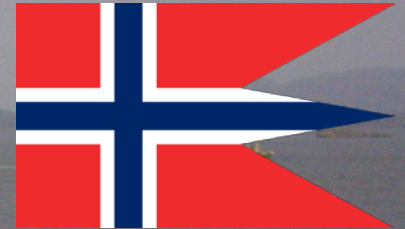


Norwegian Submarine Service

National experience from over
100 years in service and some
thoughts about the future



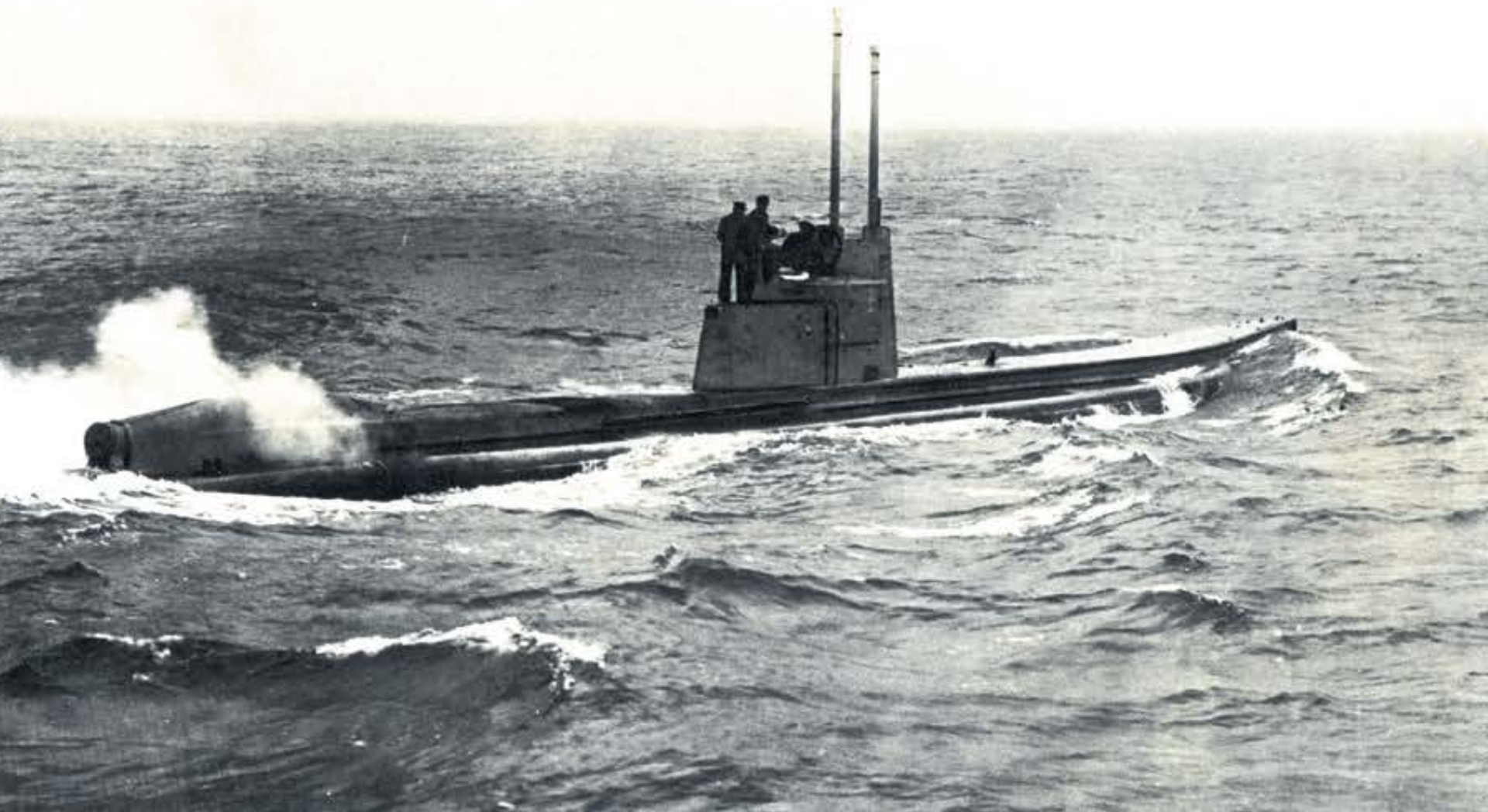
On Scene but Unseen
Esse non Videri

CDR sg Pål Øystein Hope
COMNORSUBSERV



NORWEGIAN ARMED FORCES
Submarine Service

Kobben, 1909





NORWEGIAN ARMED FORCES
Submarine Service

Pioneers...



Dons og Tank-Nielsen i Aeroplanet



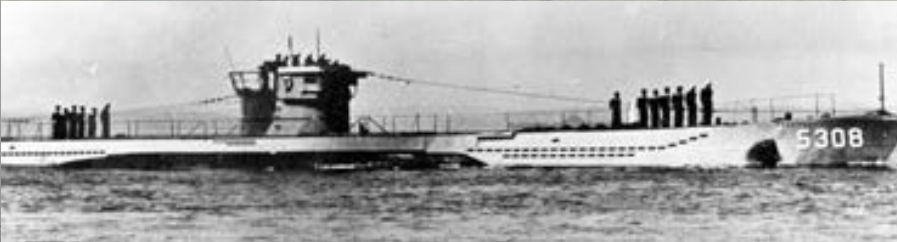
A-class



B-class



U-class



K-class



Kobben



Ula



1909

1919

1929

1939

1949

1959

1969

1979

1989

1999



Norwegian Submarine Service

- Ula-class – 5 (4) crews • Approx 25 crewmembers
 - HNoMS Ula
 - HNoMS Uredd
 - HNoMS Utvær
 - HNoMS Utstein
 - HNoMS Uthaug
 - HNoMS Utsira





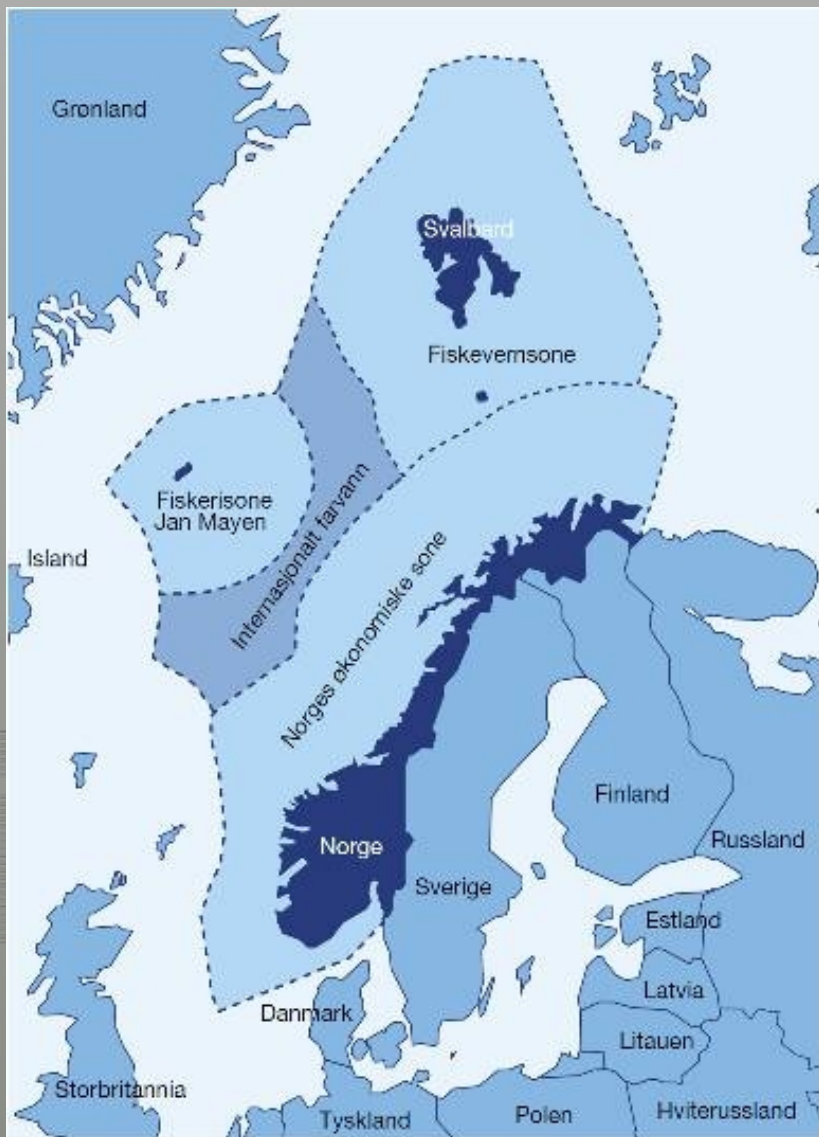
NORWEGIAN ARMED FORCES
Submarine Service

Norway

Landarea: 385.186 km²

Sea area: 2.031.734 km²

Coastline: 25.148 km





Change in operations

- Ula-class designed for anti-invasion during cold war
- Designed to be first line of defence
- Littoral anti-shipping
 - Multi sensor integration
 - Multiple target capability
- From cold water operations to the Mediterranean and back, redesigned to fit “new” environment and missions





Development and Experience

- The end of “the Cold War” changed the way Norway operated Submarines
- A shift from cold war presence and missions, to a manoeuvre oriented maritime concept.
- Participation in multinational and joint operations.
- International deployments/operations



In Service update program

- Time 2005 – 2015
 - P6344 (04-12)
 - P6345 (09-15)
- Cost driven
- Technology
- Keep Ula-class operational until 2020+





P6344 – First deliverables

- Passive Sonar
- Combat System IS
- Nav/Mine sonar
- Tropicalisation
- Satcom ant.
- Link 11
- Inertial Nav sys
- Torpedo DM2 A3 teststa
- DM2 A3 life extension



Passive Sonars -Multi Function Consoles



P6345 Upgrade programme

General Ship and Hull systems

- Valves, Pumps, Hydraulics, Air & Water, Fire ext, Galley, Sanitary

Propulsion and Electro systems

- Diesel Engines, Charger, Mains, Engine- & Steering Control, Degaussing

Navigation and Sensors systems

- Integrated Nav-system, Radar, ESM, Log & Echo sounder

Combat Management system

- MSI-90U, Torpedo Board Interface, Link11 integration, Attack Periscope

Communication systems

- Communication Control Matrix (classified-unclassified), AIS, Crypto system



Timeframe

Specifications and commercial preparation started	primo 2009
Pre qualification of industry started	primo 2009
First RFO's	medio 2009
First Contract effective	ultimo 2009
Delivery of Components	2009 - 2012
Delivery of Systems	2010 - 2015
SAT complete	2013 - 2015.





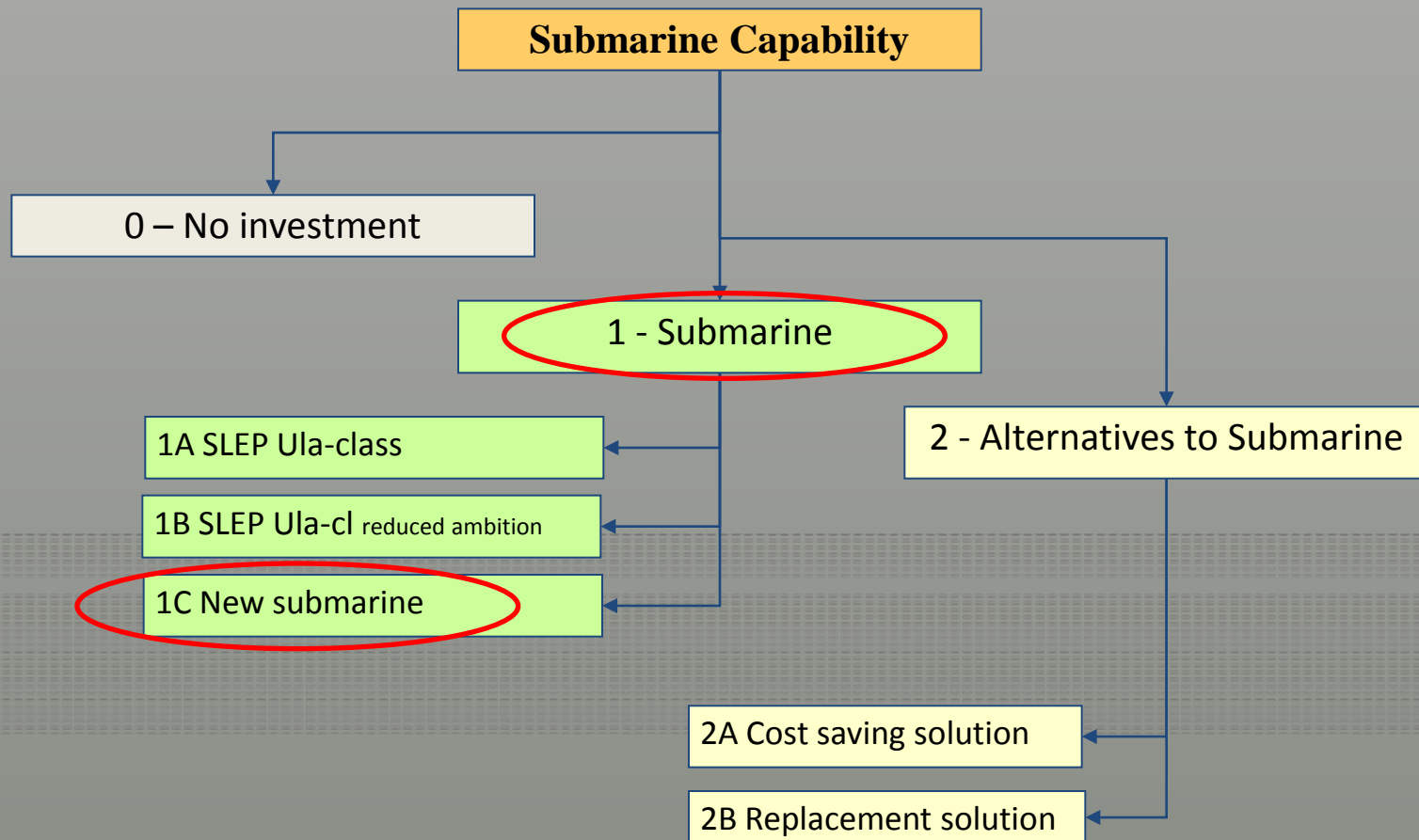
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Submarine Service

Project - 6346

Future Submarine Capability

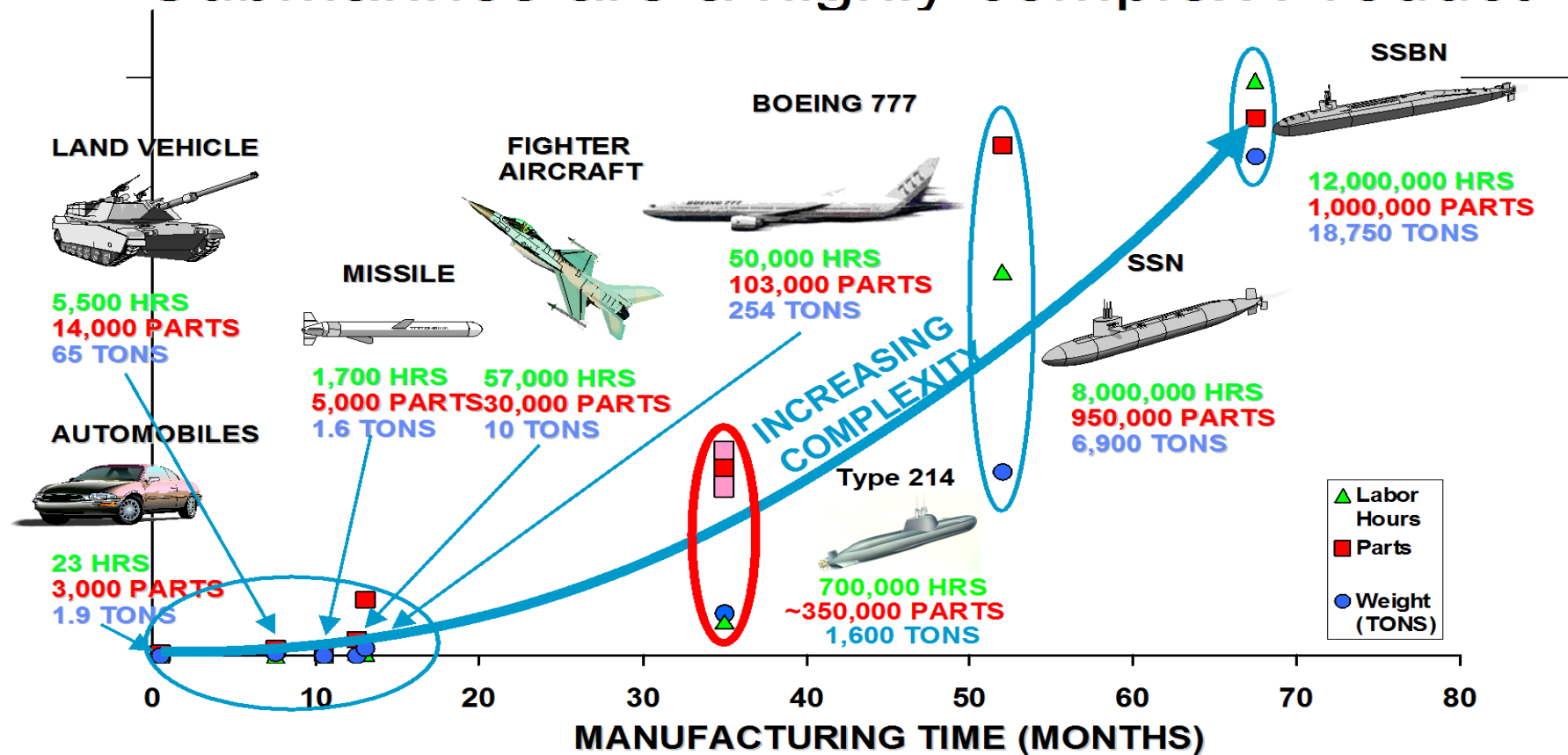


P6346 – Conceptual phase (2006-11)





Submarines are a highly complex Product



Summary

- Ula-cl – a product in demand
- Small organisation, but mission capable
- Updates and Upgrades in progress
- Shaping the future as we speak...
- In 2025 Ula will be 35 years...

"Submarines are today's capital ships"



"Esse Non Videri"

"On Scene, but unseen"



NORWEGIAN ARMED FORCES
Submarine Service



Questions?