

# SMALL TARGET DETECTION THROUGH ADVANCED RADAR TECHNOLOGY

**TERMA<sup>®</sup>**

Jens C. Pedersen

*Director, Product Portfolio and Innovation*

*Terma Radar Systems*

You don't know what you don't see



- Targets of interest are often of the same RCS as sea clutter, same size as birds and may be mistaken as fishing or leisure boats
- Smugglers etc. does often take advantage of bad weather, hide behind wave crests, hide behind large ships or follow wake of large ships
- Other tricks such as hiding of people in the hull of the boats and covering motors with wet blankets - to reduce noise, infrared signature and RCS - are common



**Illegal immigrant detection  
to 11-15 nmi, sea state 3-5**

Stationary installations





3-5 m<sup>2</sup> RCS detected to  
10-12 nmi, sea state 4-5

Ships



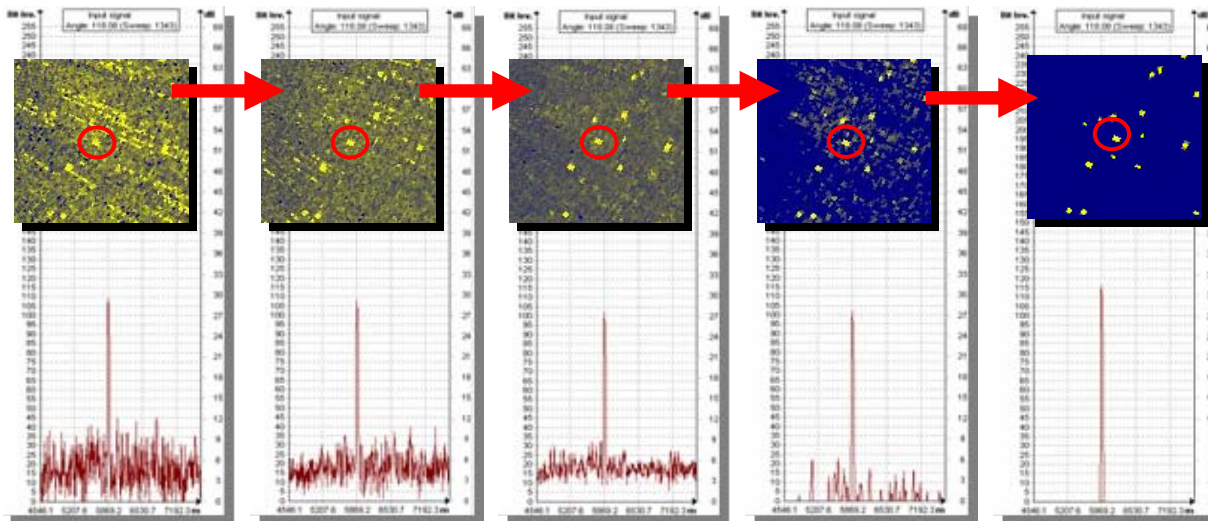
- Naval References
- Surface Movement Radar
- VTS & Coastal surveillance



> 1000 radars - in all conditions



High gain Antennas  
Low sidelobes  
& tailored beam shape



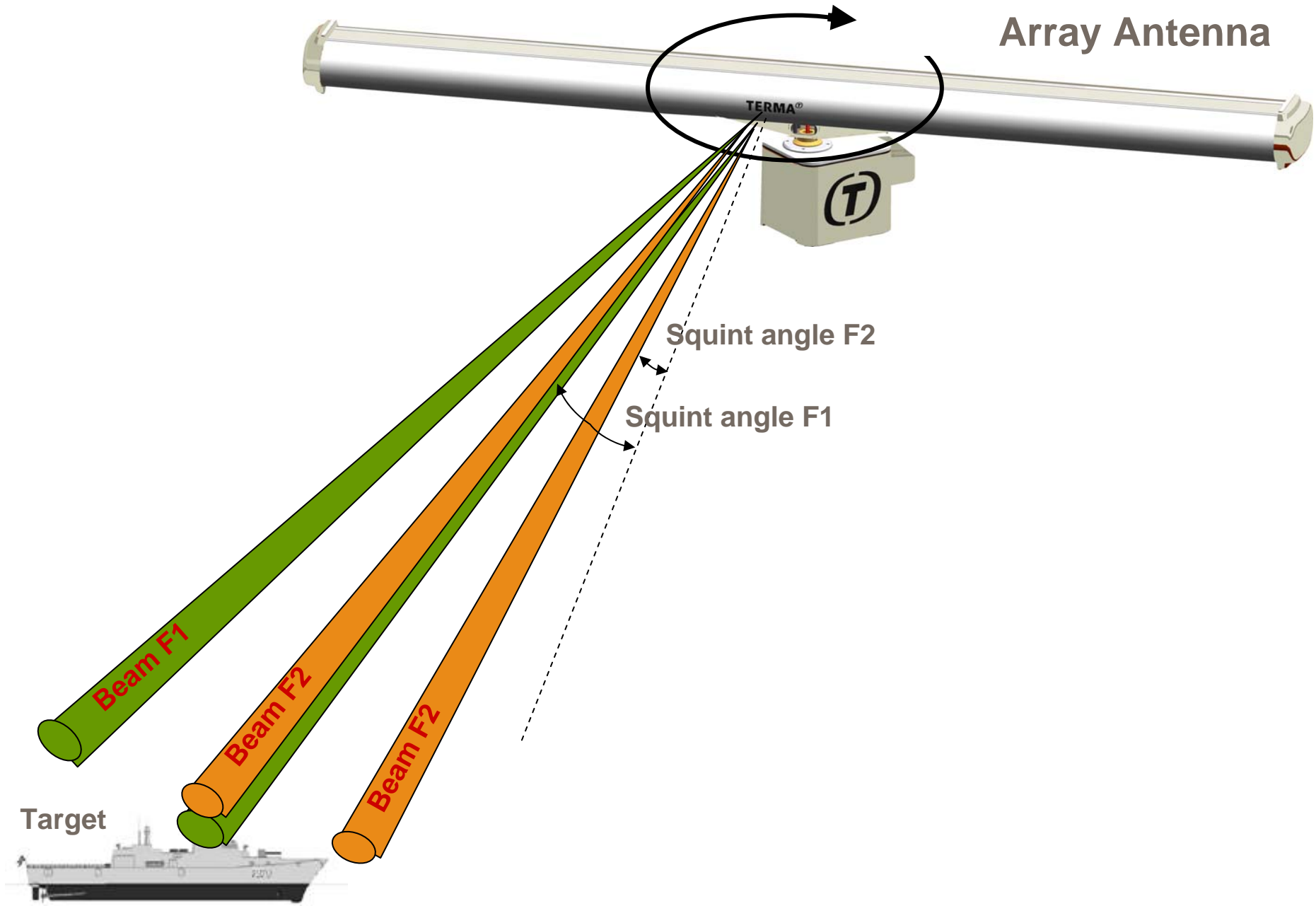
FiveStepVideoPassing<sup>©</sup>

Frequency & Time diversity  
Advanced multiple  
Clutter reduction processing

ASC 2

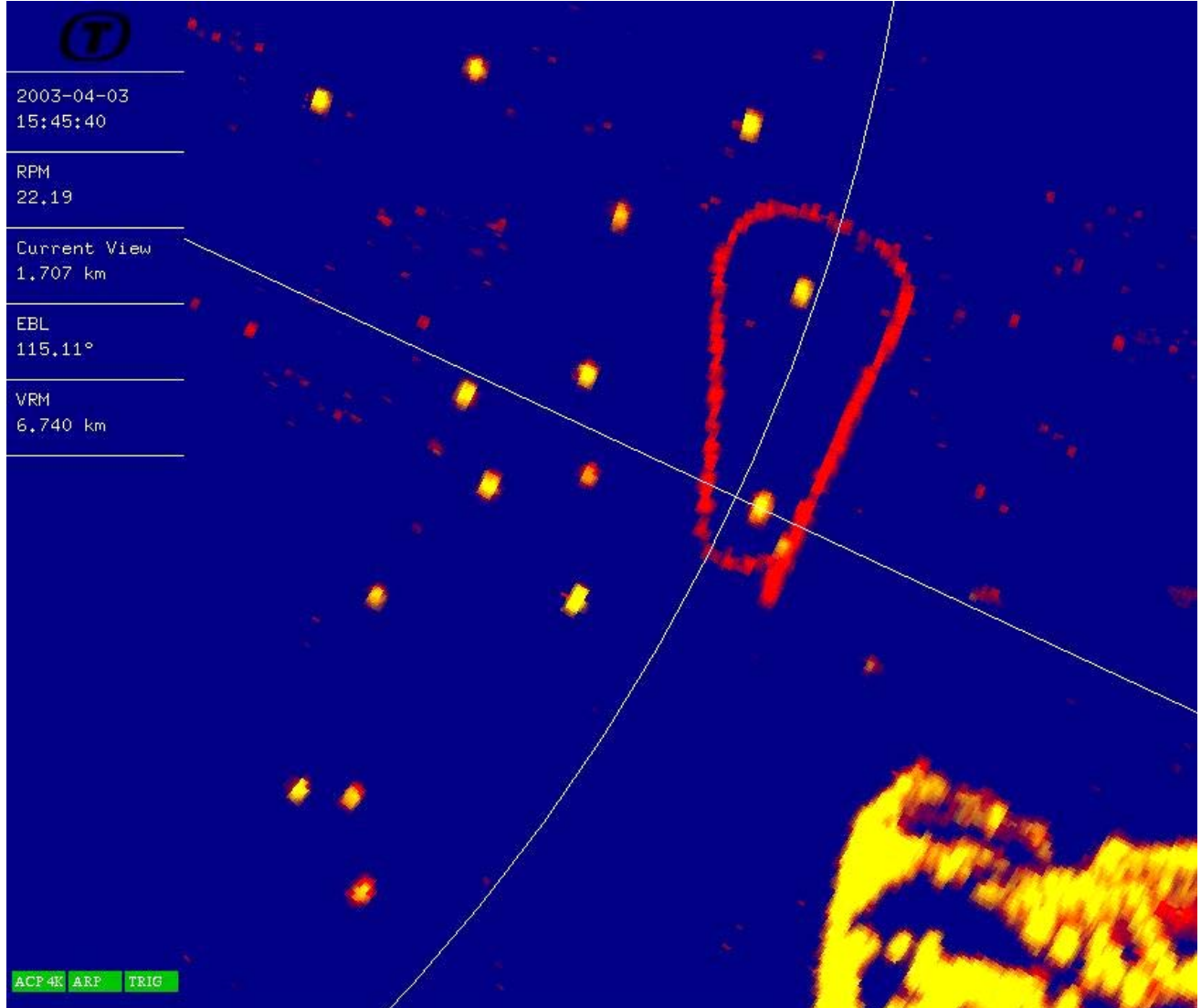
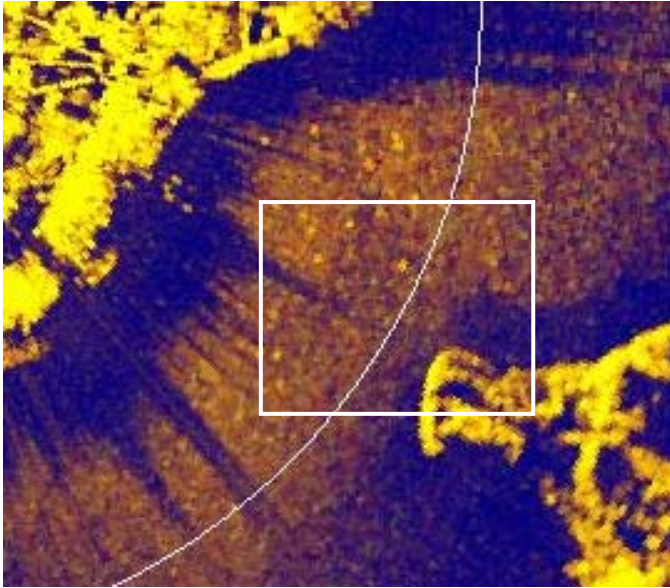
Full automatic adaptation to weather  
Dramatic enhancement of system  
capability





Frequency and Time Diversity





Fresh wind, waves with whitecaps

Detection in clutter





System	SCANTER 2001 <i>i</i>		In development	
Antenna aperture	6 meters	3 meters	2 meters	<1 meter
Antenna elevation	100 – 250 meters ASL	5-20 meters ASL	5-20 meters ASL	5-20 meters ASL
Detection range, RIB or wooden boat	10 – 15 nmi	3-6 nmi	3-6 nmi	1-2 nmi
Max sea state	4 +	3 +	4 ++	4 +

Performance against piracy



# Autonomous sensors

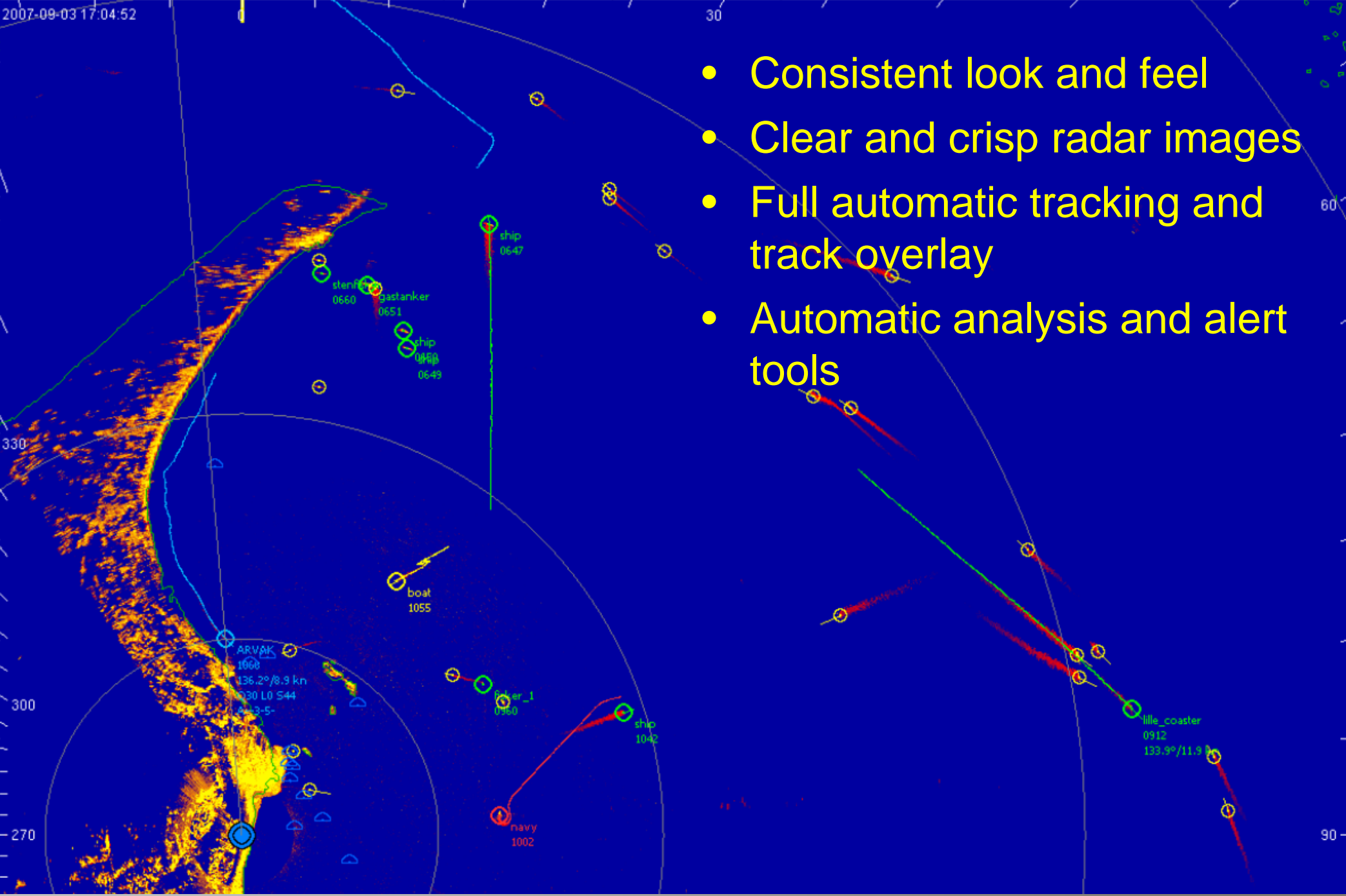


# Remote controlled measures



- All targets shall be detected
- Low false alarm rate
- Discrimination on behaviour
- Rapid reaction





- Consistent look and feel
- Clear and crisp radar images
- Full automatic tracking and track overlay
- Automatic analysis and alert tools

Discrimination on behaviour.





Thank you for your attention

