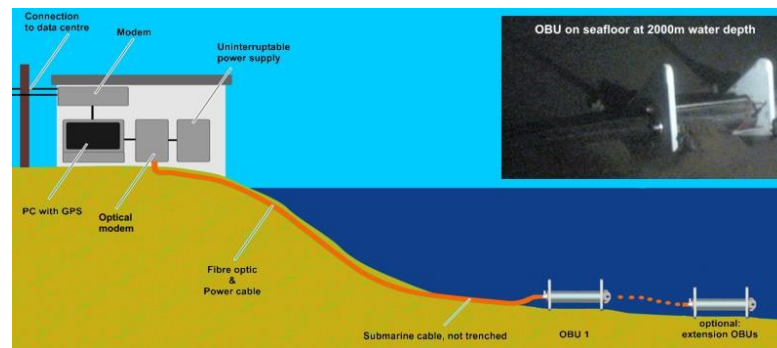
- PPP in various forms are already in operation in Europe, also within the marine research communities, mainly regarding operation of RVs
- Industry standard UWVs such as ROVs and AUVs are also used from RVs for scientific operations
- Many private companies cooperates closely with government research institutes for the design and development of RVs, UWVs and scientific instruments and equipment





# Potential new PPP

- ESFRI conference in Brest, France in June 2011 showed that ocean floor observatories is the "most wanted" scientific equipment for the scientists
- Many industries, such as oil, gas, mineral exploration, telecom, electrical power transport, offshore wind companies and others depends on under water installations, cables, pipes etc
- There should be possible to combine technology, physical instruments and installations, signal cables, power cables etc in a joint under water infrastructures





# Thank you for your attention!

