



**Developments with GSM services on
cruise ships and ferries -
market developments and cost**

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CellAtSea™, the Service

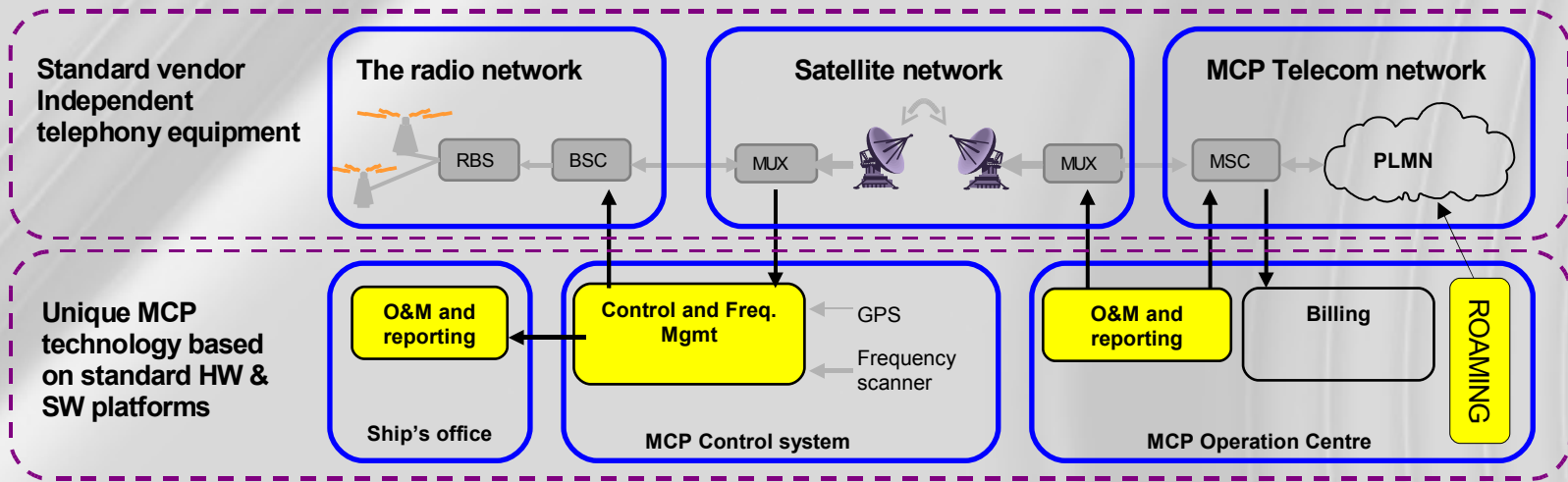
- Utilizes V-SAT technology

Connecting the ship to shore in combination with a conventional wireless radio network on board. This enables wireless subscribers to roam in exactly the same way as when using their phone outside of their home operator network
- World wide connectivity where VSAT goes, CellAtSea™ goes.

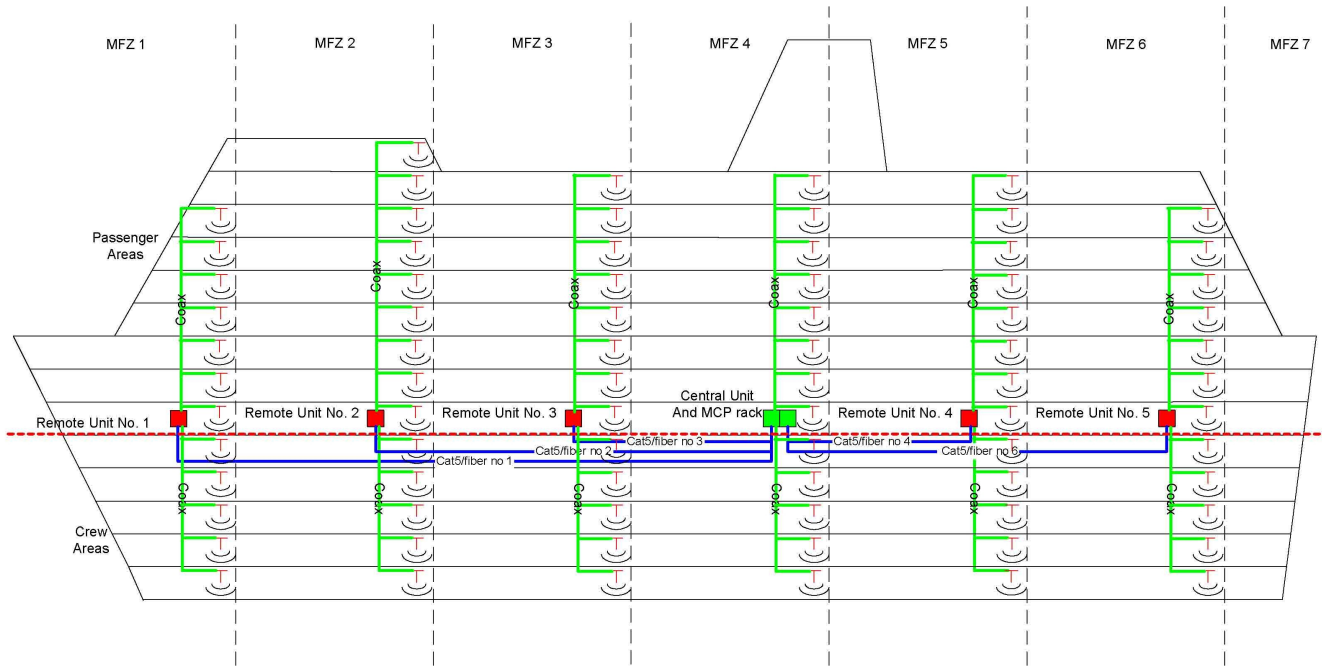


The Technology

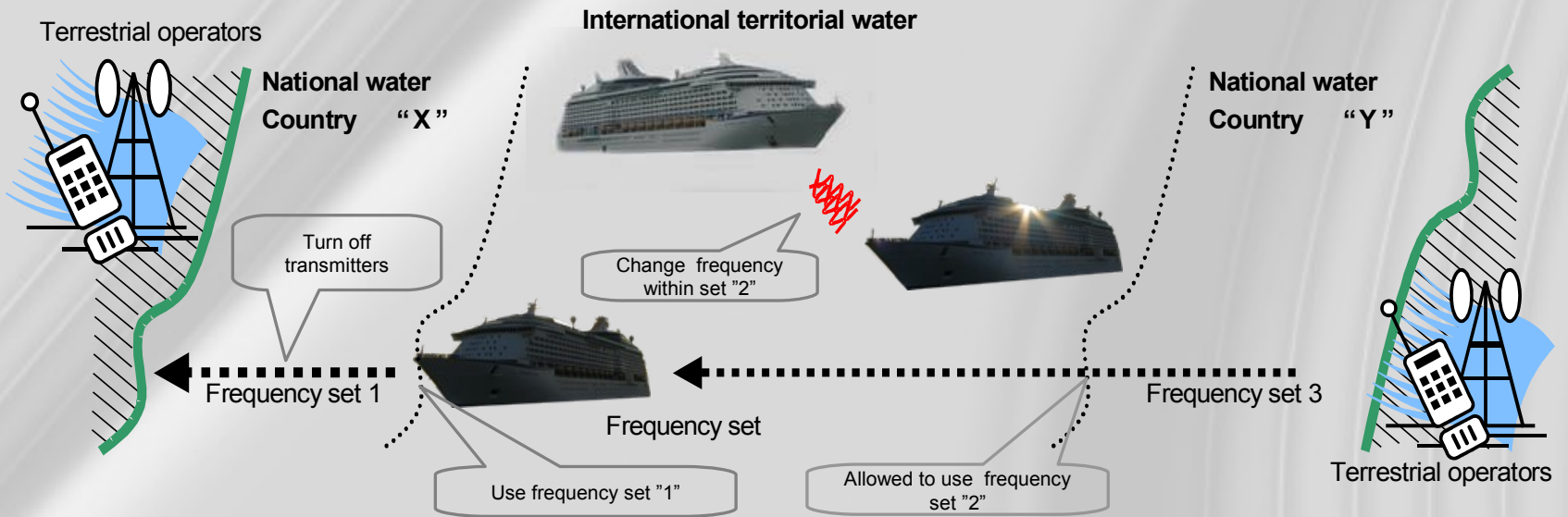
- Unique MCP technology utilizes standard “off the shelf” wireless system components and software, thus minimizing costs and risks. GSM systems in general moved from few, big, high emitting antennas towards Picocells < 1mW



Cabling of ships



Avoiding Interference



The MCP system is a self adaptive network, monitoring and controlling the ships radio network frequency usage at any time, avoiding conflict with other radio networks



GSM onboard Cruise ships and Ferries

Development

- First attempts made mid 90', repeater based systems and some satellite based.
- First stand alone system commercially successful around year 2001
- Market opened up during 2004 / 2005
- Market presumed saturated during 2008

Market response:

- Relatively conservative to the idea, but rewards:
- Long term contracts, based on revenue and service



GSM onboard Cruise ships and Ferries

World market size:

Approx. 150 Cruise ships

Approx. 200 ferries

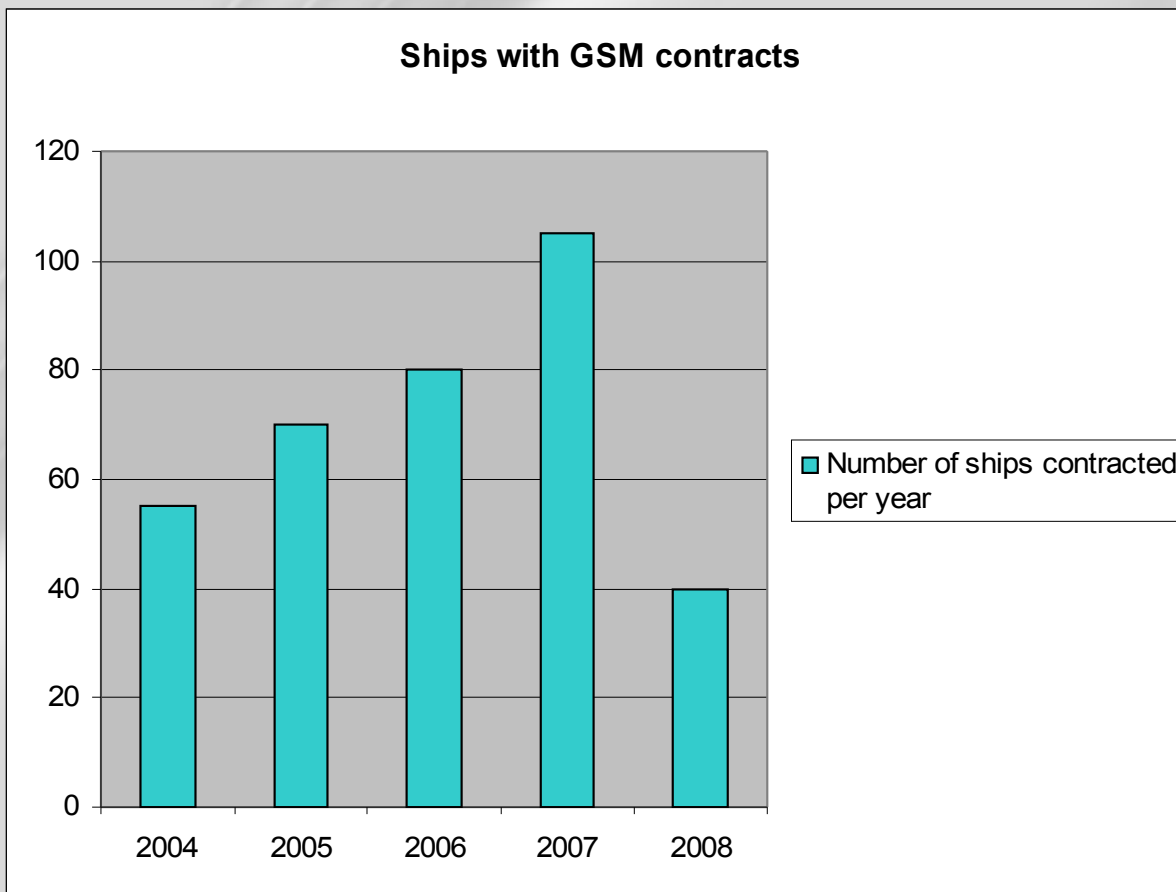
Total market value, between EUR 100 – 150 mill

Annual growth: Estimated 5-10% per year.

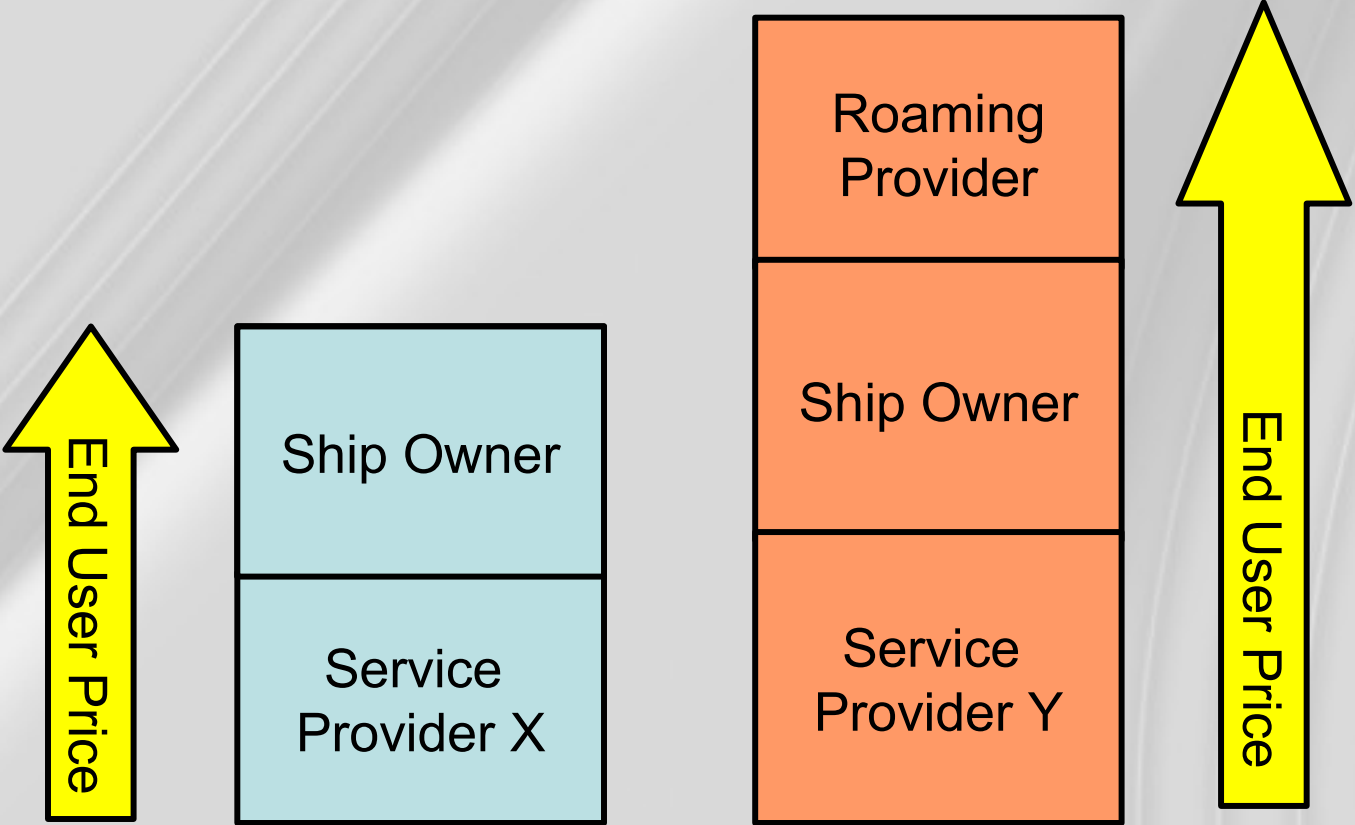


GSM onboard Cruise ships and Ferries

Contracts awarded and expected development



Revenue Models



Price & Markets

- Cruise & Ferry market

Seems to be a willingness in the start to pay premium rates from pax on board cruise ships, rates 4 - 5 EUR per minute.

Price tends to have a significant pressure downwards in northern Europe. Ship-owners starting out in the GSM business are very much aware of end user prices. Expectancies approx 1,6 – 2 EUR per minute.

EU is moving in direction of lowering roaming prices for European subscribers in general. Most maritime services today are totally dependent on Roaming. The higher cost related to satellite transmission, compared to terrestrial connectivity, as well as relatively high CapEx on board each ship will probably mean prices will not be affected by authorities in the short term.



Future customer demands

–Integration of communication services

–My humble prediction is:

- VSAT itself is only a bridge, Service providers must be prepared to take an overall responsibility for all communications from Ship – Shore in the near future,

Value Added Services

- Passenger Services
 - SMS
 - Passenger information services
 - Stay-In-Touch customer tool
 - Itinerary reminder
 - Online booking services
 - Promotion services
- Ship Owner Subscription Services
 - CrewGSM
 - Crew paging
 - Business zone
 - Barring profiles
 - SMS access
- Information Services
 - Vessel location & tracking
- Integration
 - Ship wire
 - Silent zone
 - Repeater
- GPRS/data
 - MMS
 - Blackberry
 - Credit Card Clearing



The Maritime Operator "Package"

- Turn key installation
- Connection through any satellite provider
- 24/7 Network support and maintenance
- Extensive International roaming
- Call billing and revenue sharing
- Flexible value added services
- Licensed telecommunications operator
 - Member of GSMA
 - Member of CDMA Development Group
 - Contributor to CEPT



Proven success on board



“This service has performed faultlessly since installation, bringing our passengers a superior value added service, and Stena Line a lucrative business opportunity”

Hans Björkberg, Stena Lines' IT Director

