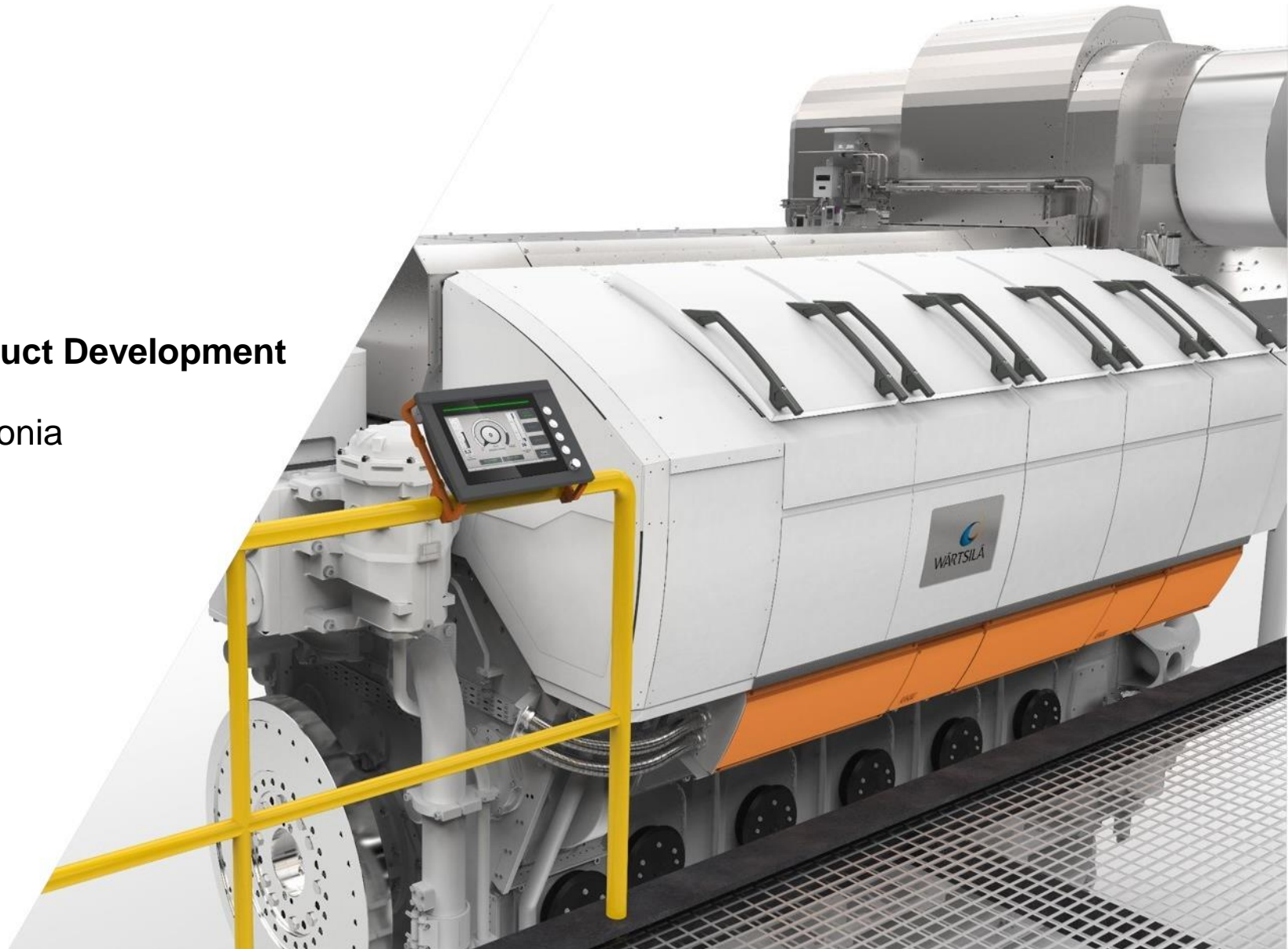


# Wärtsilä Future Fuel Technology & Product Development

## Decarbonising the Maritime Industry Through the Uptake of Methanol and Ammonia

Edition 2.1  
Feb 2023

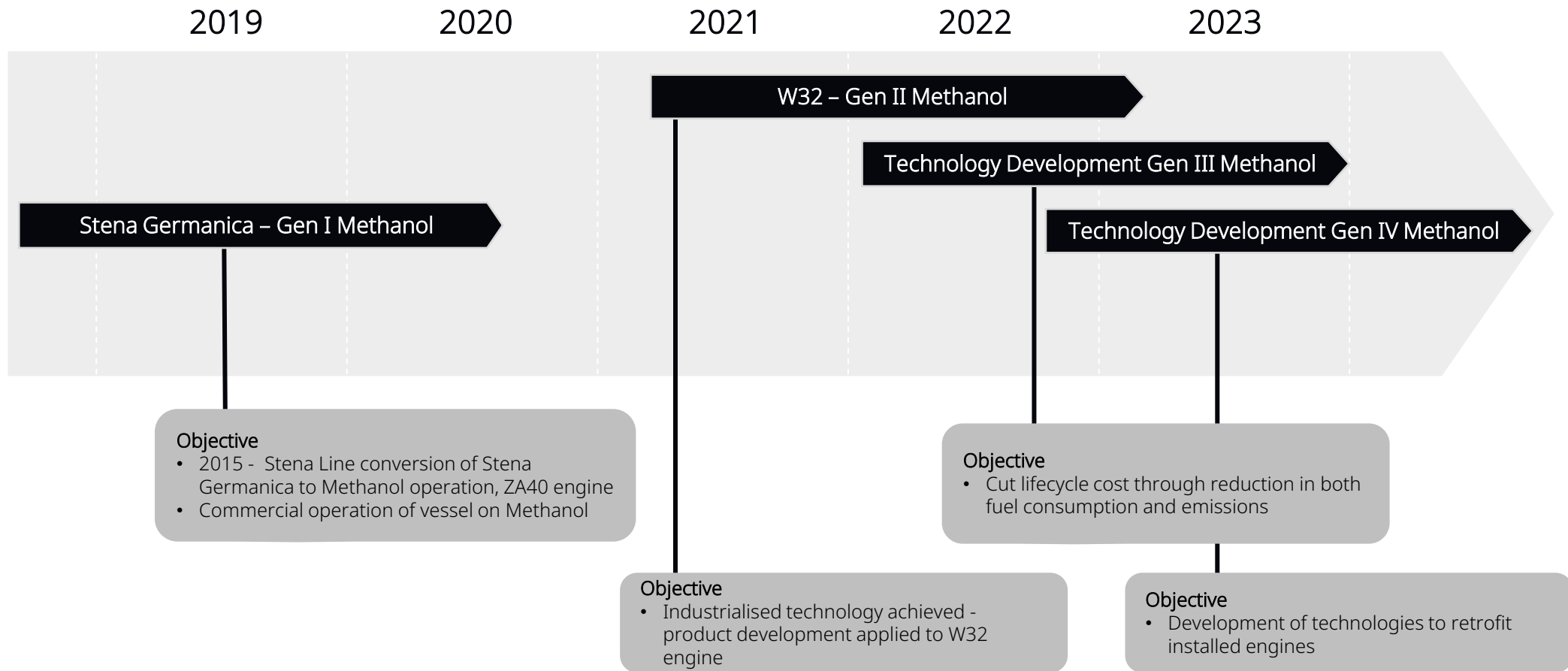


## Overview

### Wärtsilä Development Roadmap

- Methanol
  - Marine Power Technology Development
  - Marine Power Product Development
- Ammonia
  - Marine Power Technology Development
  - Marine Power Product Development

# Marine Power Technology Development – Methanol



# Marine Power Product Development – Methanol



Current Status



Current Plan



Ambition

**Technology Development**  
Developing combustion technologies, fuel systems, automation systems and safety features to operate on future fuels

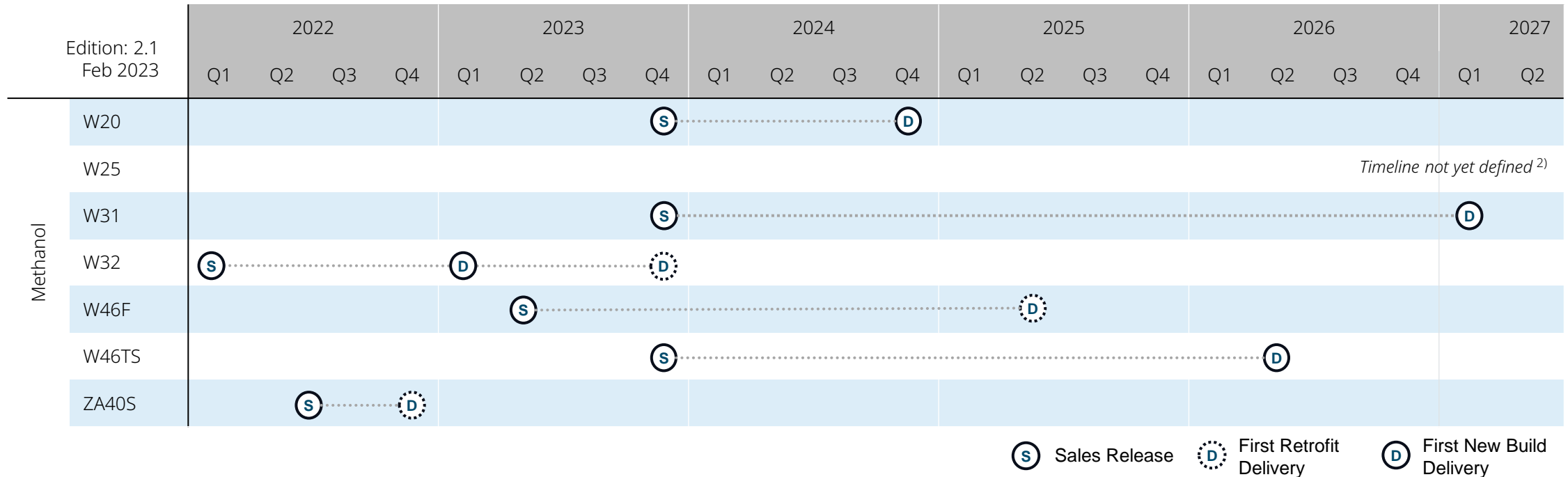
**Product Development**  
Applying technologies to specific product types

**Industrialised Solution**  
Decarbonise the marine industry with portfolio of engines running on future fuel applications

**Product Development**  
W32 Methanol engine now available to market and scheduled for delivery in 2023

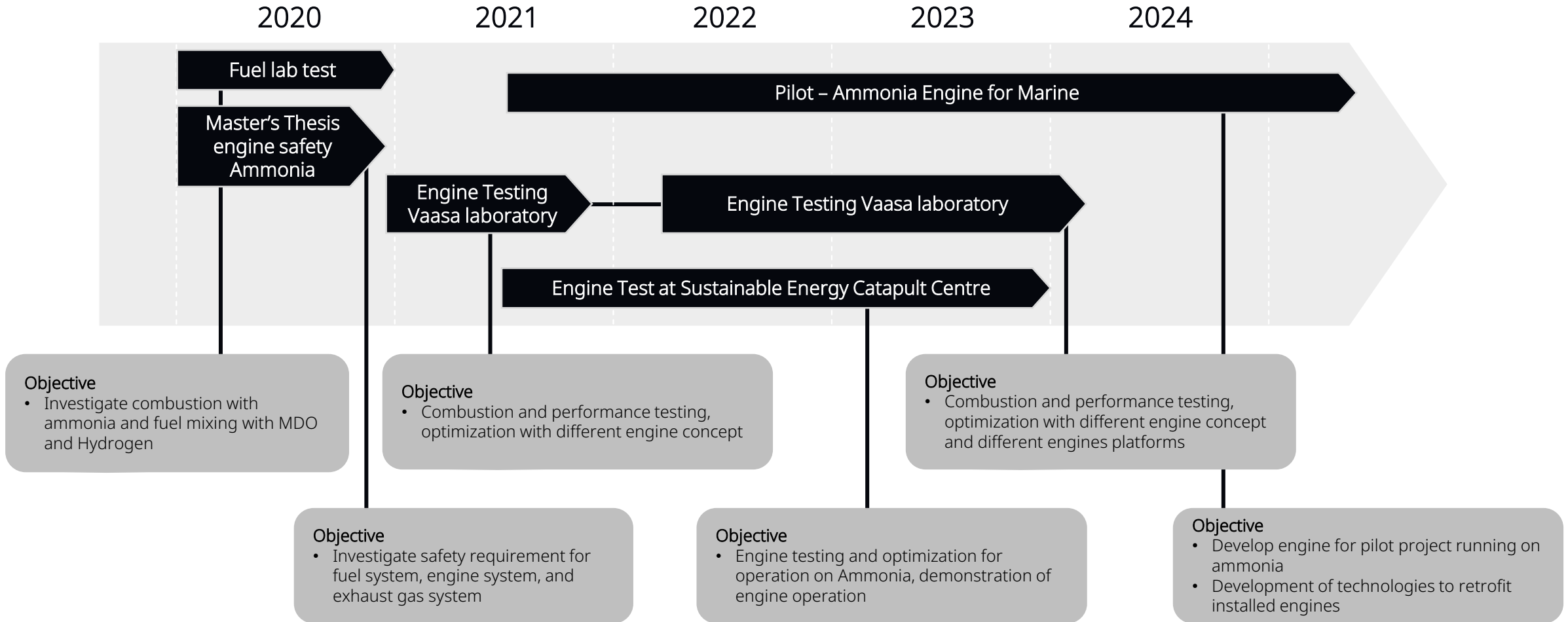
**Roadmap of Development<sup>1)</sup>**  
Indicated product timelines remain subject to change

**At Which Time**  
Methanol is available with supporting infrastructure to meet customer demand and these fuels are economically viable



1) Disclaimer: Subject to sufficient technology progression and quality, while ensuring maximum safety in these developments, the following indications in development have been made. It should be noted that both engine model and timeline remain subject to change based on market demand and other influencing factors.  
 2) The W25 Methanol timeline is not yet defined. Tentative plans indicate a sales release may occur not earlier than 2027

# Marine Power Technology Development – Ammonia



# Marine Power Product Development – Ammonia



Current Status



Current Plan



Ambition

## Technology Development

Developing combustion technologies, fuel systems, automation systems and safety features to operate on future fuels

## Product Development

Applying technologies to specific product types

## Industrialised Solution

Decarbonise the marine industry with portfolio of engines running on future fuel applications

## Product Development

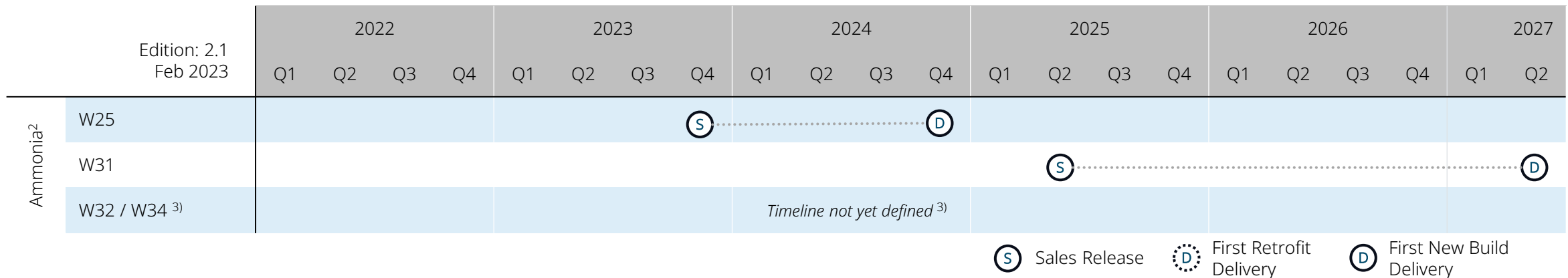
Current indications predict first Ammonia engine available for delivery as early as 2024

## Roadmap of Development<sup>1)</sup>

Indicated product timelines remain subject to change

## At Which Time

Ammonia is available with supporting infrastructure to meet customer demand and these fuels are economically viable



1) Disclaimer: Subject to sufficient technology progression and quality, while ensuring maximum safety in these developments, the following indications in development have been made. It should be noted that both engine model and timeline remain subject to change based on market demand and other influencing factors.

2) 40-60% blend based on fuel volume

3) Retrofit package is under planning. Sales release and first delivery dates are dependent on results from on-going technology tests. Tentative plans indicate a sales release not earlier than 2024.



WÄRTSILÄ