

Technology leadership driving value creation

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Our development focus is in enabling flexible, efficient and future-proof commercial solutions

Key achievements in our environment

Continuous engine efficiency development is essential with all fuels

- World-record engine efficiencies demonstrated on several latest engine types

Engine product portfolio developed and market introduction ongoing

- Fully modular 4-stroke engine platform with W25, W31 and W46TS engines

Emissions focus is particularly important, as emissions are becoming more closely linked to financial performance

- Continuous reduction of nitrogen oxides, sulphur emissions, carbon dioxide
- We are world leaders in 4-stroke engine methane slip (=unburned hydrocarbons) reduction

We have reached the key milestones in our alternative fuel roadmap

- Focus on commercialisation and expanding engine platform continues
- Alternative fuels mainly focus on methanol, ethanol, ammonia, hydrogen

Hybrid, engine–battery combination development continues

- Current high fuel costs have raised the interest towards engine hybrid systems
- Potential to challenge merchant market 2-stroke engine solutions



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Way of working in R&D

Prioritising a stepwise approach in development ensures maximised quality and safety standards



Idea



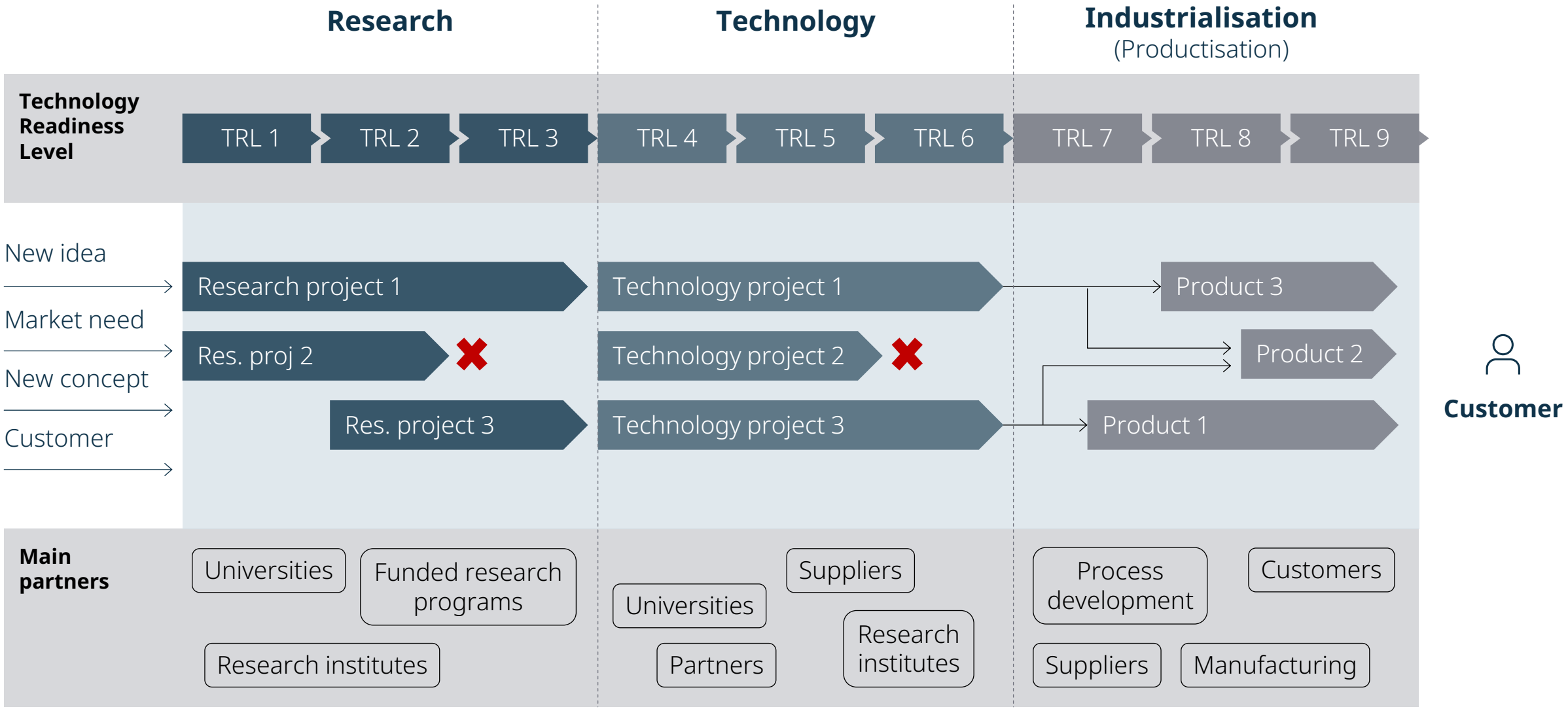
Technology development & proof of concept



Industrialised solution

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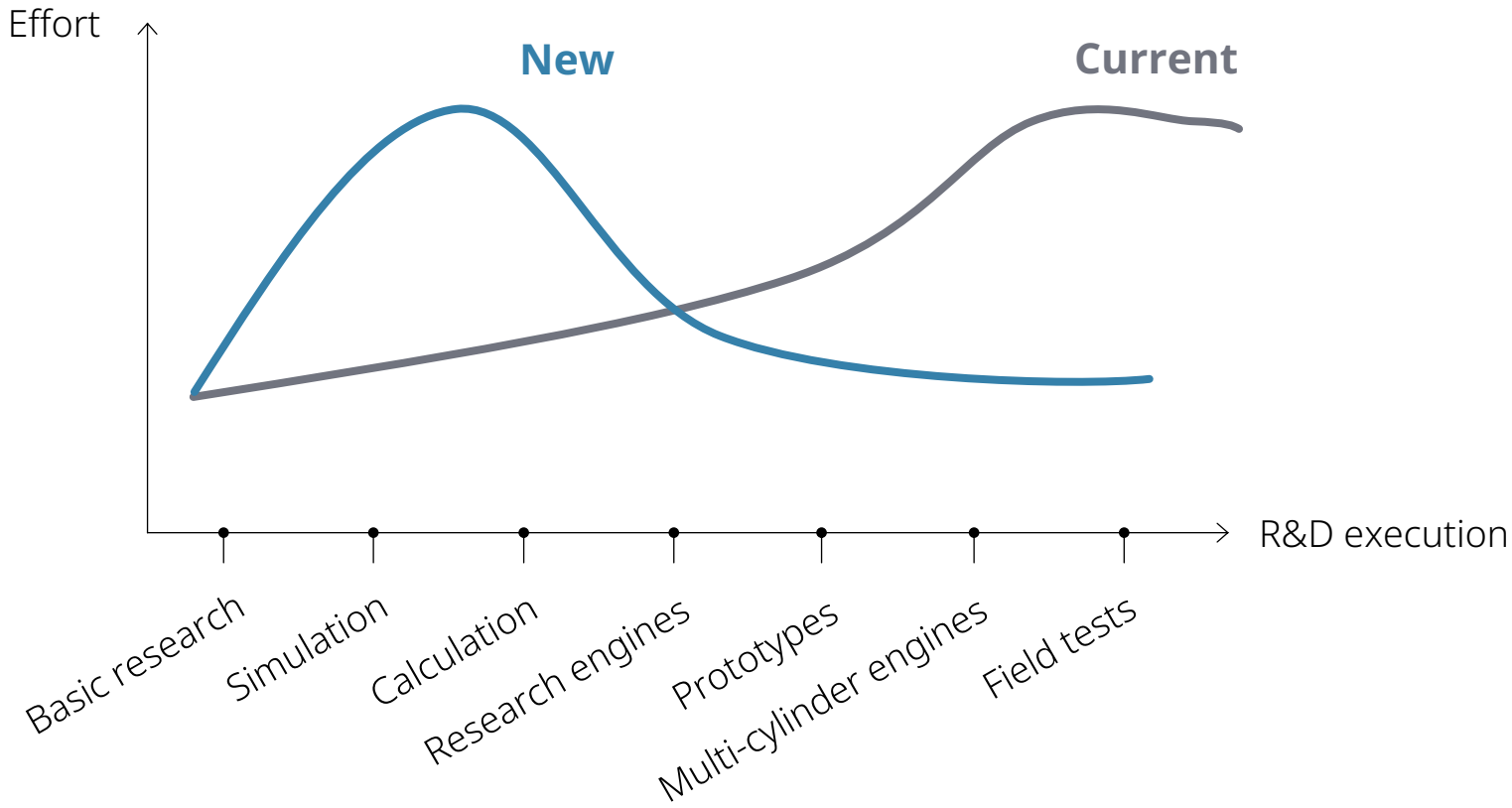
Our value stream connects research to market-ready products

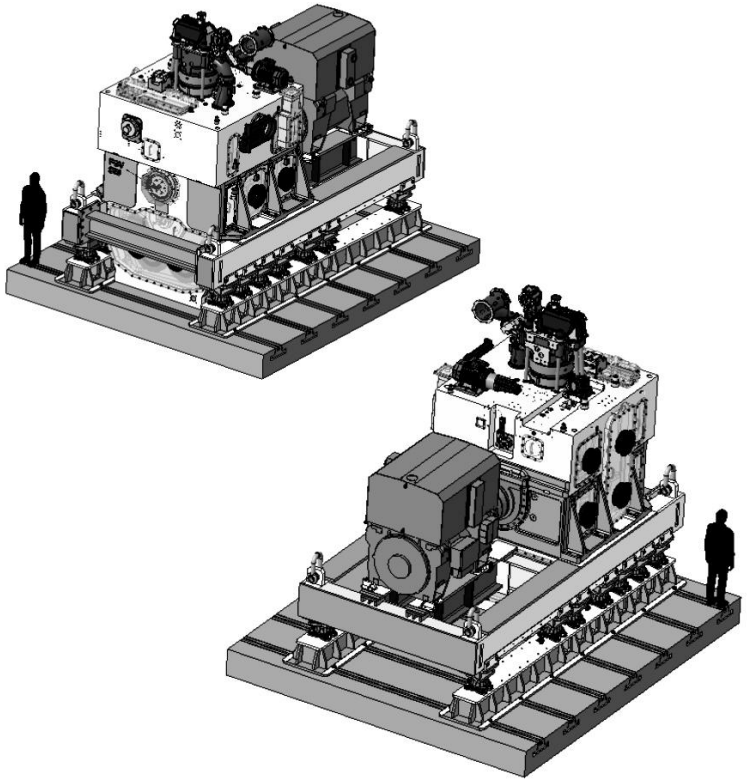


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Virtual validation improves R&D productivity and capital efficiency

Early digitalisation and AI utilised throughout process





New single-cylinder research engines, starting mid 2027

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Our patent portfolio is growing: first filings doubled in five years

2x
Growth in first patent filings 2020–2025

>70%
Of filings relate to engine technologies

>500
patent families, including granted patents and pending applications covering over 2,400 individual cases worldwide

>70%
Of patent families relate to engine technologies



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Technology that supports service business growth

Modernising our digital foundation: essential to sustain value creation across decades-long asset lifecycles

Wärtsilä's unified digital technology backbone:

Already supporting lifecycle offerings across more than 1,000 connected vessels and power plants



Connectable installed base

Removing friction points to make our installed base easier to connect, serve and continuously improve.

Frontier AI-ready architecture

A scalable technology stack ready to accommodate Frontier AI-driven offerings across our digital portfolio.

Lifecycle and new equipment growth

Strong technology capabilities enable us to move up the service value ladder and strengthen our position in newbuild markets.

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