

A photograph of an offshore wind farm at sea. Several wind turbines are visible in the foreground and middle ground, with a long line of turbines extending into the distance. The sky is overcast with grey clouds, and the water is dark and choppy. The overall tone is blue and grey.

# ØRSTED WIND POWER WAY OF WORKING WITH RD&D

Trondheim,  
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# Ørsted's overview of levers for CoE reduction

## Multiple levers to drive down cost in offshore wind power

1

### Scale

- Turbines size
- Sites size
- Vessel size



2

### Innovation

- Foundation
- Electrical infrastructure



3

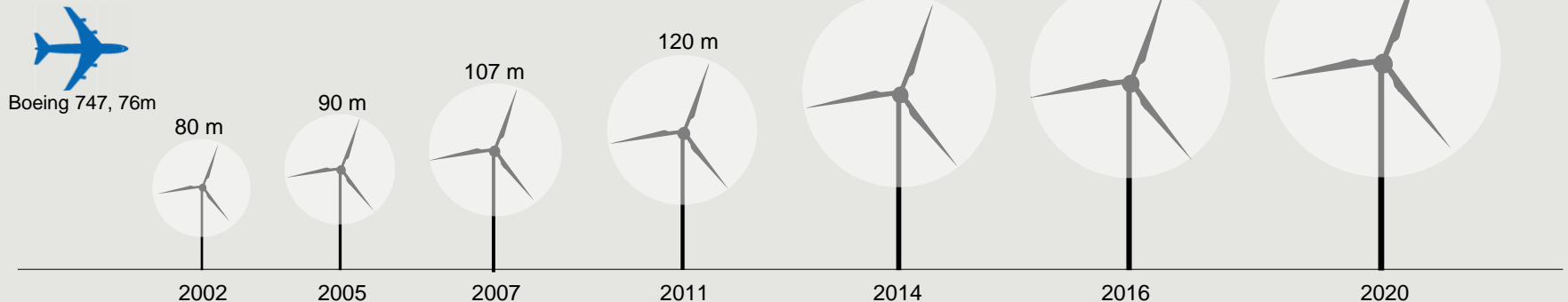
### Industrialisation

- Transition from single supply to multiple global suppliers



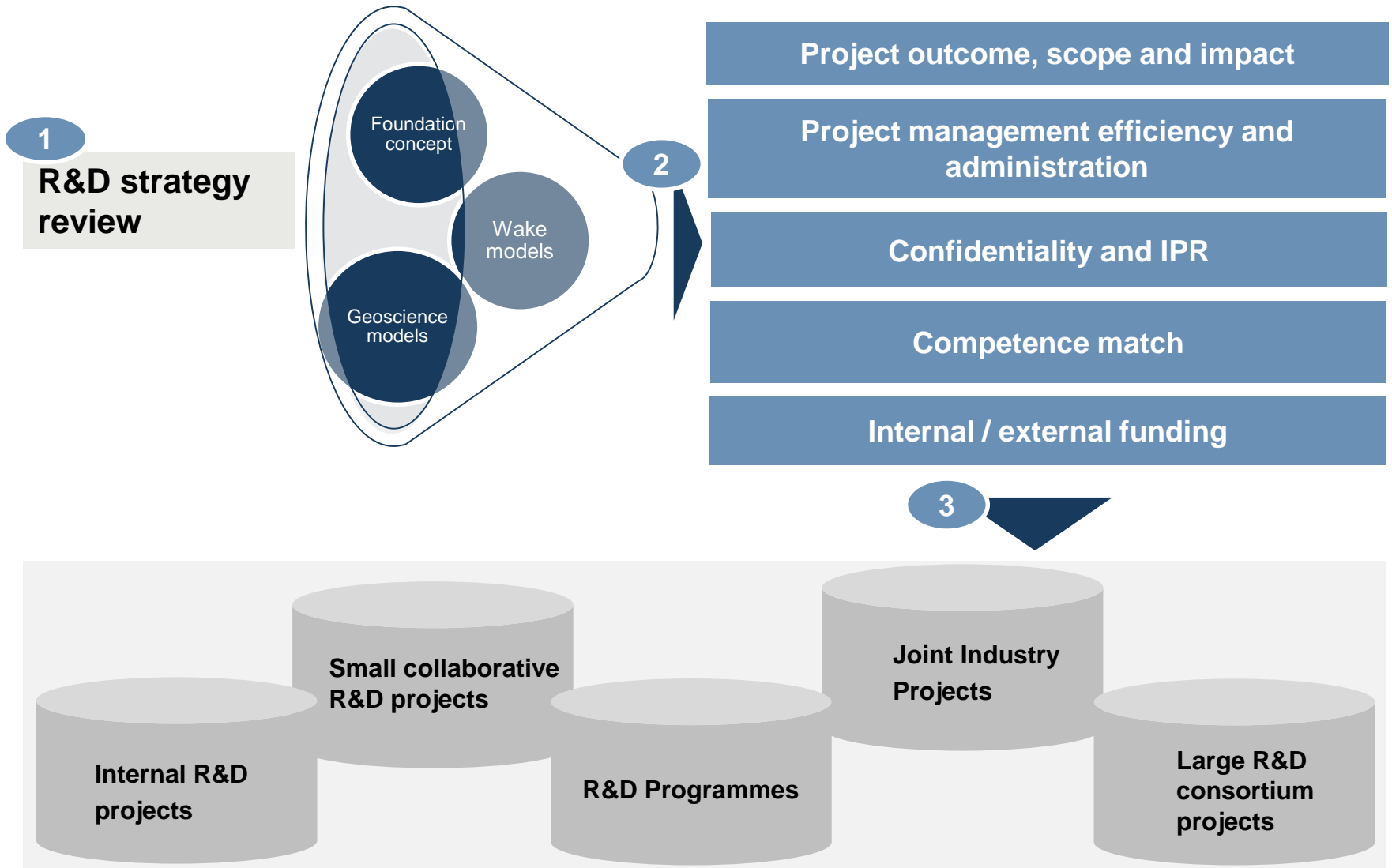
## Rapid technological development

Wind turbine rotor diameter, year of commissioning



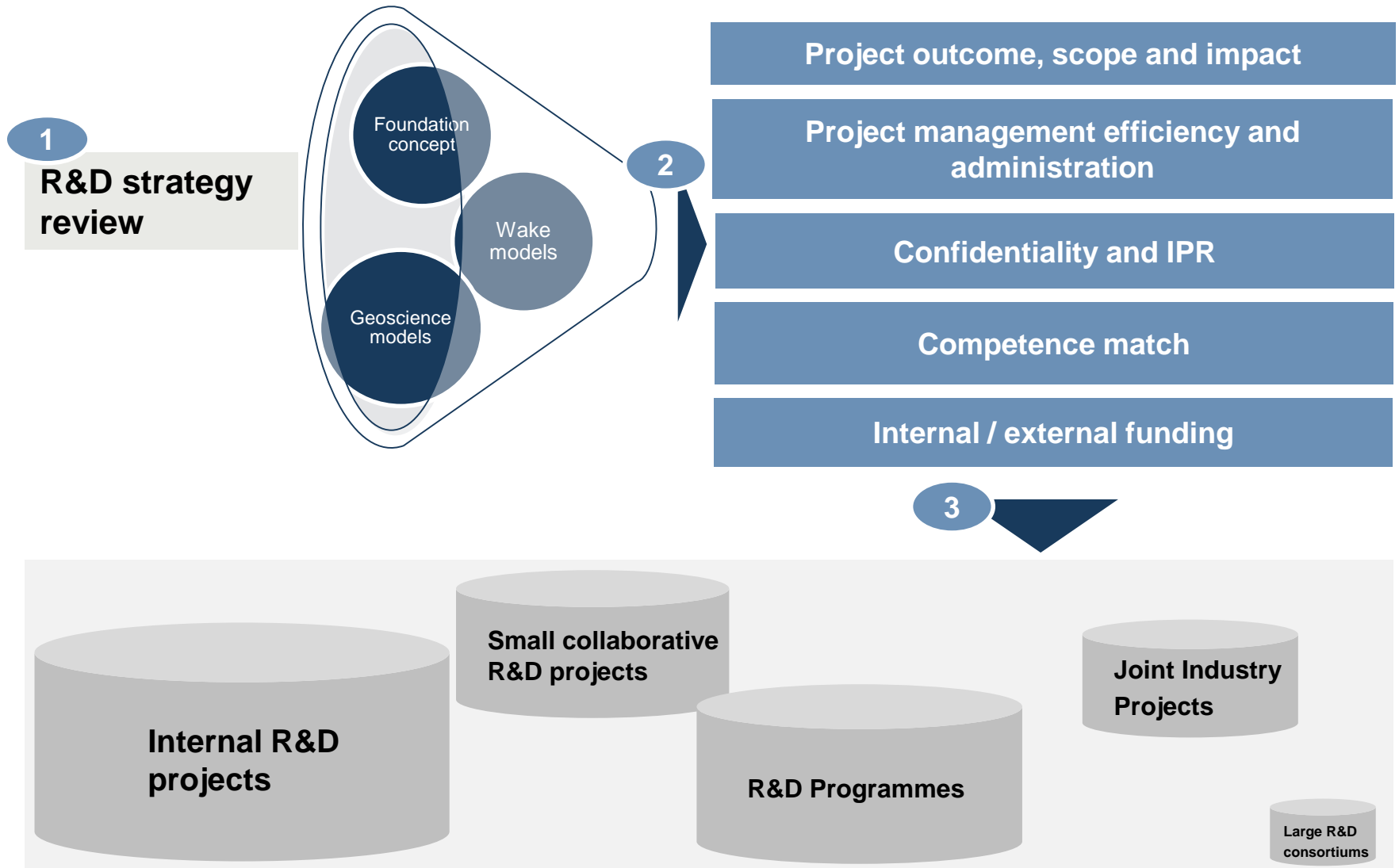


# Ørsted R&D strategy and types of collaboration





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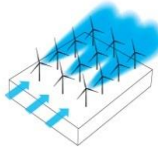


# Ørsted's R&D Programme

## R&D Strategy

- organised in 5 Roadmaps

### Roadmap 1 Wind & Waves



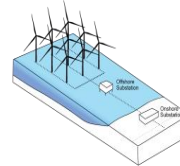
Measurements: Lidar, radar, buoys  
Modelling: Lay-out, AEP, Loads, etc.  
Power curve validation

### Roadmap 2 Foundations, Geoscience and Marine



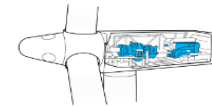
Geotechnical survey methods  
Monopile/ jacket design methods  
Soil-structure interaction  
Underwater noise damping  
Corrosion protection

### Roadmap 3 Electrical Infrastructure



Substation design  
Array and export cables layout and installation  
Grid simulations  
Grid connection  
Ancillary services

### Roadmap 4 WTG O&M



Component reliability  
New components  
New O&M inspection and replacement methods

### Roadmap 5 Logistics



Logistics modelling and optimisation  
Accommodation set-up development

## Objectives

Enable the pipeline, CoE reduction, Risk reduction, HSE performance,  
Design standard improvements and competence development





# Collaboration with universities and research institutions

- building competences leading to improved R&D



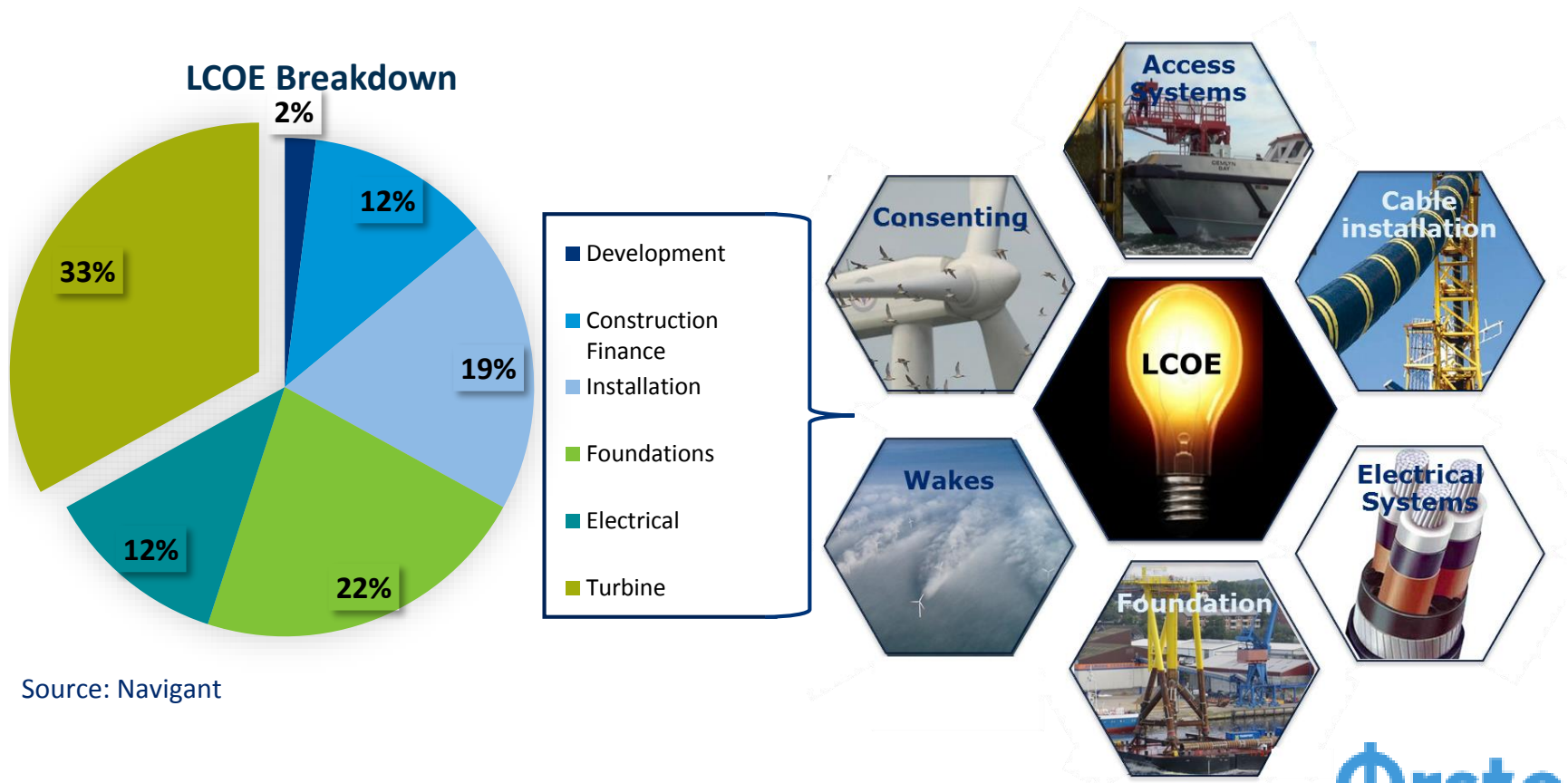
List not exhaustive.

# Example on joint demonstration and commercialisation

## - Carbon Trust OWA



**Six research areas** - Focusing on everything but the turbine, representing roughly **70% of offshore wind energy costs**



Source: Navigant



# From basic research to commercial deployment

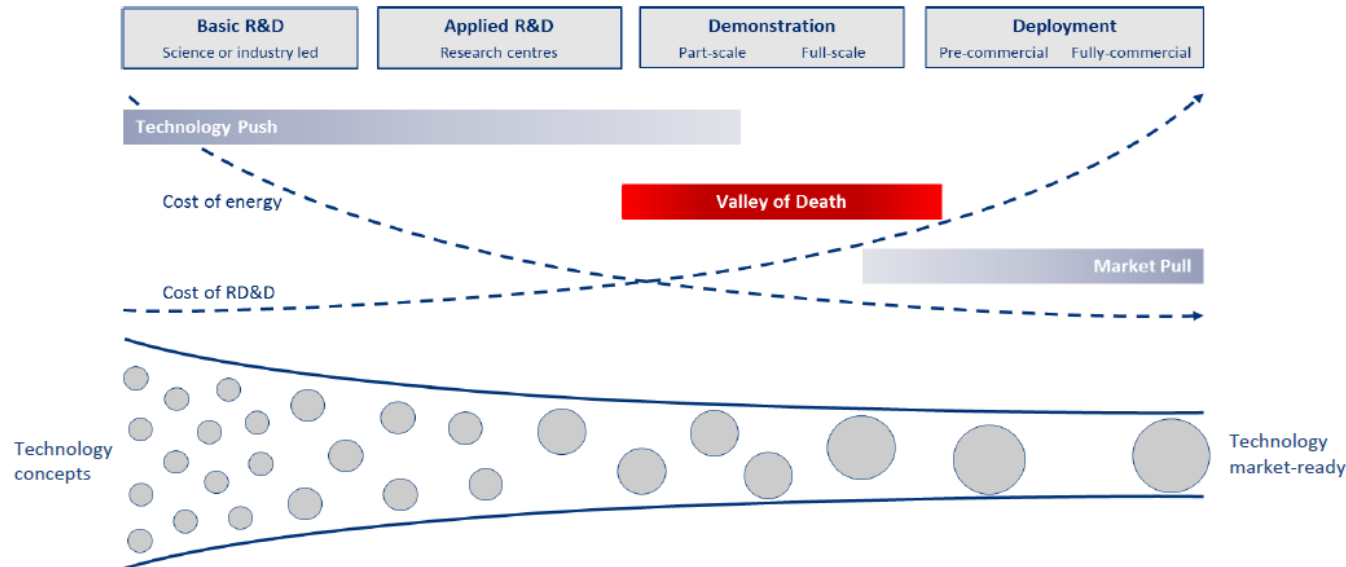
## - how, who, what...

### 6: Innovation



## Innovation is critical to delivering cost reduction and building supply chain capability

- Balance of support required across technology readiness levels (TRL)
- Forging links between industry and academia can maximise market penetration of new technologies
- Greater information and data sharing can accelerate technology innovation







**Thank you for your attention**

