



# Sophisticated VTMS radar Systems

For now and the future

# Content

1. What are we talking about
2. CHL
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4. Developments
5. Conclusions

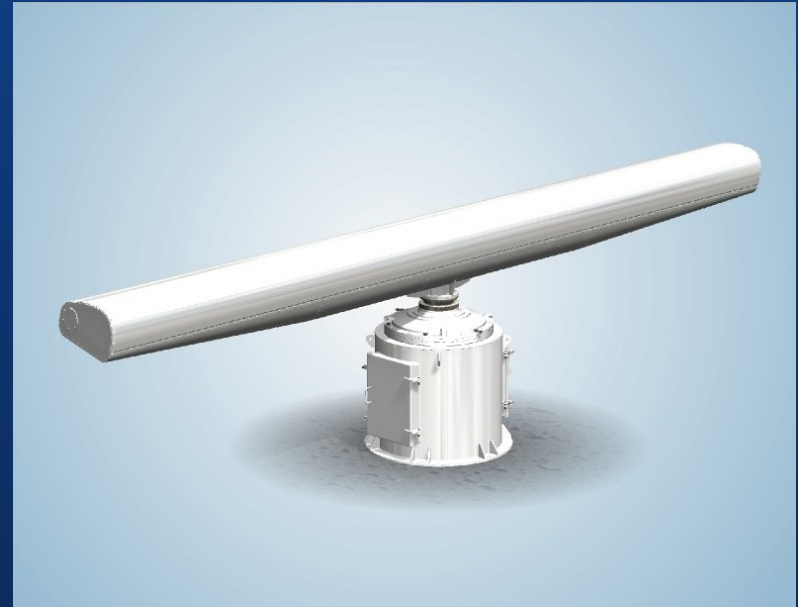
# Radar antenna system

## Breakdown

- Antenna
- Turning unit
- Rotary Joint
- Encoder

## NOT

- Transceiver



Antenna system lifetime = typically 3 times a transceiver lifetime

# Intro CHL

1. 60 years experience in radar antennas
2. Small series of custom-built radar antenna systems which are the best in their class.



# Intro - Best of class

For example;

- Performance
- Reliability
- Long life
- Strength
- Low maintenance
- Noise (Turning unit)



# Intro - Global Presence



More than 300 sites have been installed with CHL antenna systems in all kind of applications. Examples are;

**VTS**

Rotterdam  
Hong Kong  
Yangtze river

**Coastal surveillance**

Malaysia  
India  
Saudi Arabia

**SMR (airports)**

Madrid  
Gatwick  
Sydney

# Intro – River VTS



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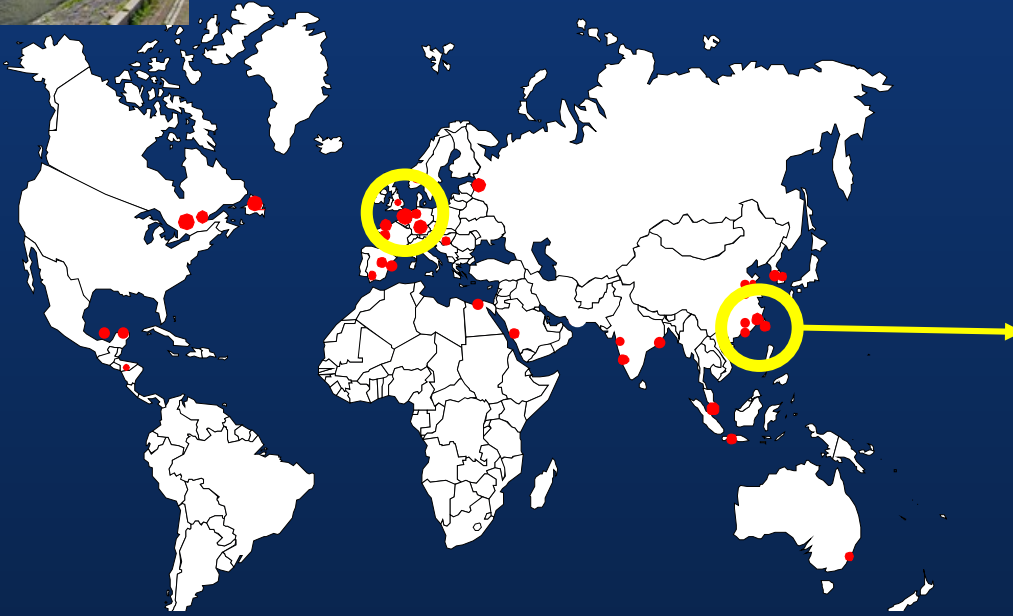
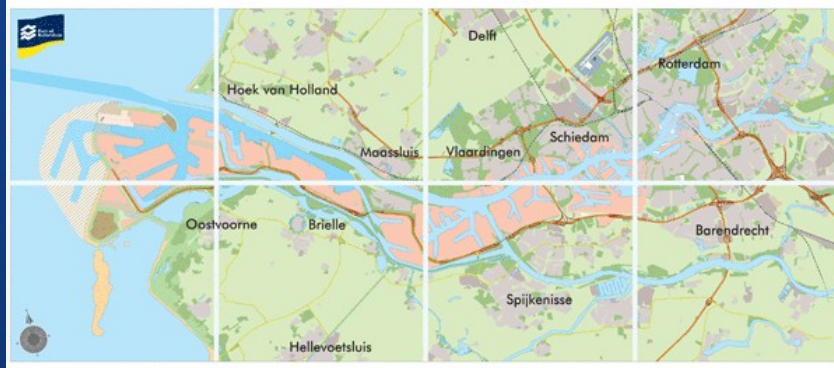
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# Intro- River VTS



# Requirements for VTS

(in a nutshell)

- Specifications
- Circumstances
- Regulations



# Specifications

## Elements

- How far do you have to see
- What do you have to see



- How accurate do you have to see (dangerous cargo)
- How reliable must the system be (back up)
- Design life

# Circumstances



# Regulations

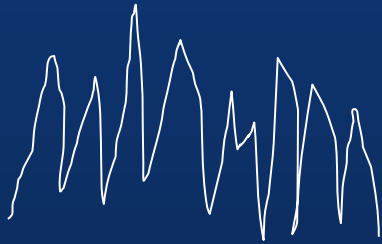
- IALA manual
- IMO → SOLAS
- National regulations

# Developments

- Military technology starts to become commercially available
  - What is it?
  - What does it mean for the operator?
  - Who is doing what at the moment?

# Dev.- What is it

- Magnetron → Solid state transceivers



# Dev – What does it mean for the operator

- Doppler → better clutter ratio → better performance
- More power → better detection ranges
- Reliable; the magnetron can't blown up (graceful degradation)
- Less maintenance

# Dev. - Who is doing it

Available now



***Kelvin Hughs***

Announced

***Terma***



*Japan Radio Co., Ltd.*



# Conclusions

## Facts:

- Radar antenna systems operate 5 to 50 years
- Next 5 to 10 years new generation transceivers
- In time regulations will follow (be prepared)

## What to do

- buy antenna systems which can coop with present and future systems to keep options open
  - you can decide when/if to change
  - No unnecessary investments