Ørsted

Offshore Wind Farms and Multi-Vendor Multi-Terminal HVDC Systems -

A Cooperation and Governance Story

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04 Oct 2023

Agenda

01 **Introduction to Ørsted**

Overview of Ørsted's business with focus on Innovation Strategy

02 **InterOPERA – A brief introduction**

Enabling offshore wind via large-scale multi vendor and multi terminal HVDC systems

03 **Cooperation and Governance**

Challenges and potential solutions to cooperation related issues in future multi-vendor multi-terminal HVDC grids

04 **Questions?**

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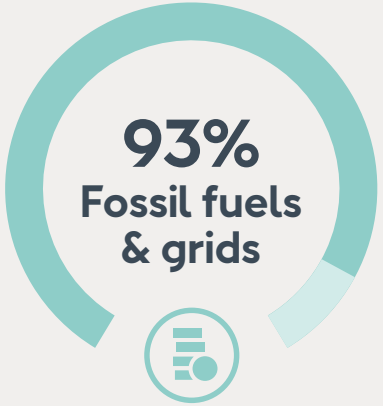
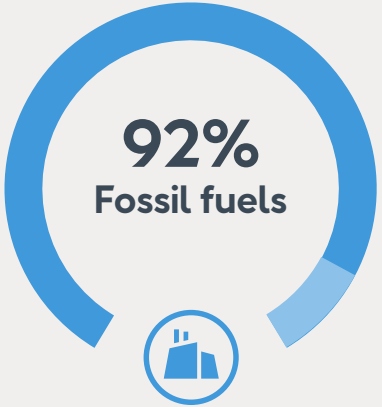
A brief history of DONG energy

Danish Oil & Natural Gas (DONG) was formed in 1972 as a state-owned company focusing on oil and gas

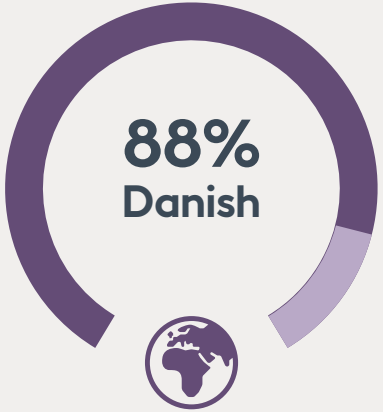
By 2007, 93% of DONG energy's operating profit came from fossil fuels



Operating profit
DKKbn, %



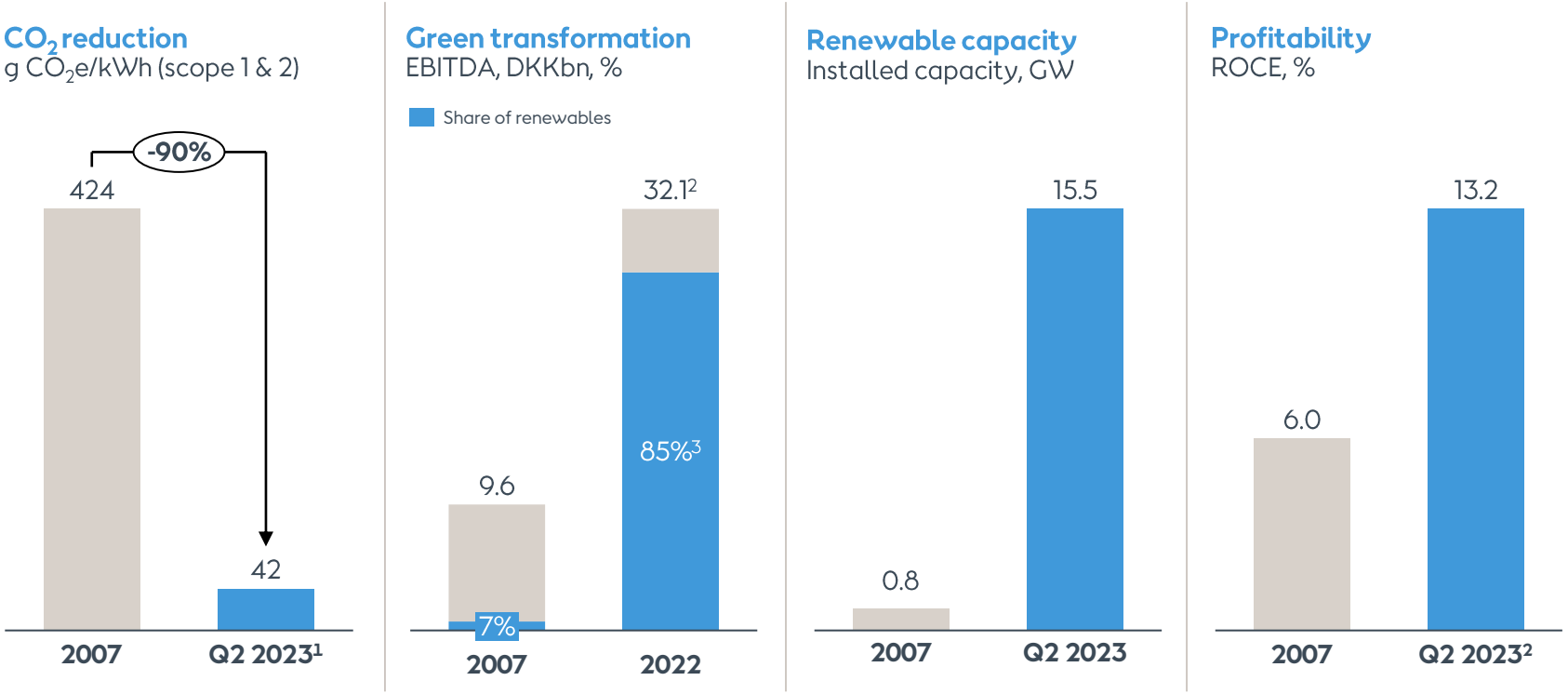
Power and heat production
TWh, %



Geographic footprint
Operating profit, DKKbn, %

Ørsted

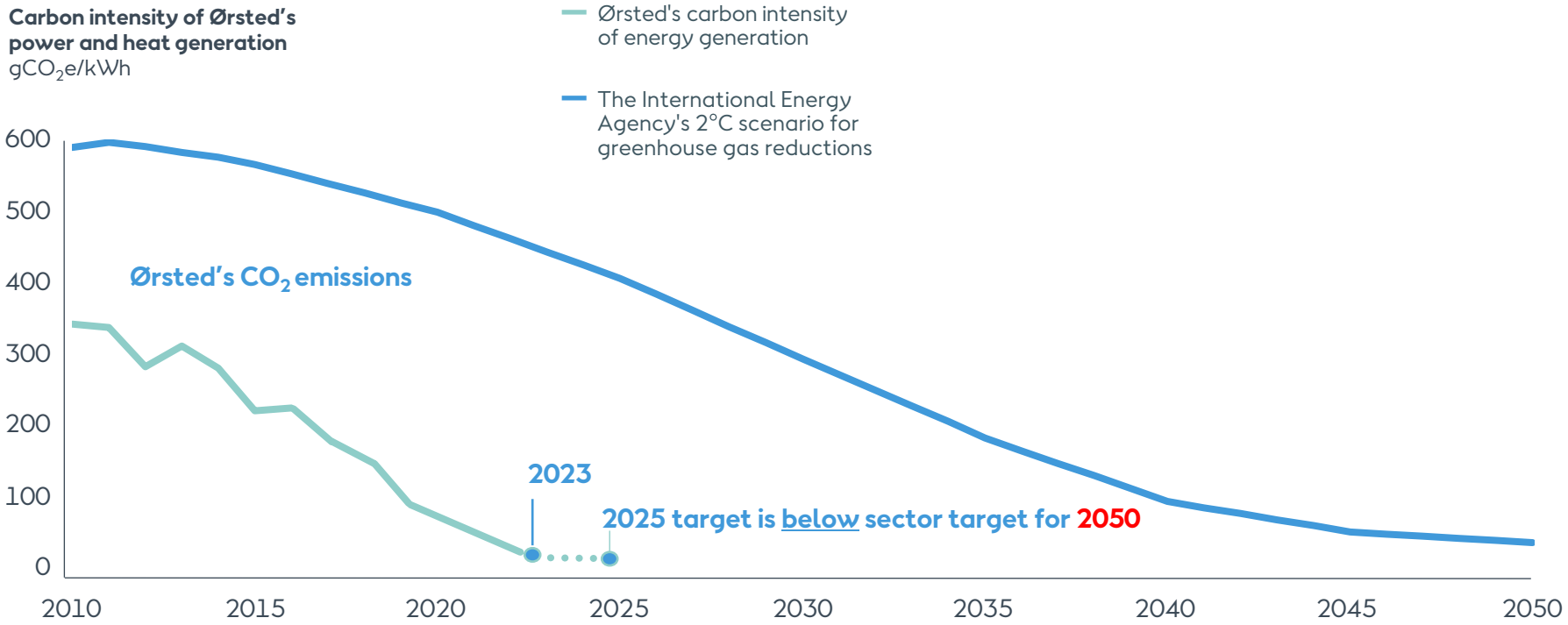
We have succeeded in profoundly transforming Ørsted



Notes: 1. Year to date. 2. Including EBITDA from new partnerships 3. Taxonomy-aligned
Source: Ørsted Interim Report Q2 2023

Ørsted

At Ørsted, we are ahead of what is required by climate science



1. Danish Energy Agency and Ørsted calculations
2. Based on International Energy Agency's 2°C scenario for carbon emissions reductions in the energy sector; in line with Paris Agreement on Climate Change

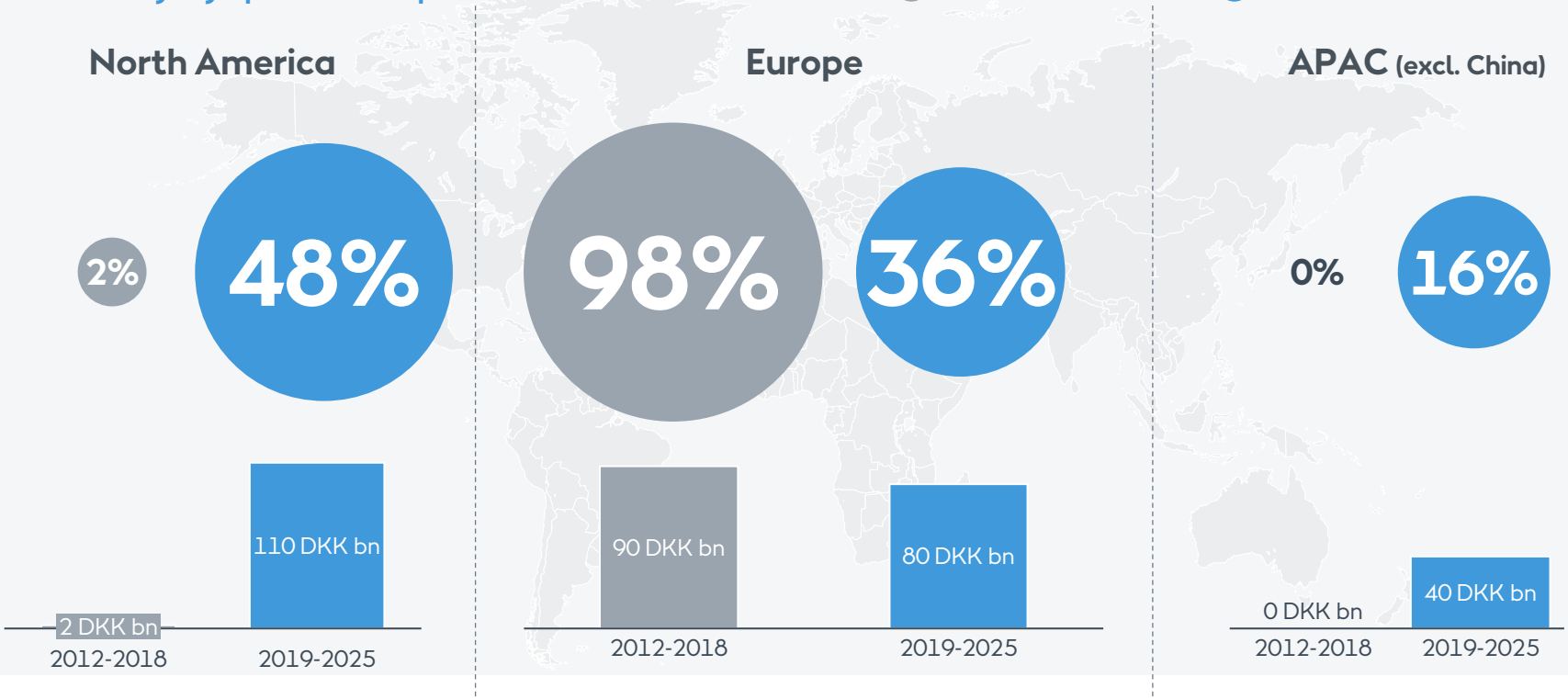
Ørsted

We will see a profound shift in regional investment mix towards 2025

Public

Estimated geographic CAPEX split 2012-2018 vs. 2019-2025[1]

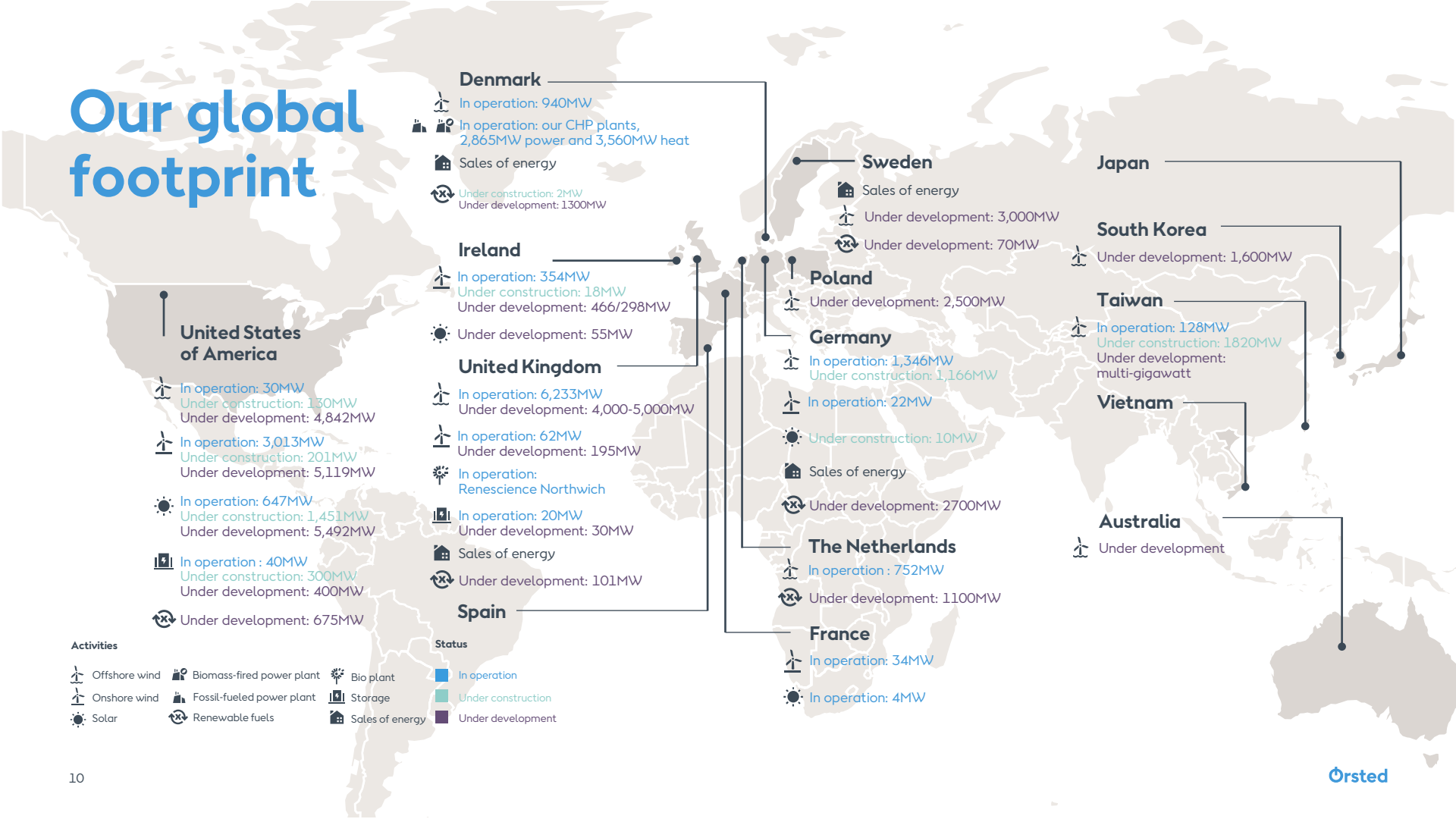
% Share of CAPEX 2012-2018 % Share of CAPEX planned 2019-2025



1 Projected geographic CAPEX split for 2019-2025 based on top-down target of DKK 230 bn.

Ørsted

Our global footprint



Ørsted

Ørsted develops energy systems that are green, independent and economically viable

Installed Under construction

Offshore wind

- Global leader in offshore wind
- Develop, construct, operate and own offshore wind farms
- Ambition to reach ~30 GW installed capacity by 2030

Onshore renewables

- Strong presence in the United States and Europe
- Develop, operate and own onshore wind, solar PV and storage projects
- Ambition to reach ~17.5 GW installed capacity by 2030

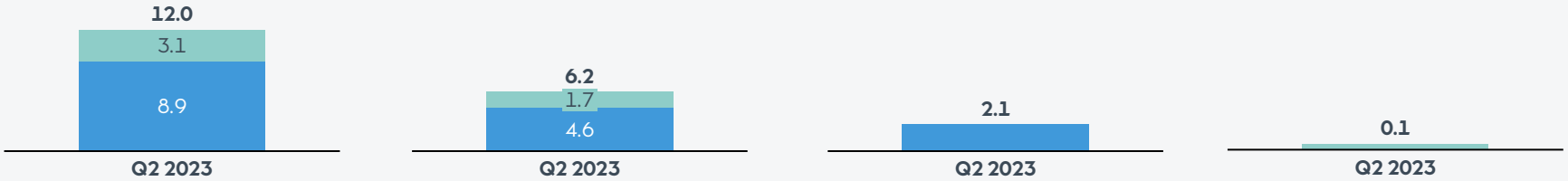
Bioenergy & other

- Presence in Europe, including bioenergy plants, legacy gas activities and patented waste-to-energy technology
- Own and operate bioenergy and waste-to-energy plants, and optimise gas portfolio

Renewable hydrogen and green fuels

- Emerging platform with 10 pipeline projects (+3 GW) mainly in Europe
- Develop, construct, own and operate hydrogen facilities
- Ambition to become a global leader in renewable hydrogen and green fuels by 2030

Capacity, GW



Source: Ørsted Interim report Q2 2023

2030 aspiration: Become the world's leading green energy major

The five pillars to achieving our 2030 aspiration

One of the world's largest **green electricity producers**

- Global no. 1 in offshore
- Significant regional player in onshore renewables
- A market shaper and significant regional player in P2X

One of the world's largest and most value-creating **deployers of capital** into the green transformation

The world's **leading talent platform** in renewable energy

A **globally recognized sustainability leader**

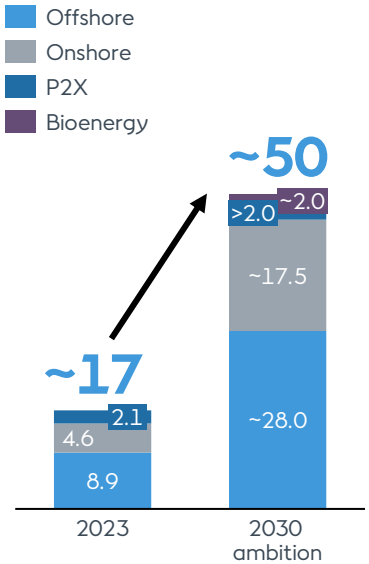
A core contributor and **catalyst for change** towards a world running entirely on green energy

Notes: 1. Scope 1-2 emissions (CO_2e/kWh) from a 2006 base year. 2. Scope 1-3 emissions. See full overview of Ørsted's science-based targets in our annual report.

Ørsted aims to reach ~50 GW gross installed capacity by 2030

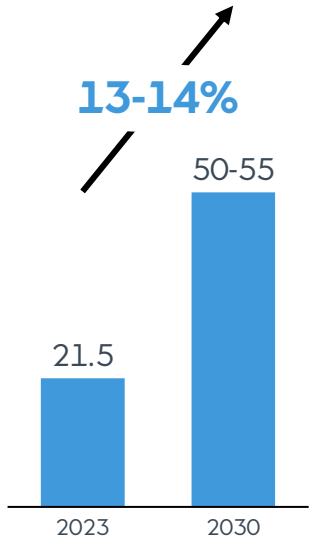
2030 ambition

Installed capacity
(GW)



EBITDA

Compound annual growth rate
(CAGR) 2020-2027[3]
(DKK bn, %)



ROCE

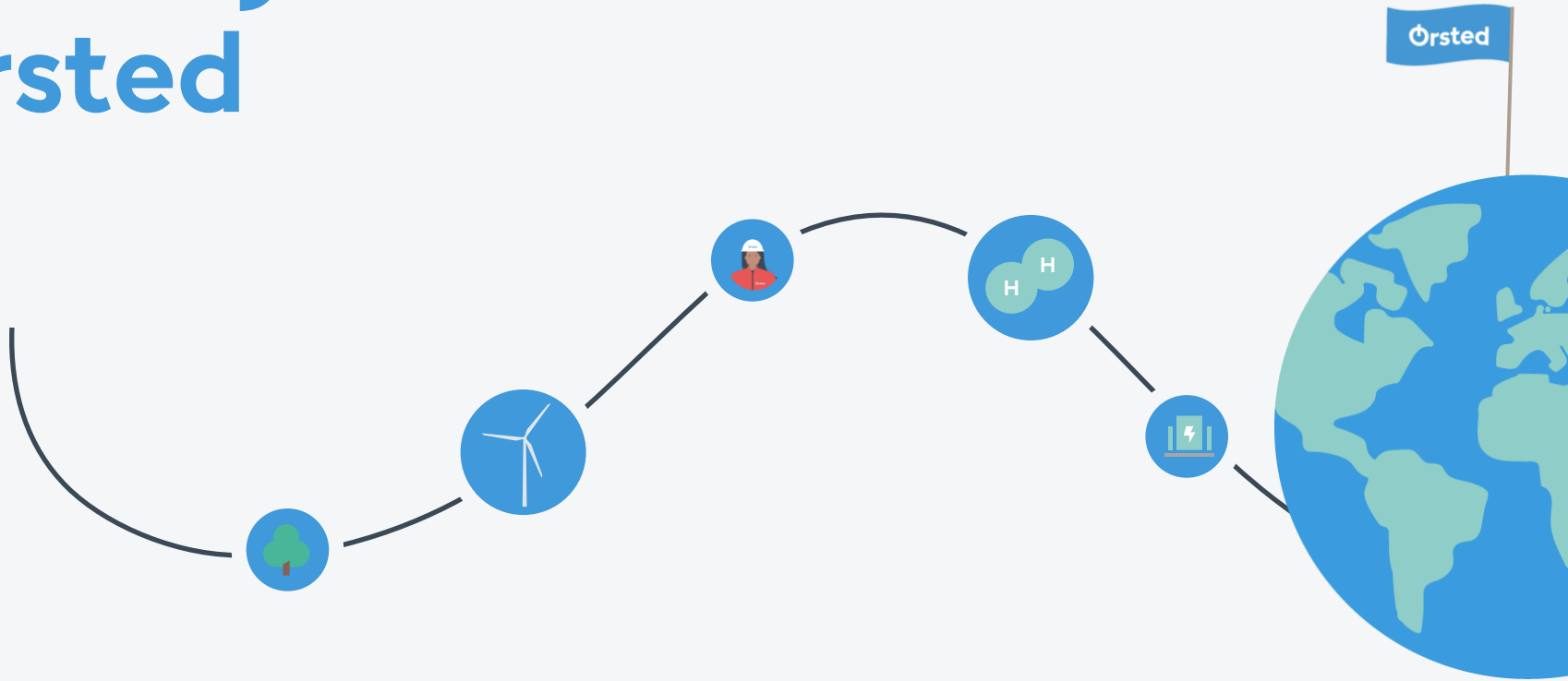
Average ROCE
(%)

Notes: 1. The difference between our weighted average cost of capital (WACC) and return on invested capital (ROIC). The term is used to measure the difference between the real rate of return on an investment and the rate of inflation in the economy. 2. Our targeted range for the fully loaded unlevered lifecycle spread to weighted average cost of capital (WACC), at the time of bid/final investment decision (FID) whichever comes first, for our offshore and onshore projects will be 150-300 basis points . 3. Average yearly increase in EBITDA from Group (excl. new partnerships).

Ørsted

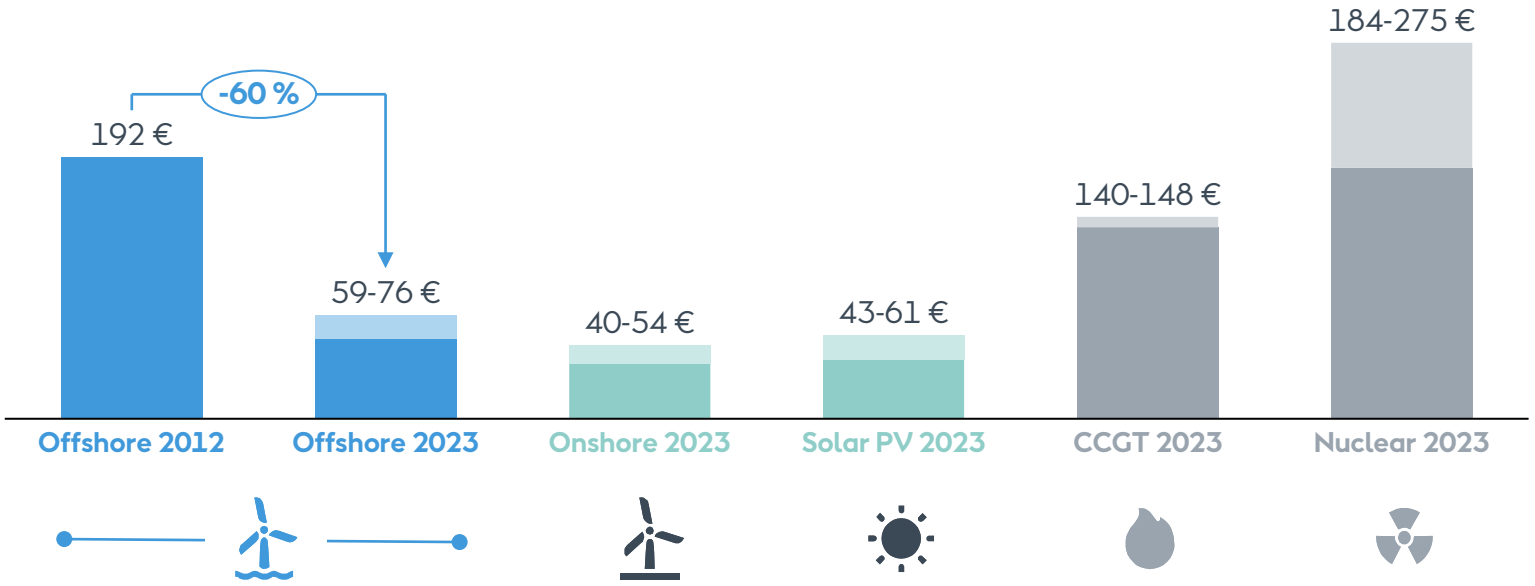
Ørsted

Strategic Innovation in Ørsted



Despite the inflationary cost pressure offshore wind stays fully cost-competitive with fossil fuels and nuclear

Levelized Cost of Electricity (LCoE)[1,2]
EUR/MWh, 2023 prices, Northwestern Europe



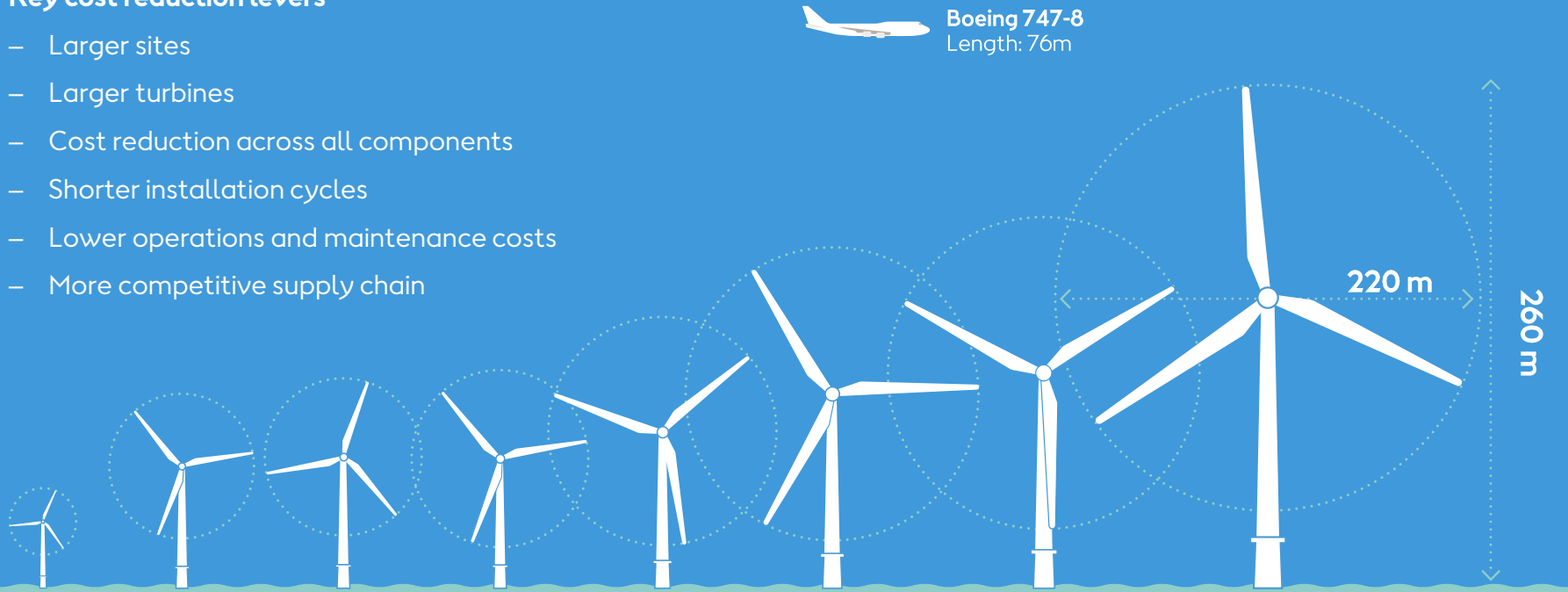
Notes: 1. The chart illustrates the total span of low and mid scenarios (i.e., lowest national LCOE found in low scenario, highest national LCOE found in mid-scenario) for projects with FID today and construction beginning tomorrow. Nuclear: UK, FI. Natural gas: UK, DE. Solar PV: UK, DE. ON wind: UK, DE. OF wind: DK, NL, UK. DE OF wind mid scenario omitted as cost of 92 EUR per MWh deemed unrepresentative, when Germany experiences a number of zero bids in auctions. OF wind 2012: generic offshore wind, North Western Europe, FID 2012. 2. CCGT LCOE in the low and mid scenarios are calculated with BNEF's benchmark fossil fuel and carbon prices. The LCOE span could be much wider if different price scenarios were applied. Nuclear new builds in Europe has been very limited the past decades and there is a high uncertainty in construction costs.

Source: Bloomberg New Energy Finance – 1H 2023 LCOE Update

In the past decades, Ørsted has pioneered offshore wind and spear-headed the industry with innovation to drive down cost of electricity

Key cost reduction levers

- Larger sites
- Larger turbines
- Cost reduction across all components
- Shorter installation cycles
- Lower operations and maintenance costs
- More competitive supply chain



Ørsted's Innovation department covers a broad scope from incremental to radical innovation

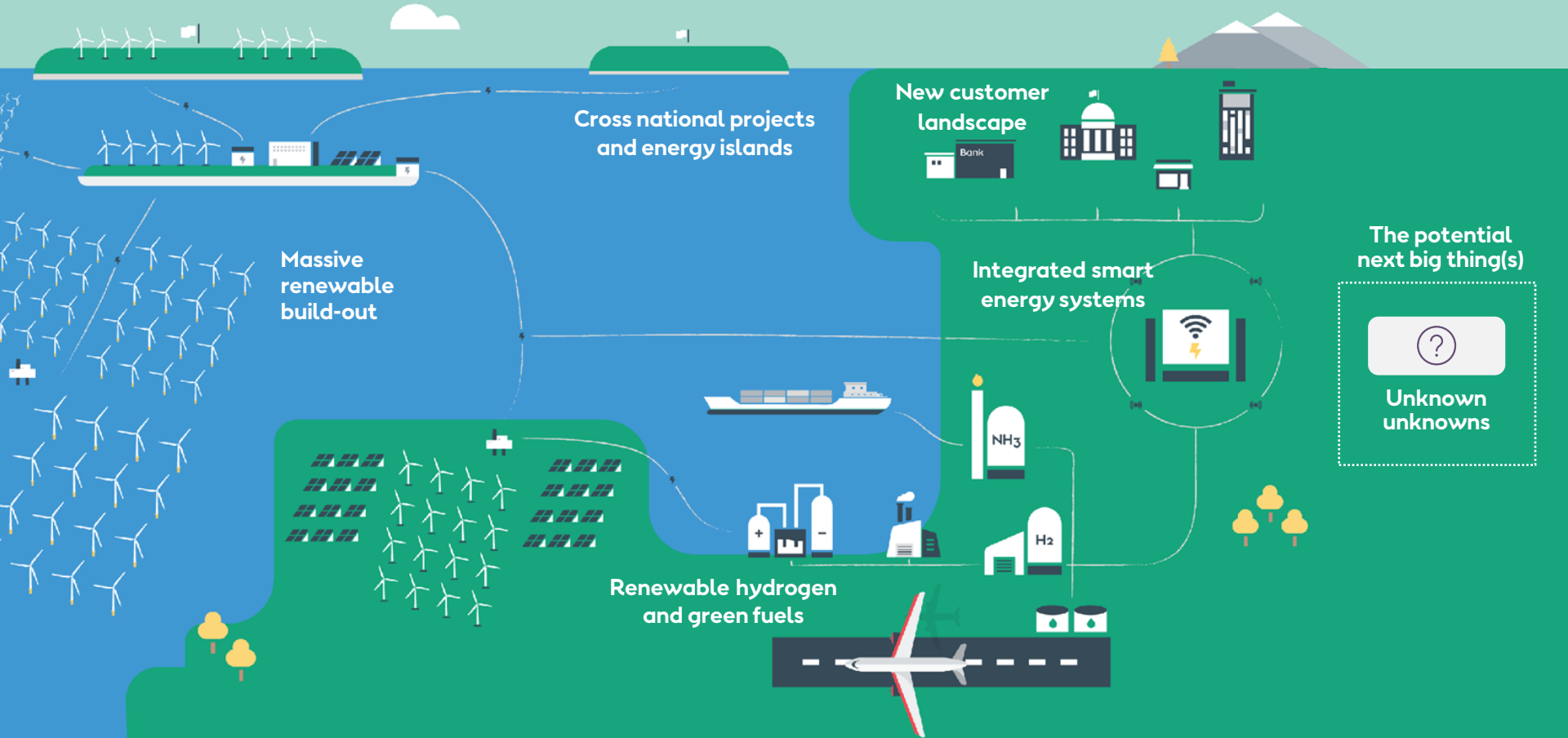
The Innovation department drives the development and implementation of concepts going beyond Ørsted's core business lines

Our focus areas include

- Renewable power generation
- Renewable integration
- Energy transmission & consumption
- Hard-to-abate decarbonization
- P2X
- Sustainability
- Biodiversity

Ørsted

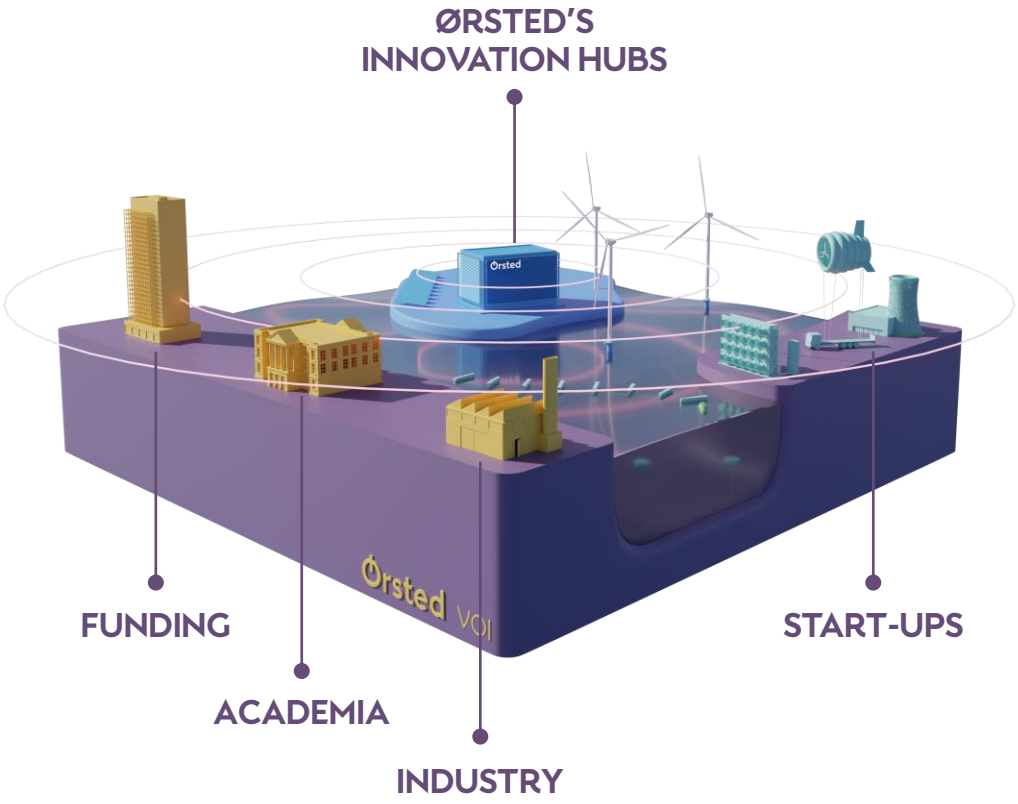
Let's create a world that runs entirely on green energy – by proactively building the energy system of the future



Ørsted's Innovation Hubs

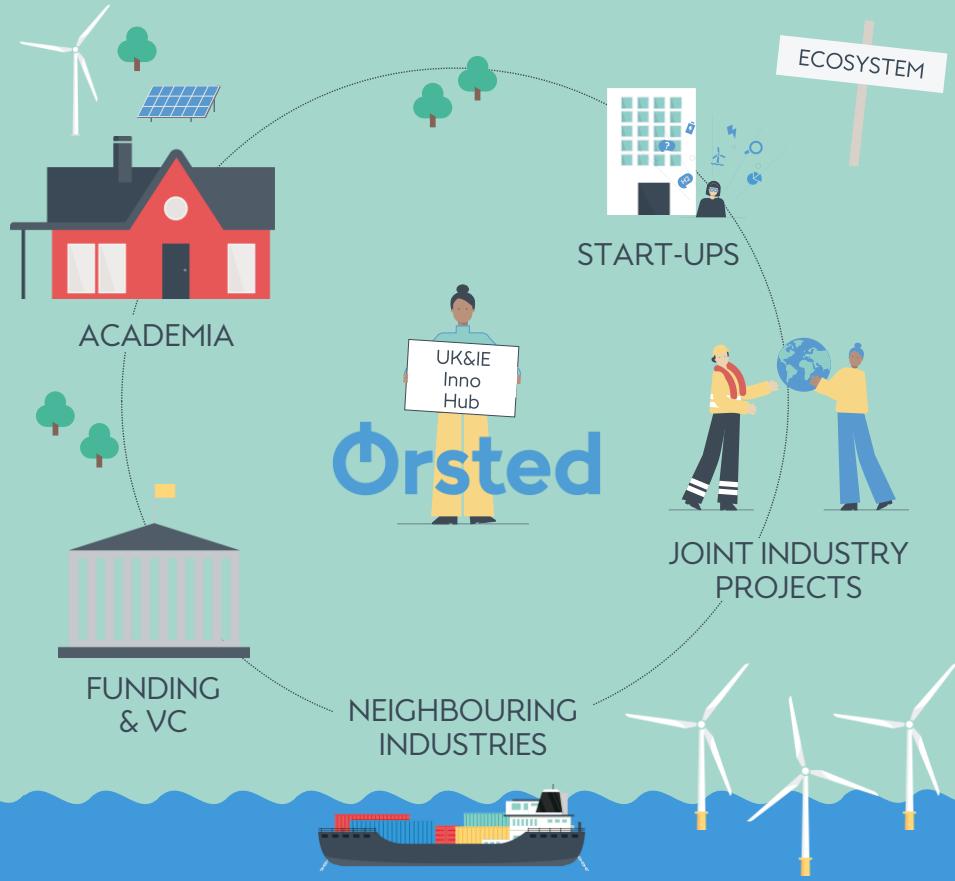
OUR MISSION
is to build a world that runs entirely on green energy by accelerating the next generation of renewable innovation in collaboration with their makers, supporters and adopters

WE DRIVE AND FACILITATE
Ørsted's collaborations with external innovation ecosystems; start-ups, academia and corporates in neighbouring industries



Ørsted

Ørsted's UK & Ireland Innovation Hub!



The **UK & IRELAND INNOVATION HUB** is Ørsted's front door for UK&I-based innovators, and your contact point to initiate collaborations

Collaborating with **EXTERNAL INNOVATION ECOSYTEMS** enables us to deliver the rapid, radical innovation needed in the fight against climate change

The UK&I Innovation Hub is a platform that creates strategic partnerships between Ørsted and innovators to support rapid commercialisation

What we seek

To access concepts that enable Ørsted's innovation ambitions in the **short-to-medium term** (<5 years), and enable their scaling, maturation, supplier-readiness and commercialisation

To detect emerging trends and radical innovation concepts that may provide opportunities for **business model innovation or disruption** in the longer-term (5+ years)

What we provide

Access to sector-leading green energy expertise – our vast network of globally recognized in-house experts across technical and commercial disciplines

Access to green energy assets – including our onshore wind, solar, storage and green fuels facilities, and the world's largest fleet of operational offshore wind farms

Access to capital – extensive and varied opportunities to co-finance and invest in innovation activities

Access to markets – a history of being the first commercial customer for cutting-edge innovations throughout our global footprint

Access to brand – wide recognition as one of the most sustainable energy companies in the world

We have a strong track record of working with and enabling other innovators

Select examples

Spoor

Investment case and pilots

Start-up developing novel solution for bird detection

Ørsted took minority equity position and entered strategic partnership to pilot solution

Pict

Investment case

Start-up developing novel solution for offshore turbine access

Ørsted took majority equity position, co-developed solution and deployed across asset base

Prosperity Partnership

Academic research programme

A 5-year, £7.64m collaboration between Ørsted, Siemens Games Renewable Energy, and the universities of Sheffield, Durham and Hull

20 individual PhD or post-doc projects addressing cost and risk reduction in offshore wind

Propel

Accelerator program

Start-up acceleration program focused on system integration

Cohort of 8 finalists selected to undergo 10 week acceleration program

Venture-client collaborations now underway with 4 finalists

PREDICT

Academic research project

Executed by the University of Aberdeen and the University of the Highlands and Islands, and fully funded by Ørsted

Cutting-edge investigation of fish migration patterns and how this relates to offshore wind farm siting

openinnovation.orsted.com

Love your home

Ørsted

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InterOPERA

Why

Context

Need for Multi terminal HVDC systems in Europe

EU objective to develop and integrate **300-450 GW of offshore wind** in the **European electricity system by 2050**

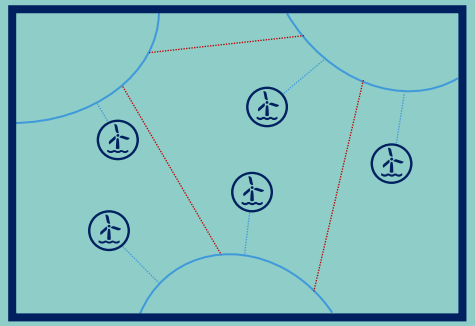
Massive deployment of **offshore wind** in conjugation with increased **distributed generation**

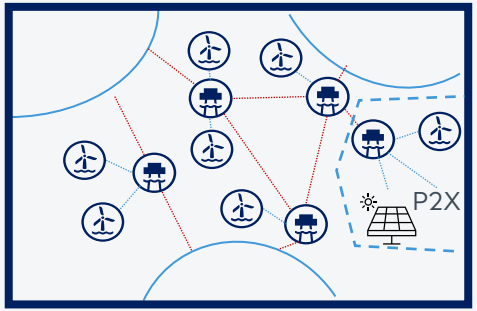
The **transmission infrastructure** will be directly impacted. **HVDC systems** due to their power flow control capability will be key

Consequence: Development of **Multi-terminal offshore hubs** delivered by **multiple vendors**

HVDC interoperability background: Foreseen Evolution of Offshore Grids

'Following the EU strategy on offshore renewable energy, it is clear that beyond 2030, offshore wind cannot grow without multi-terminal, multi-vendor HVDC…' [1]





Today's world:

Radial grid connections

- Wind Developer + TSO + Vendor

Embedded links

- TSO (+TSO) + Vendor

The upcoming situation:

Meshed offshore hubs

- TSOs + Vendors + Developers

Meshed onshore/offshore grids

- TSOs + Vendors + Developers

[1] *'Workstream for the development of multi-vendor HVDC systems and other power electronics interfaced devices'* ENTSO-E, T&D Europe, WindEurope

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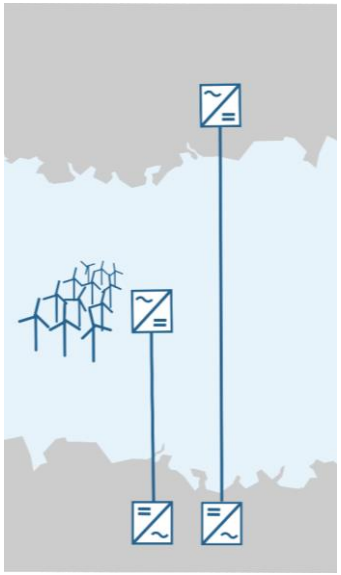
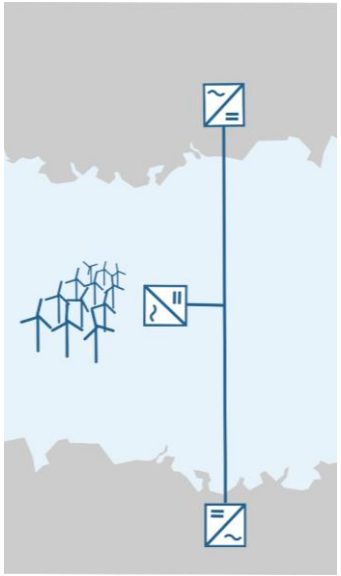
Multiterminal HVDC systems are seen as an opportunity for efficient and resilient energy transport

Reducing the footprint and increasing stability of offshore systems→ Multi terminal HVDC systems drive efficiency and resilience in deployment of transmission infrastructure

HVDC features	• Fewer losses over long distances • Power flow control and power system stability support capabilities (grid forming controls)
Multi-terminal systems	• Higher RES integration capacity • Increased market coupling, reduced societal costs • Minimized impact of infrastructure – increased social acceptance
Multi-vendor systems	• Limitation of risks related to one single technology provider • Increased competition and innovation • Potential increase in speed of deployment



Today



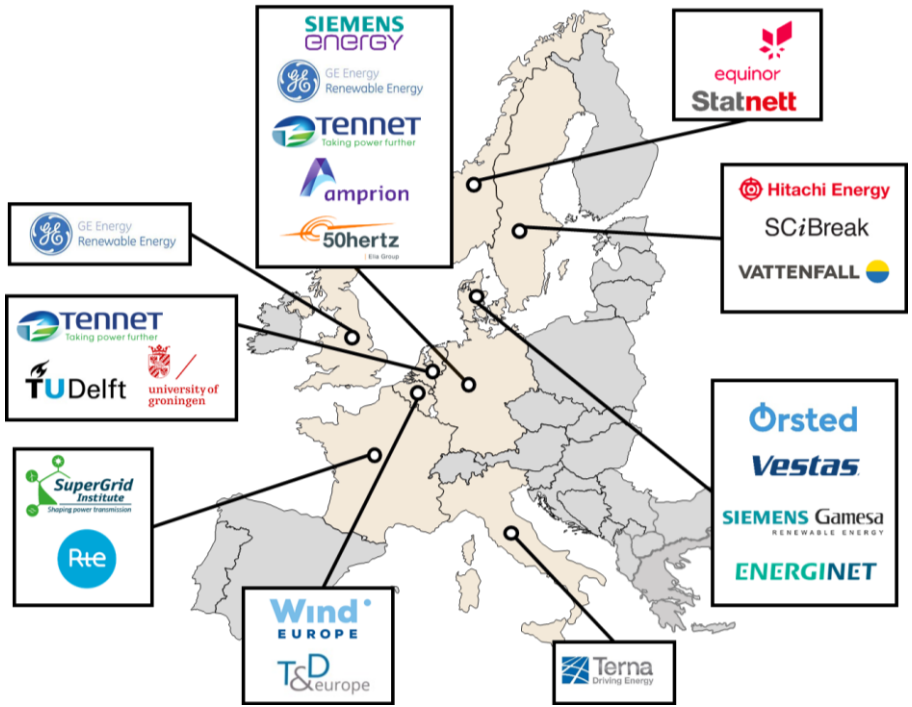
The near future

Inter OPERA
Enabling multi-vendor HVDC grids

InterOPERA

What

Project consortium



InterOPERA in numbers:

- 11 European countries
- >70 MEur of funding plus in-kind contributions
- 23 Organizations
  - HVDC Vendors
  - WTG Vendors
  - TSOs
  - Windfarm Developers
  - Research Institutes
  - Test Labs
- 7 Work Packages, 2 Project Phases, 1 real-life demonstrator
- >200 Contributors

It is much more than an academic exercise

Joint TSOs, HVDC Suppliers and Offshore Developers action

WTG vendors

Vestas
SIEMENS Gamesa

Wind developers

equinor
Wind EUROPE
Ørsted
VATTENFALL

HVDC vendors

Scibreak
Hitachi Energy
T&D europe
SIEMENS energy

TSOs

amprion
TenneT
Terna Driving Energy
Rte
ENERGINET
50hertz
Statnett

Consultants, Research & innovation

university of groningen
TU Delft
SuperGrid Institute — Shaping power transmission

Inter OPERA
Enabling multi-vendor HVDC grids

Context

Main challenges

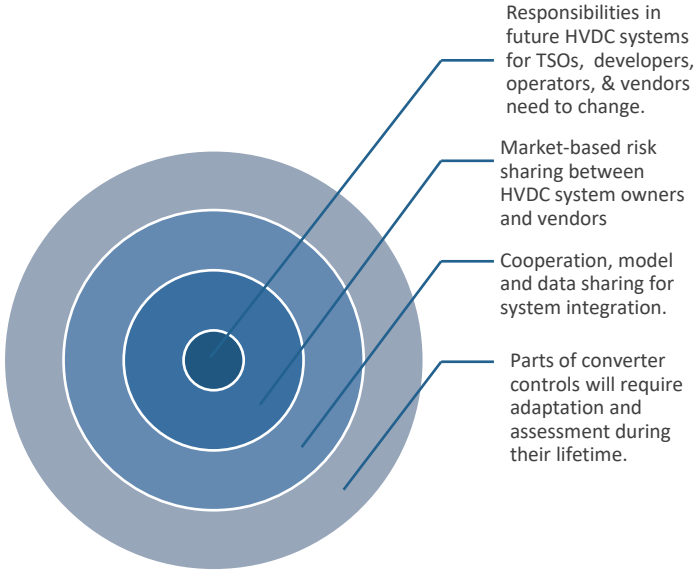
How to ensure interoperability of converters provided by different vendors?

HVDC converters and large scale PEIDs for power generation must host grid-forming controls

How to pave the way for multi-terminal and multi-vendor HVDC projects?

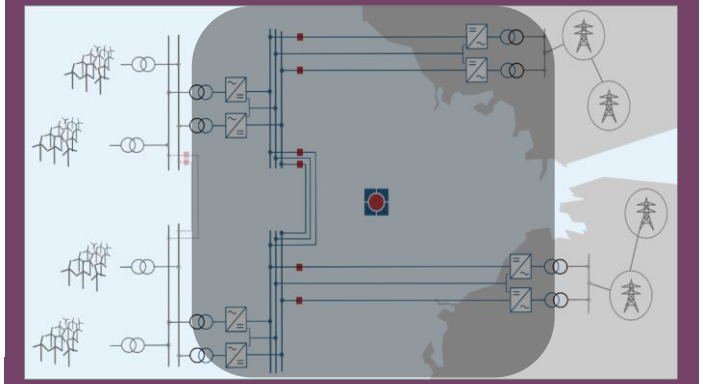
How to extend multi-terminal multi-vendor systems to larger and larger DC hubs?

How to expand multi-terminal multi-vendor HVDC grids across countries?



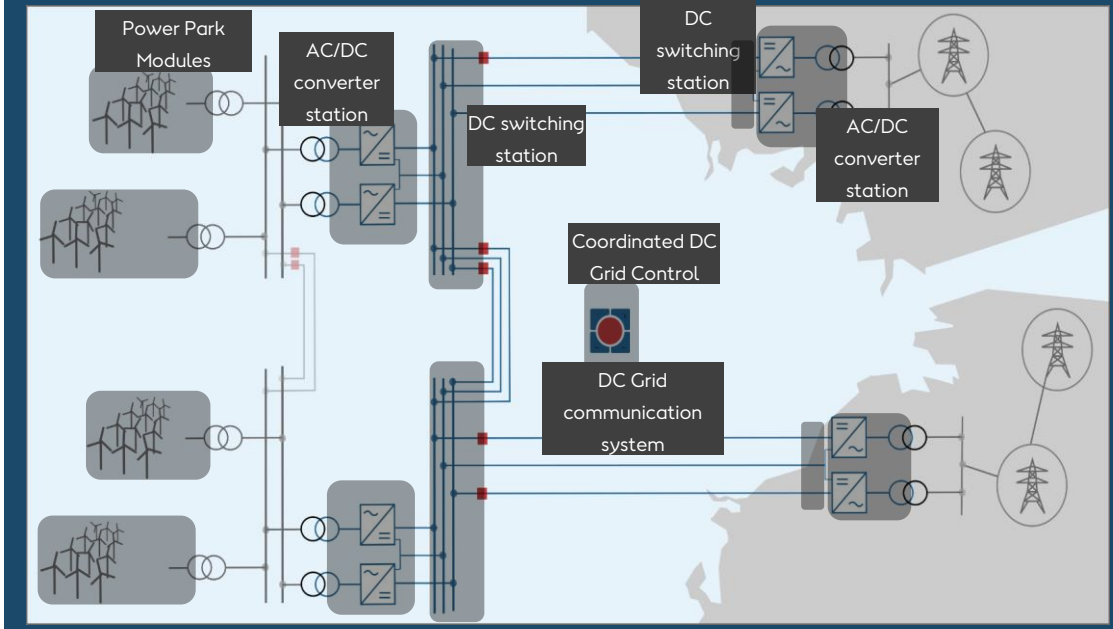
Key Objectives 1/3 : Make HVDC Grids Modular & Interoperable by design

Turnkey integrated HVDC Grid



Monolithically structured technologies
incompatibility between different vendors

Today

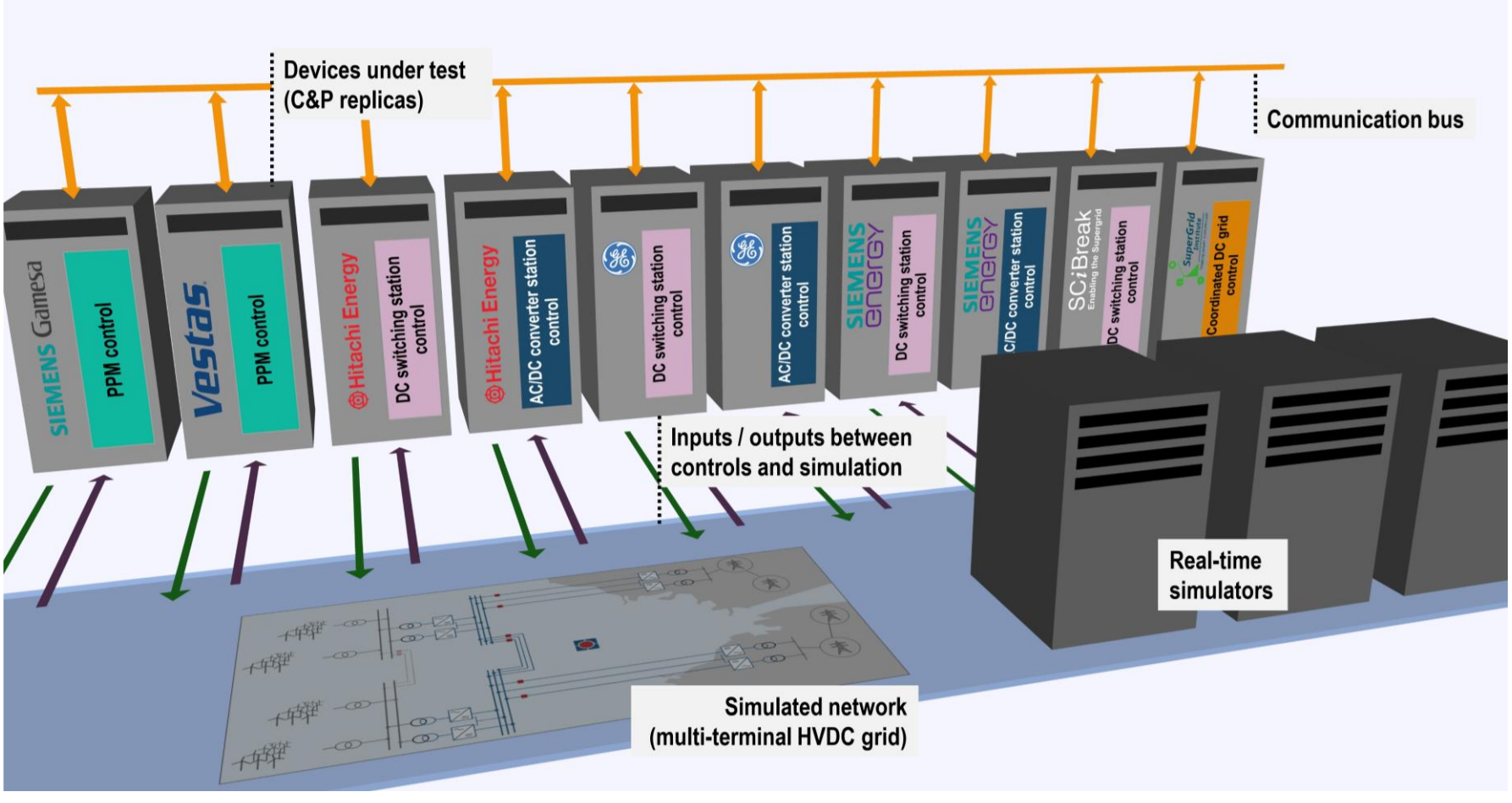


Modular HVDC building blocks with standard interfaces

Interoperability by design
Validated multi-vendor multi-terminal HVDC functional specs

Target

Key Objectives 2/3 : Perform a real-time physical demonstrator

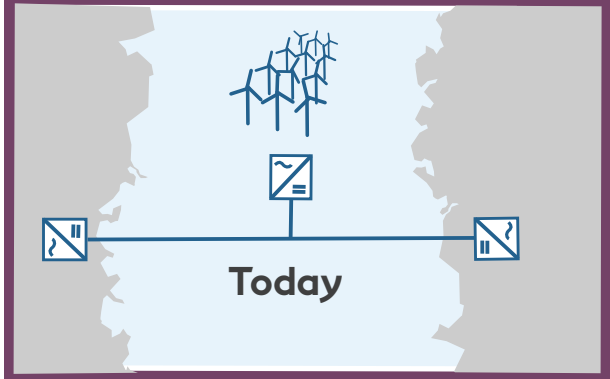


Key Objectives 3/3 : Pave the way for MVMT HVDC w. Future Expandability

2023 → 2025 → 2027

Forward-looking offshore grid design – Demonstrator definition and guidance for coordinated HVDC system planning

Usable procurement documents, tender processes & governance frameworks



First single-vendor hybrid multi-terminal HVDC links

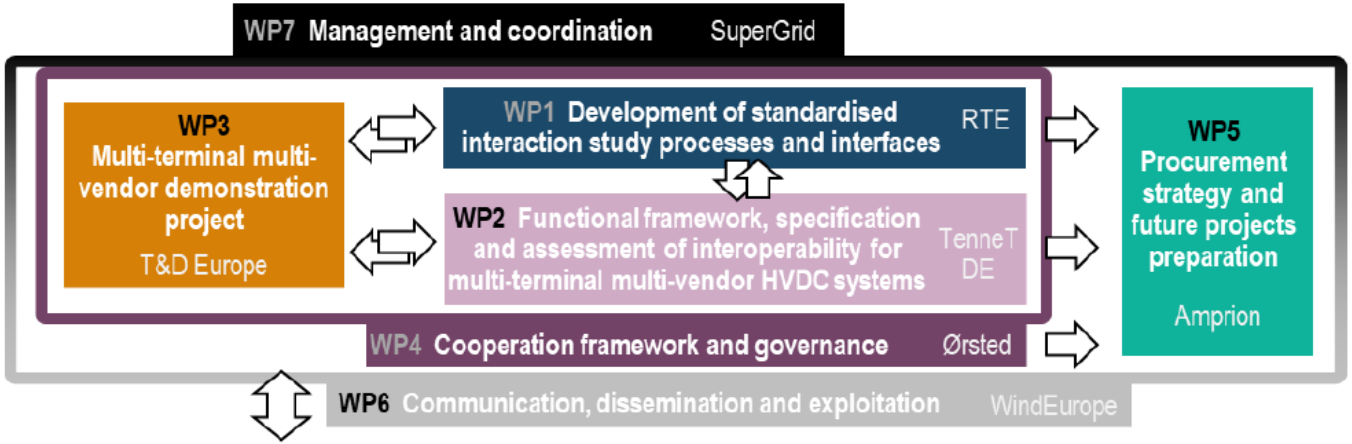
Expandability hindered by lack of coordination in power system planning

Offshore grid expansion enabled by sufficient level of coordination in system planning - compatibility between HVDC projects

InterOPERA

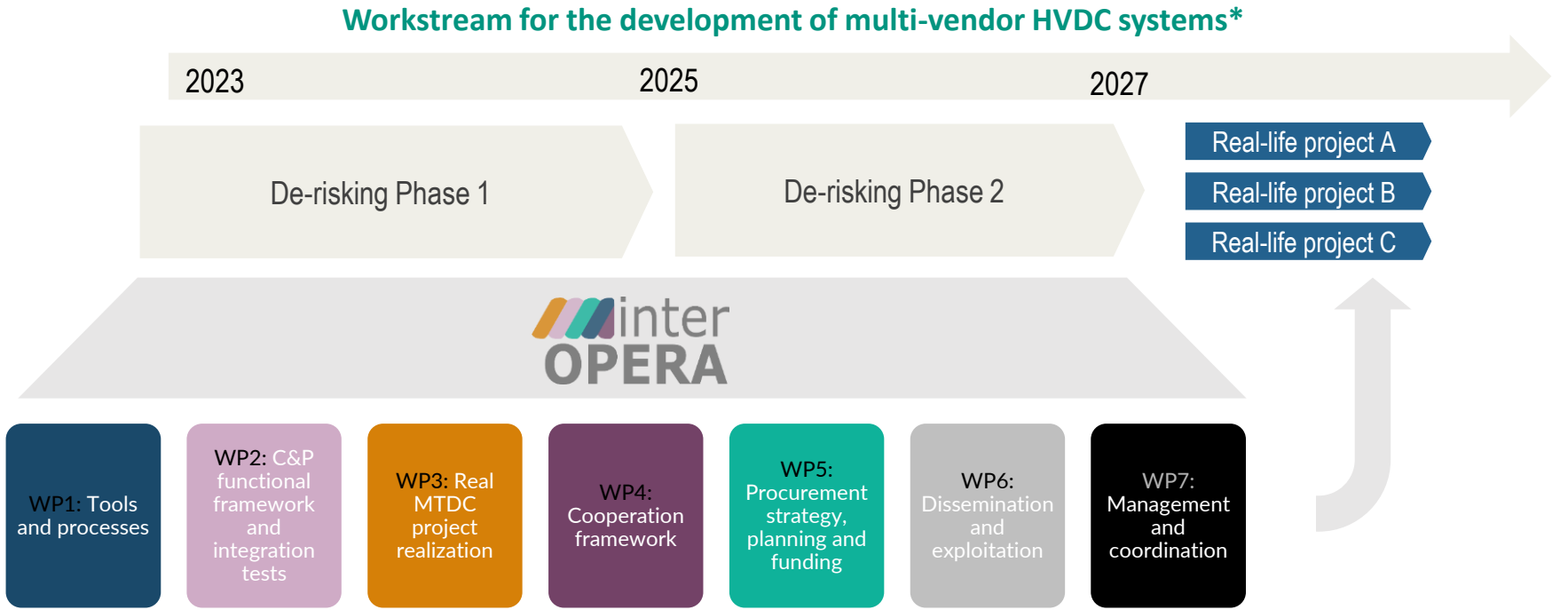
How

Work Packages and Breakdown of Key roles



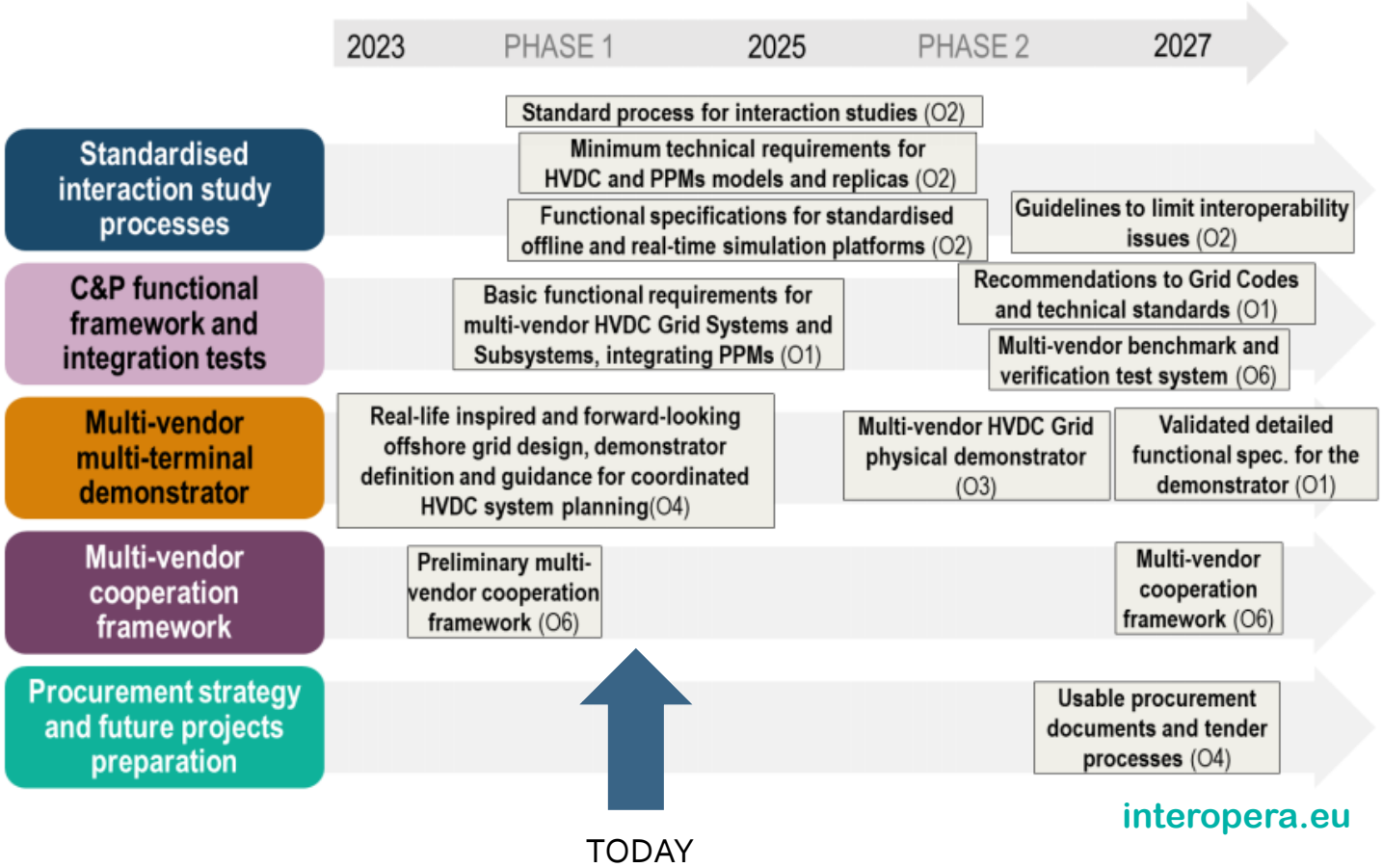
Power system planning, design and operation	Modelling and simulation, system integration	Real-time communication, control & protection development	IP - Legal	Procurement, Regulation	International energy policy, industry alignment
TenneT, ENERGINET, SuperGrid Institute	TU Delft, Rte, equinor	Hitachi Energy, SuperGrid Institute, SIEMENS energy, Vestas, SCiBreak, SIEMENS Gamesa	Ørsted, Statnett, university of groningen	amprion, Terna, 50hertz	Wind EUROPE, T&D europe

Project concept and objectives



Planning of Activities

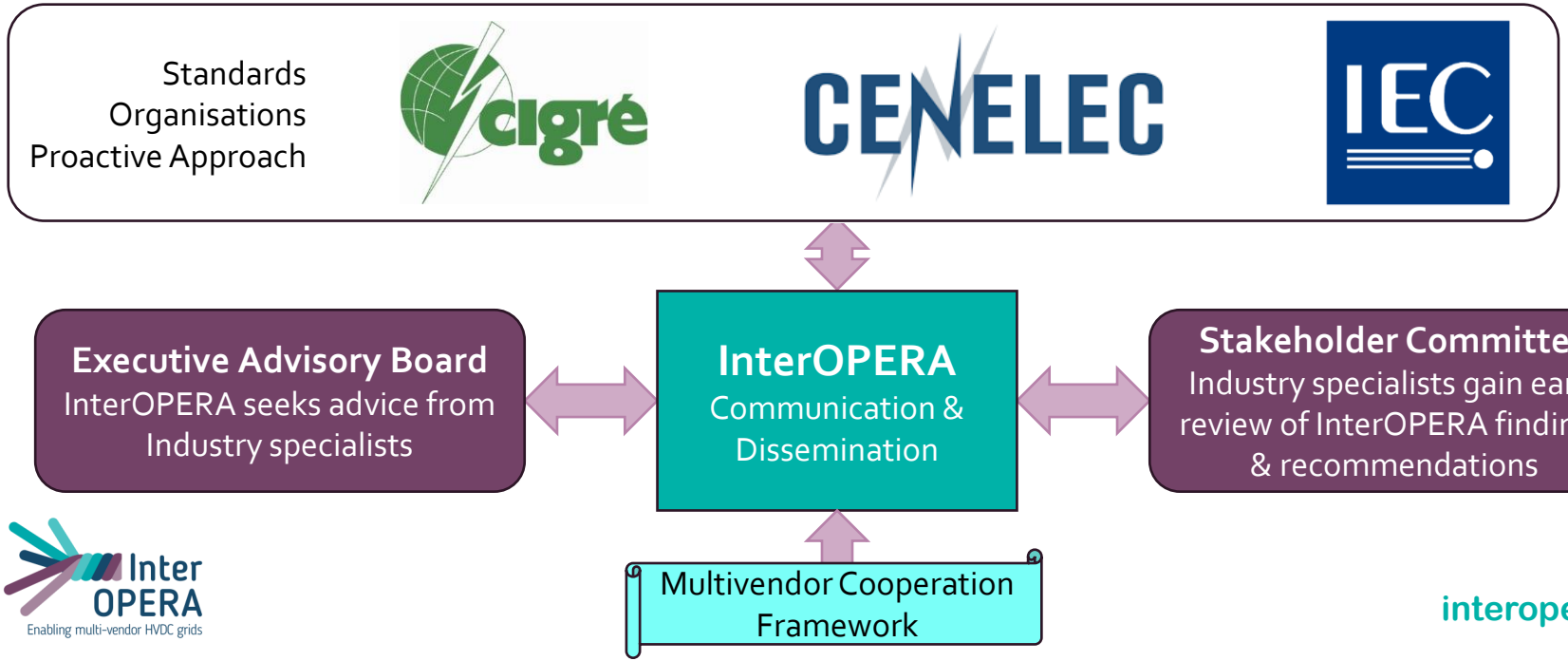
Core activities allow InterOPERA to achieve its ambition



Inter OPERA
Enabling multi-vendor HVDC grids

Secure multi-stakeholder cooperation, build confidence and uptake of the interoperability frameworks

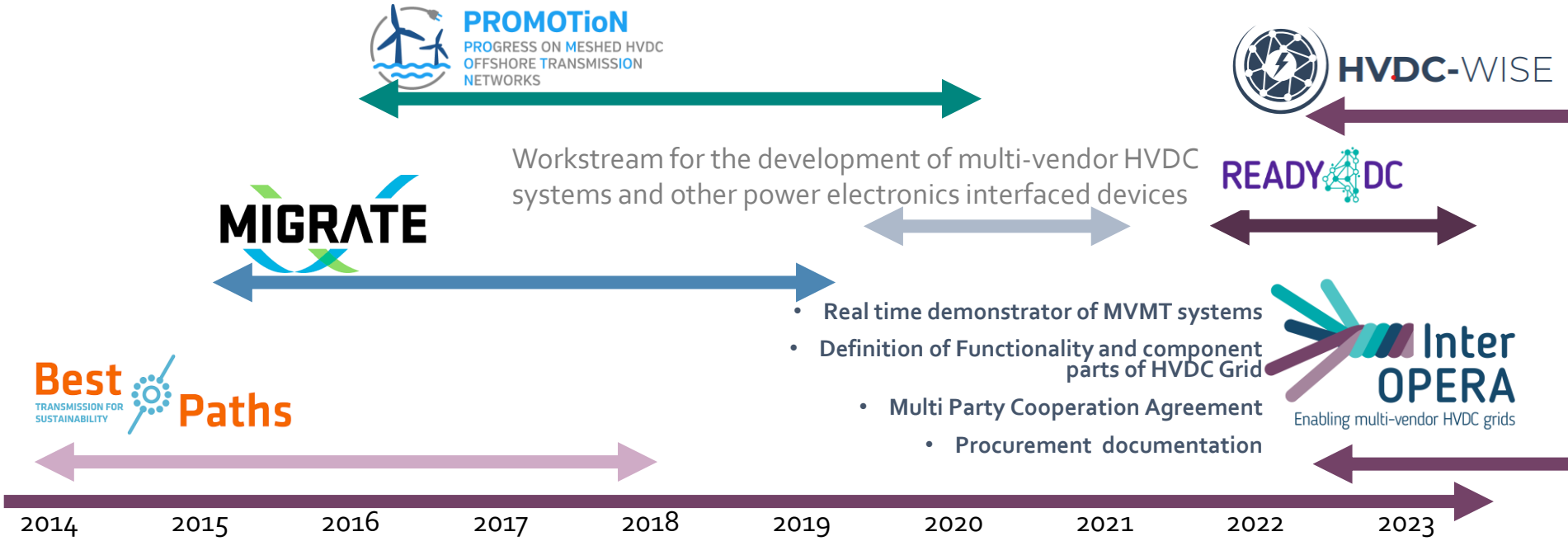
→InterOPERA will share practical experience in Europe and beyond



WP1
WP2
WP3
WP4
WP5
WP6
WP7

Inter OPERA
Enabling multi-vendor HVDC grids

InterOPERA builds on EC funded commitment to develop the technology for cost efficient and resilient evacuation of Wind Power:



Inter OPERA
Enabling multi-vendor HVDC grids

interopera.eu

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InterOPERA objectives
Relevance of WP4

A coordinated approach	• Between TSOs, wind developers, and HVDC manufacturers • 4 years part of broader clear roadmap • Engage with all potential stakeholders and parallel activities
Demonstrated interoperability frameworks	• Operational, technical, regulatory functional frameworks and standard interfaces • Real project organization and procurement strategies • Complex multi-stakeholder cooperation agreements and legal basis
Enabling a real offshore pilot project	• Full scope of engineering activity • Deliver a market ready solution • Tender to be launched by 2026

WP4 - Overall Objective

- **WP4** is dedicated to developing a suitable cooperation framework to handle complex multi-stakeholder engagement throughout the InterOPERA project

- These engagement concerns include:
    - data/model sharing;
    - IP;
    - cooperation issues; and
    - etc.

- There are **2** key deliverables:
    - Develop a Preliminary Multi Party Cooperation Agreement (PMPCA) as an addition to the established Consortium Agreement;
    - Develop and publish a General Multi-Vendor Cooperation Framework to be used as basis for future multi-vendor HVDC projects.

The WP is being led by Ørsted, while the two key deliverables will be led by T&D Europe and Statnett respectively.

People of WP4 - Leaders

Syed Hamza Kazmi

WP 4 Leader

Ørsted

Lead WP4 and coordinate between T4.1 and T4.2

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Carlo D. Esposti

Task 4.1 Leader

T&D Europe

Oversee the development of PMPCA in M1-M6

Contact

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Jan Stensrud

Task 4.2 Leader

Statnett

Oversee the development and refinement of the Generic MPCF

Contact

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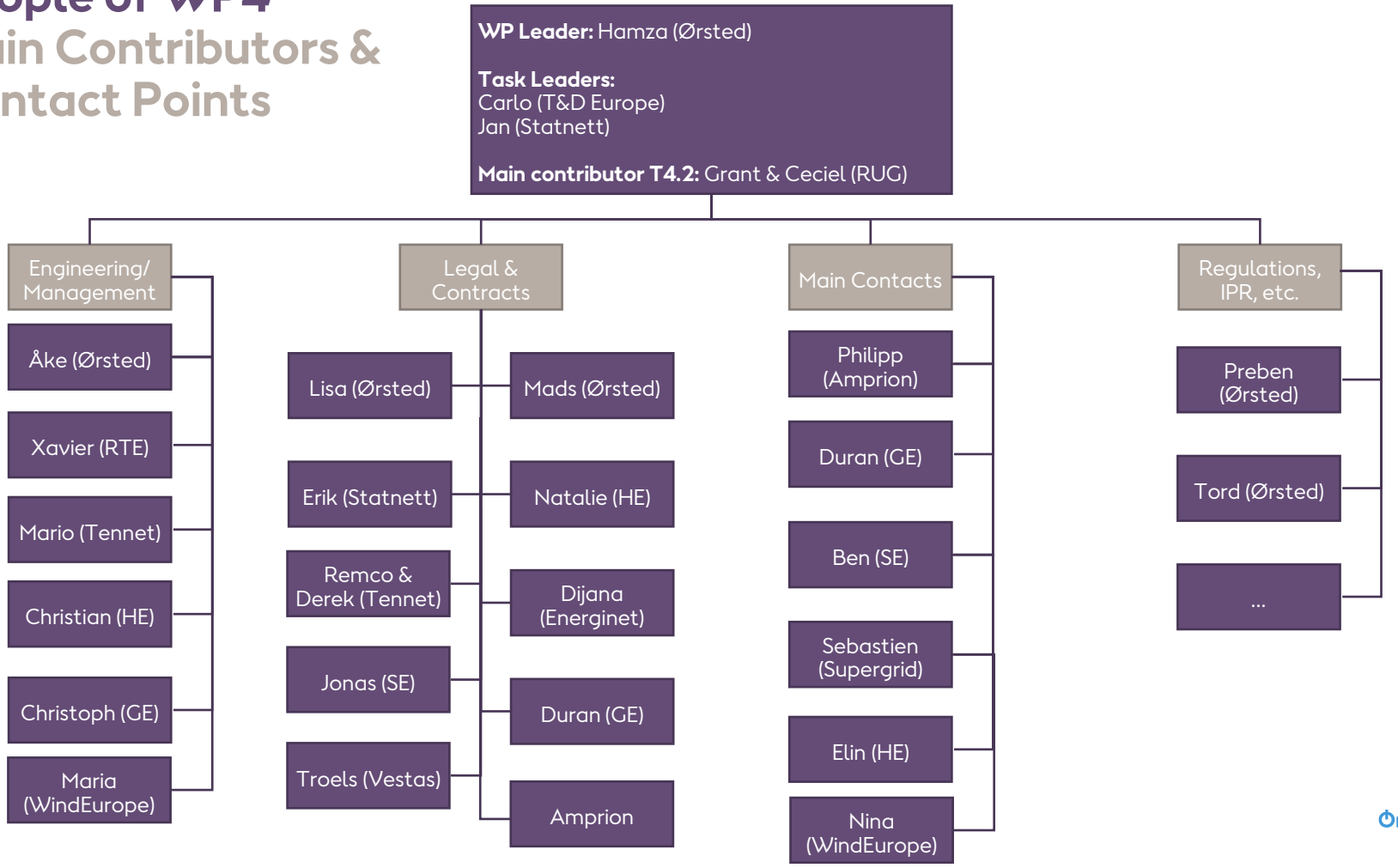
People of WP4
Main Parties

	Leaders	Main Contributors	Contributors and Reviewers
Task 4.1 (PMPCA)	**T&D Europe**	SuperGrid Statnett, Energinet, Amprion Ørsted SE, HE, GE, SCiBreak	RTE Tennet (DE, NL), 50 Hertz Equinor, Vattenfall Vestas, SGRE RUG
Task 4.2 (Generic Framework)	**Statnett**	**RUG** Energinet, Amprion Ørsted T&D Europe, SE, HE, GE Vestas	SuperGrid, RTE Tennet (DE, NL), 50 Hertz Equinor, Vattenfall WindEurope, SGRE

People of WP4
Main Contributors & Contact Points



Building the first MVMT HVDC System

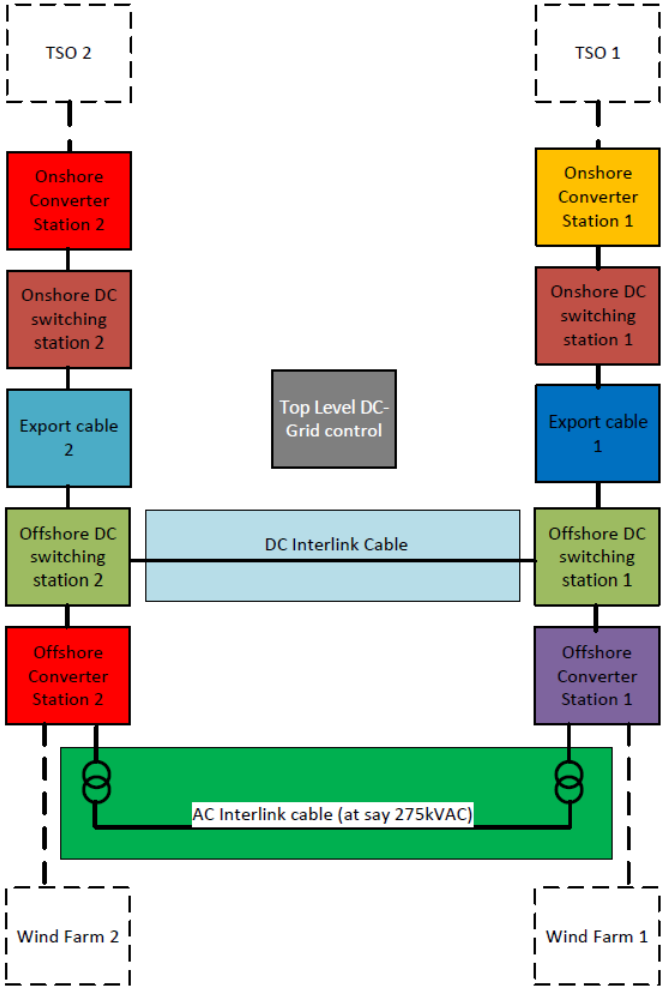
Managing cooperation between all parties

Hamza (Ørsted) and Jan (Statnett)

interopera.eu

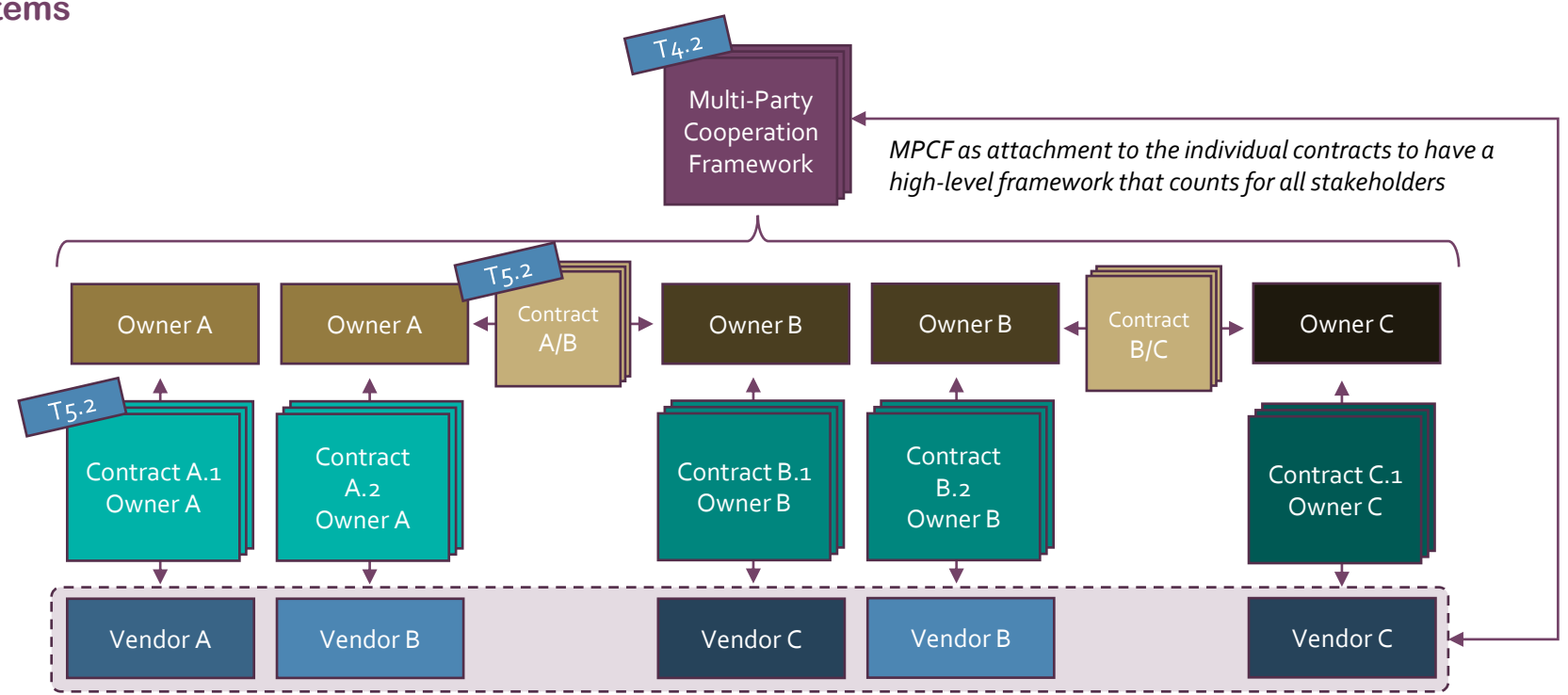
Multiple Parties Involved in Building Future MVMT Systems–

An Example



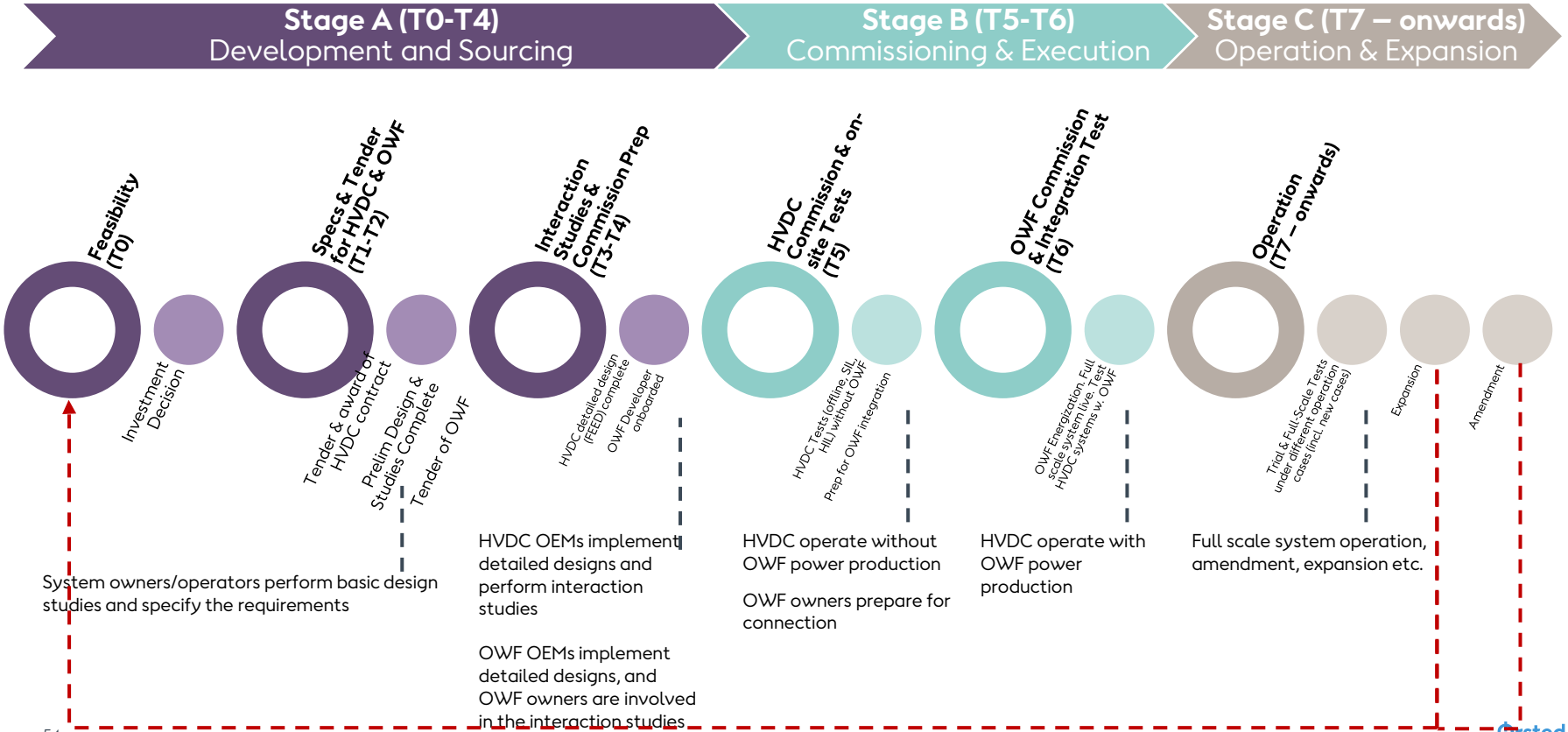
MPCF and Project Contracts

Overview of the potential structure for contracts and cooperation framework in future MV/MT systems

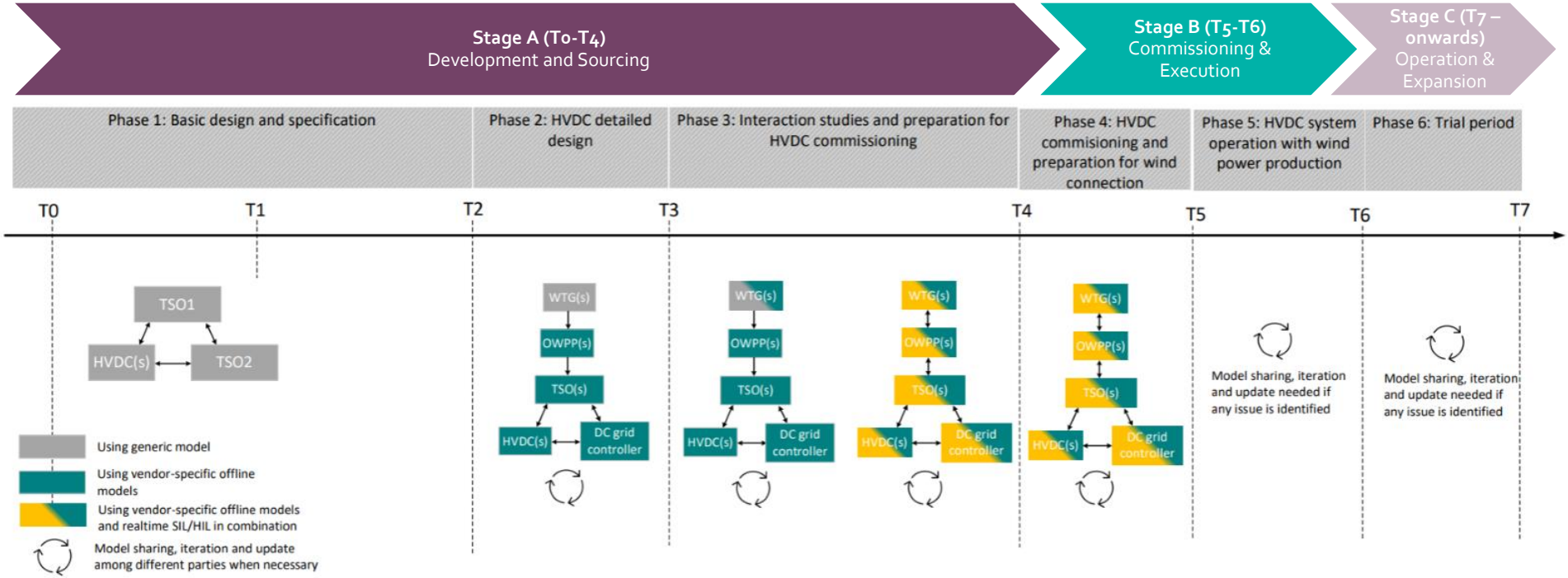


HVDC Vendors do not have contracts between each other → MPCF will close that gap

Building an MVMT system with OWF – the process

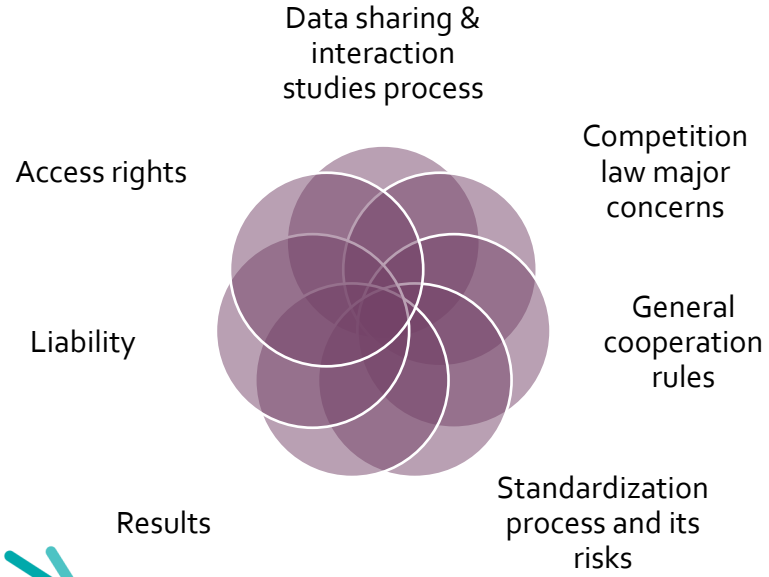


Building an MVMT system with OWF –
Interaction Studies & Model Sharing

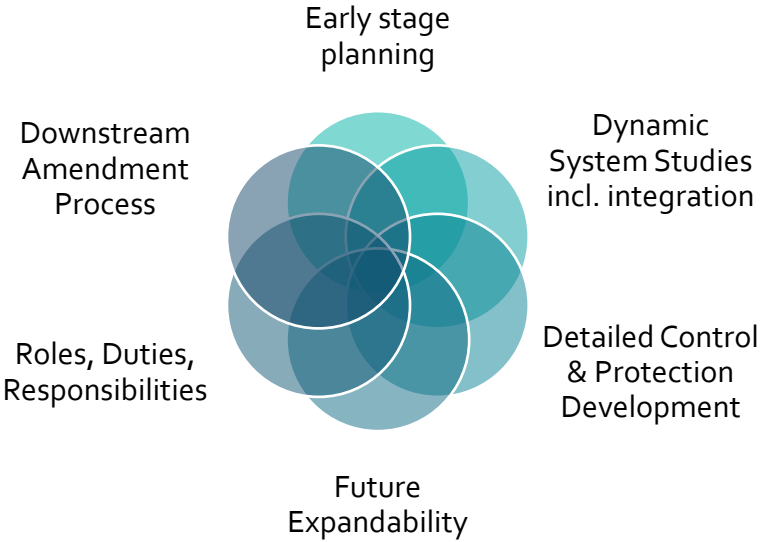


The Cooperation Framework will be included in the contracts proposals and be the basis for the cooperation between different stakeholders for exchange of data, information and models in Future MV/MT Systems

Content (non-exhaustive)



Scope (exhaustive)

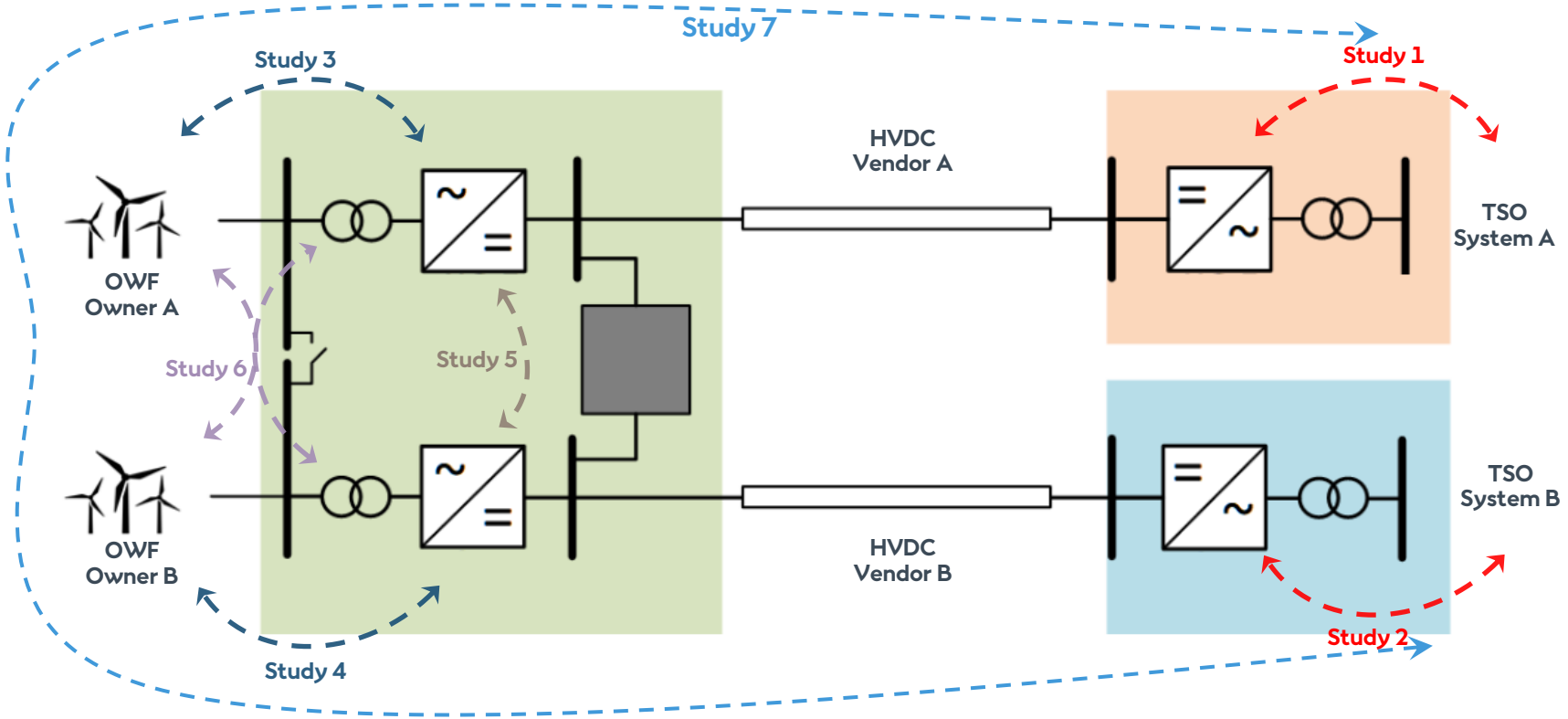


Inter OPERA
Enabling multi-vendor HVDC grids

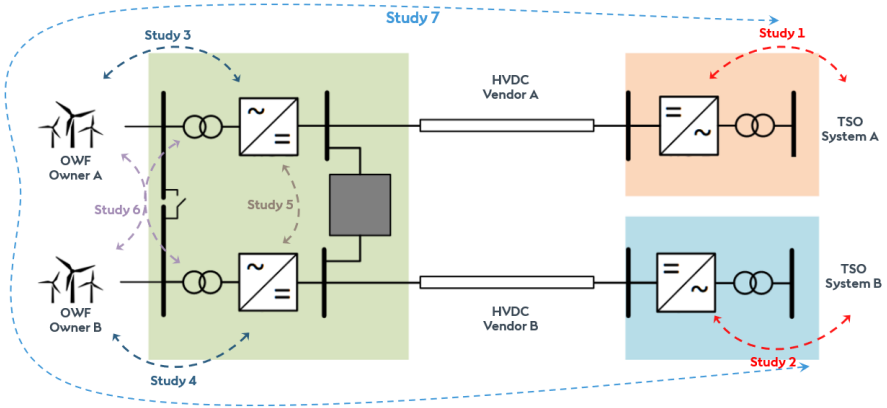
Interaction Studies in MVMT Systems

Pitfalls for cooperation

Interaction Studies to be conducted



Roles and Responsibilities of parties during Studies



Study Number	Role of parties					Responsibility		
	HVDC Vendors	TSOs	Labs	OWF Developer	OWF Vendors	Primary # 1	Primary # 2	Secondary
1	Provide Models and/or Run Studies	Run Studies	Run Studies?	No Role	No Role	HVDC Vendors	Labs & TSOs	Rest
2	Provide Models and/or Run Studies	Run Studies	Run Studies?	No Role	No Role	HVDC Vendors	Labs & TSOs	Rest
3	Provide Models and/or Run Studies	Informed	?	Run Studies	Provide Models	OWF Developer	HVDC & OWF Vendors	Rest
4	Provide Models and/or Run Studies	Informed	?	Run Studies	Provide Models	OWF Developer	HVDC & OWF Vendors	Rest
5	Provide Models and/or Run Studies	Run Studies	Run Studies	Provide Models & Results of 3 & 4	No Role	HVDC Vendors	Labs & TSOs	Rest
6	Provide Models and/or Run Studies	Informed	?	Run Studies	Provide Models	?	OWF Developers & Vendors	Rest
7	Provide Models and/or Run Studies	Run Studies	Run Studies?	Provide Models & Results of 3 & 4	No Role	TSOs/Labs	HVDC Vendors	Rest

Building an MVMT system with OWF –

RACI Matrix during different phases (work in progress)

Study No.	Prelim Design (T1-T2)					Detailed Design (T3-T4)					Commissioning & Testing					Operation & Maintenance (T7-onwards)				
	HVDC Vendors	TSOs	Labs	OWF Developers	OWF Vendors	HVDC Vendors	TSOs	Labs	OWF Developers	OWF Vendors	HVDC Vendors	TSOs	Labs	OWF Developers	OWF Vendors	HVDC Vendors	TSOs	Labs	OWF Developers	OWF Vendors
1	A/C	R	-	-	-	A/C	R	R/A?	-	-	A/C	R	R/A?	-	-	A/C	R	R/A?	-	-
2	A/C	R	-	-	-	A/C	R	R/A?	-	-	A/C	R	R/A?	-	-	A/C	R	R/A?	-	-
3	I?	I	-	R	A/C	A/C	I	I?	R	A/C	A/C	I	I?	R	A/C	A/C	I	I?	R	A/C
4	I?	I	-	R	A/C	A/C	I	?	R	A/C	A/C	I	?	R	A/C	A/C	I	?	R	A/C
5	A/C	R	-	A/C	C	A/C	R	R/A?	A/C	C	A/C	R	R/A?	A/C	C	A/C	R	R/A?	A/C	C
6	A/C	I	-	R	A/C	A/C	I	R/A?	R	A/C	A/C	I	R/A?	R	A/C	A/C	I	R/A?	R	A/C
7	C	R	-	C	C	C	R	R/A?	C	C	C	R	R/A?	C	C	C	R	R/A?	C	C

RACI Matrix

Responsible, Accountable, Consulted, Informed.

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Enabling multi-vendor HVDC grids

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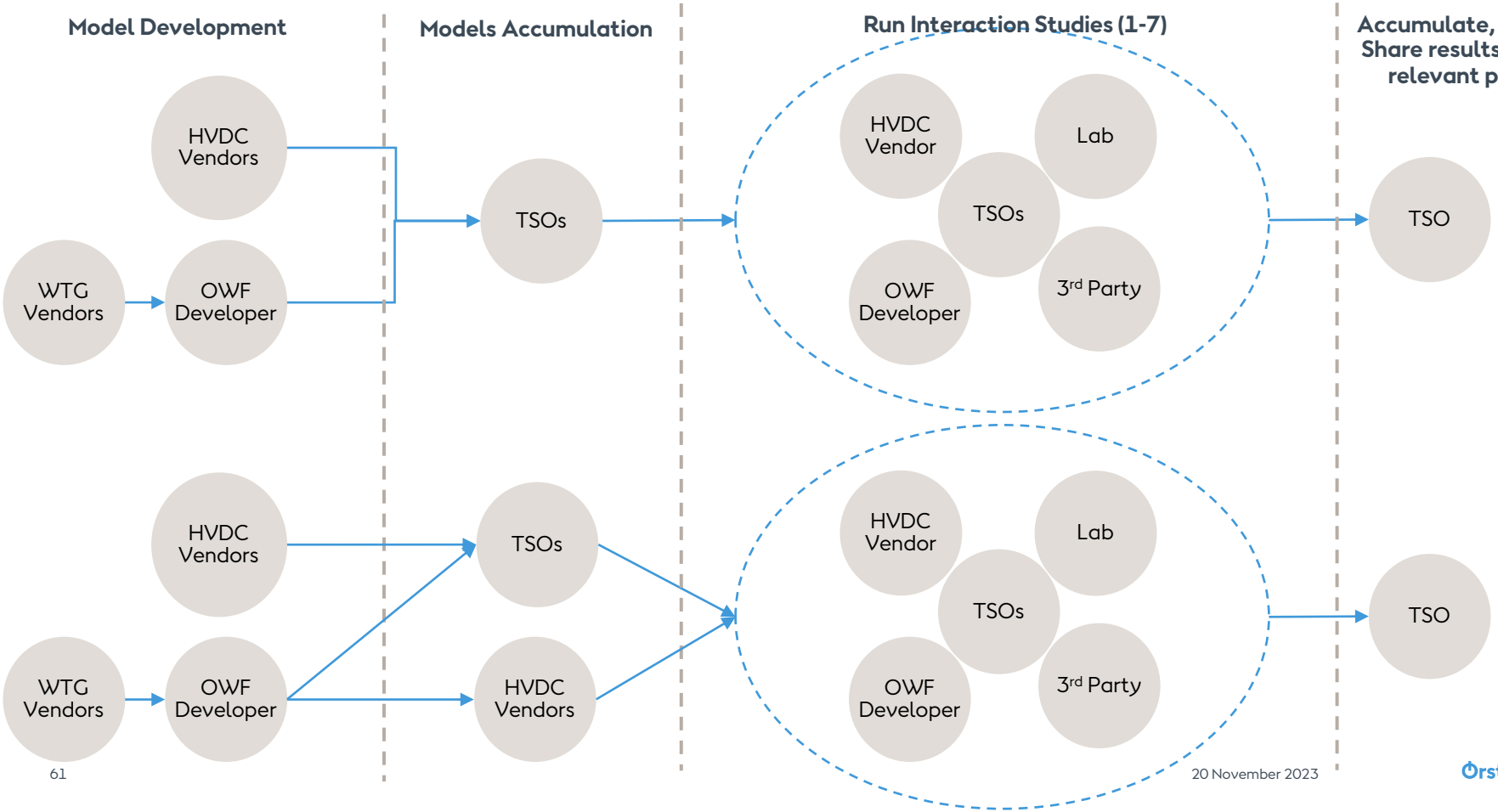
Flow of Models and Data – Possible Philosophies

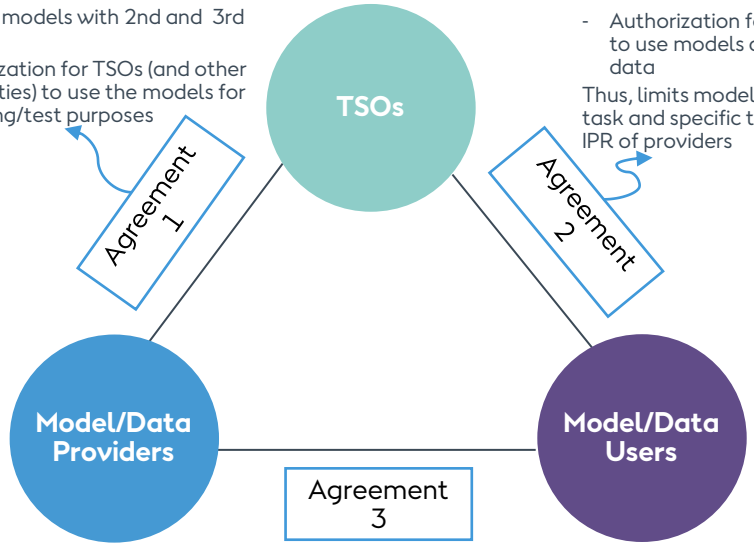


Access Rights and NDAs
Data related Template Contracts or Legal Agreements

Provisions incl:
- Sharing models with 2nd and 3rd parties
- Authorization for TSOs (and other key parties) to use the models for designing/test purposes

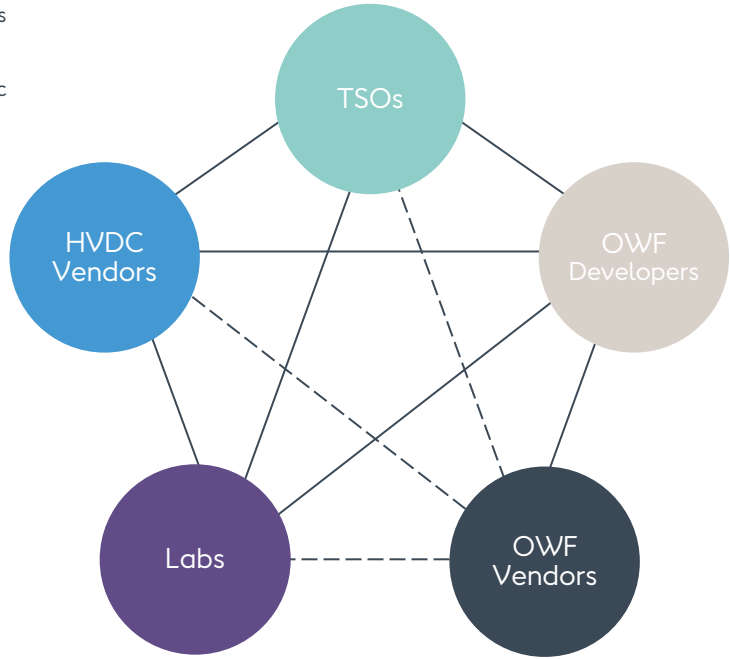
Provisions incl:
- Authorization for models users to use models and resulting data

Thus, limits model use for specific task and specific time to protect IPR of providers



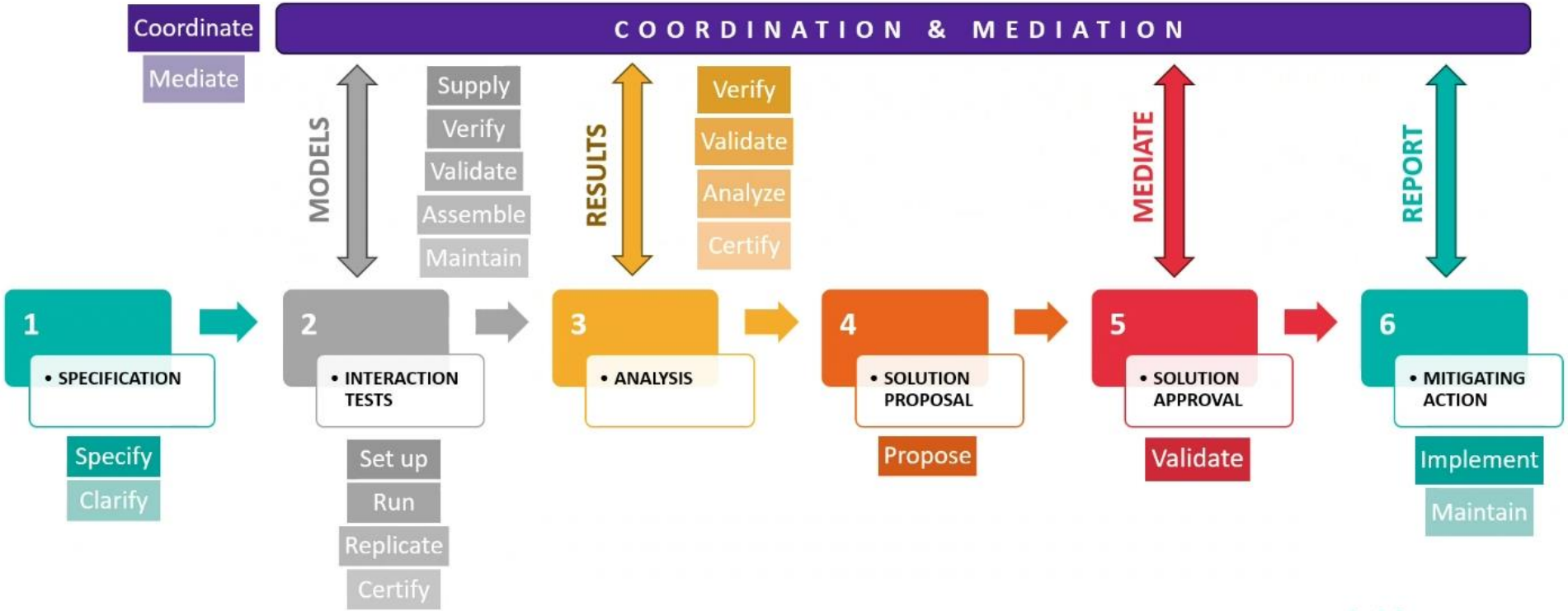
NDA - Provisions incl:
- Authorization for model users to use model and resulting data (limited purposes)

Thus, limits model use for specific task and specific time to protect IPR of providers



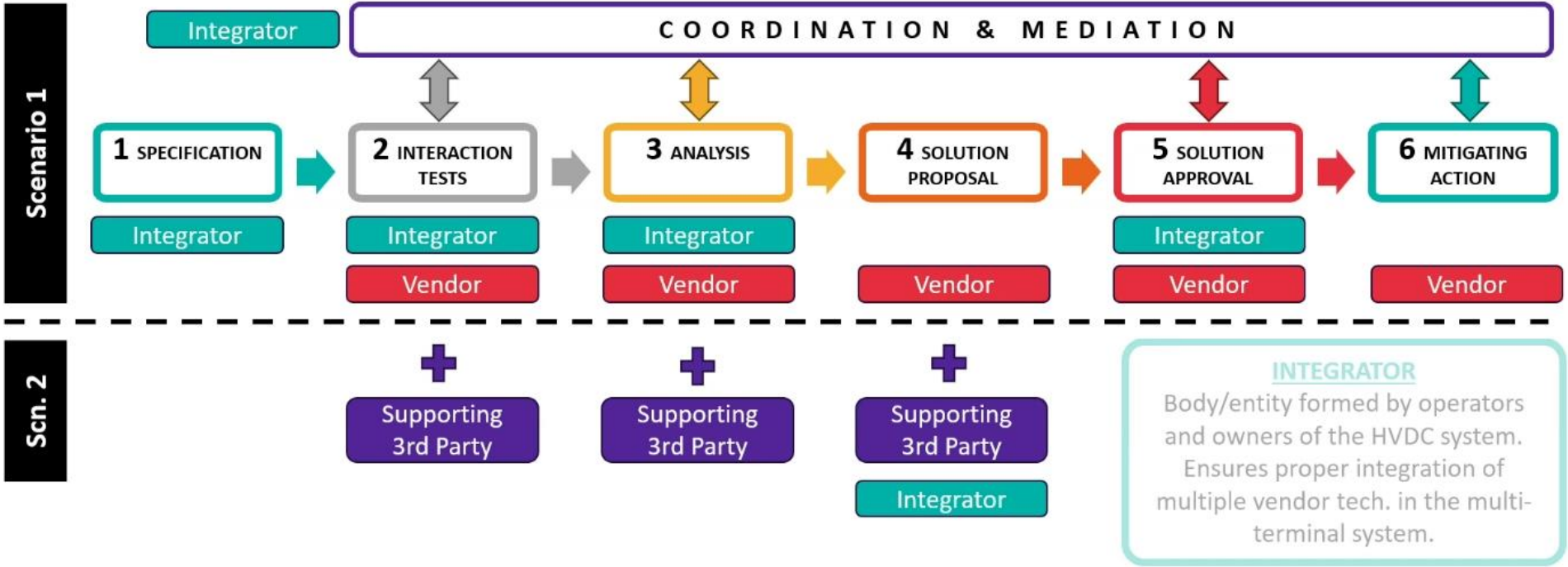
Workflow for interaction studies

A couple dozen roles (27) identified among all stages



Role's assessment

Interaction studies remain priority **AFTER** MTMV HVDC projects awarded



Cooperation and Governance

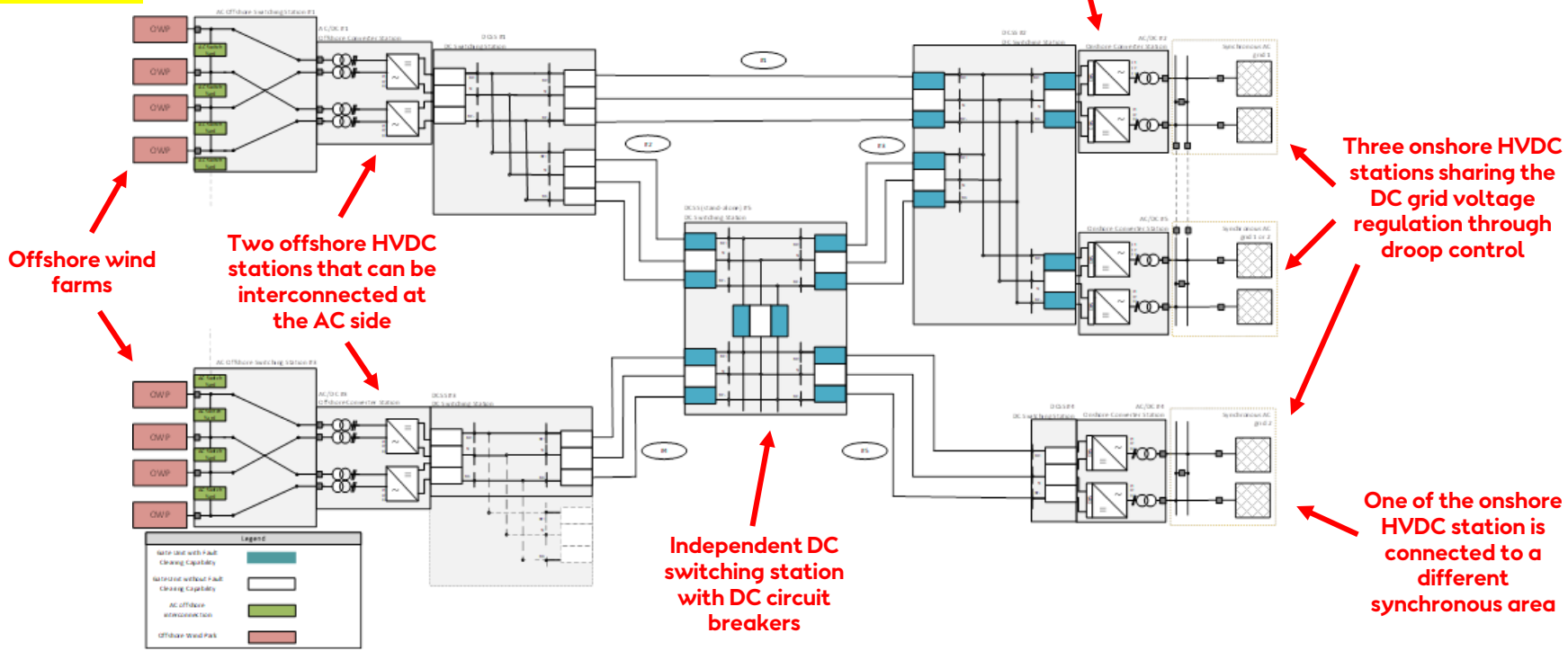
Managing cooperation and legal challenges in InterOPERA - a complicated multi-stakeholder project

via Work Package 4

Demonstrator Topology (Offline)

Enabling multi-vendor HVDC grids

Not Final



WP4 Timeline & Status

Phase 1 | Phase 2

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48

Today

T4.1 - PMPCF

- Decision Process (Governance)
- Liaise w. WPs 1-3
- IP & Competn Risks
- PMPCA

Deliverable 4.1 PMPCA completed in M7
- 1st draft prepared by T&D Europe & HVDC Vendors
- Final PMPCA submitted to EU Repository
- NDAs and Dissemination in Progress
- Governance process & structure completed

T4.2 General MPCF kicked off in June ahead of schedule
- Core team and secondary contributors onboarded
- Main Deliverables refined along with scope of MPCF
- First 6-months detailed plan presented to stakeholders for **D4.2**
- Biweekly work meetings and D4.2 active since June 2023

T4.2 - Multi-Party Cooperation Framework development
to account for future expandability, dynamic system studies and detailed control & protection development

- General Multi-Party Cooperation Framework
- Competition Law Extended Review & Continuous Handling of Issues
- Liaise w. WPs 1, 2 ,3 & 5 collect issues and improve MPCF

D4.1
- PMPCA ✓
- Decision Process ✓

T&D Europe

D4.2
- Multi-party Cooperation Framework (prelim draft w. focus on data sharing)

Statnett

D4.3
- Multi-party Cooperation Framework (extd. draft w. roles/responsibiities)

Statnett

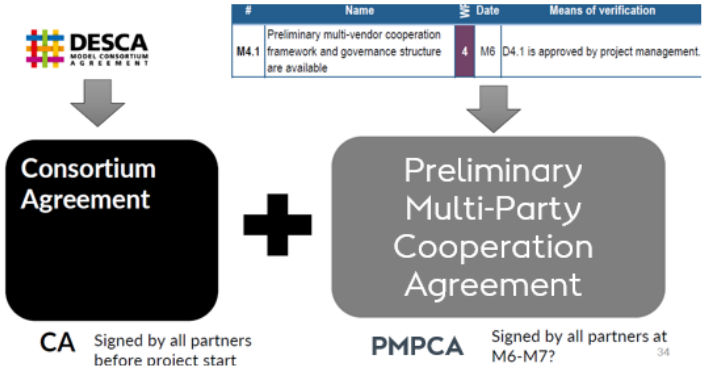
D4.4
- Multi-party Cooperation Framework (final w. InterOPERA learnings)

Ørsted

1. The Preliminary Multi-Party Cooperation Agreement

Expected structure

Preliminary Multi-Party Cooperation Agreement



#	Name	WP	Date	Means of verification
M4.1	Preliminary multi-vendor cooperation framework and governance structure are available	4	M6	D4.1 is approved by project management.

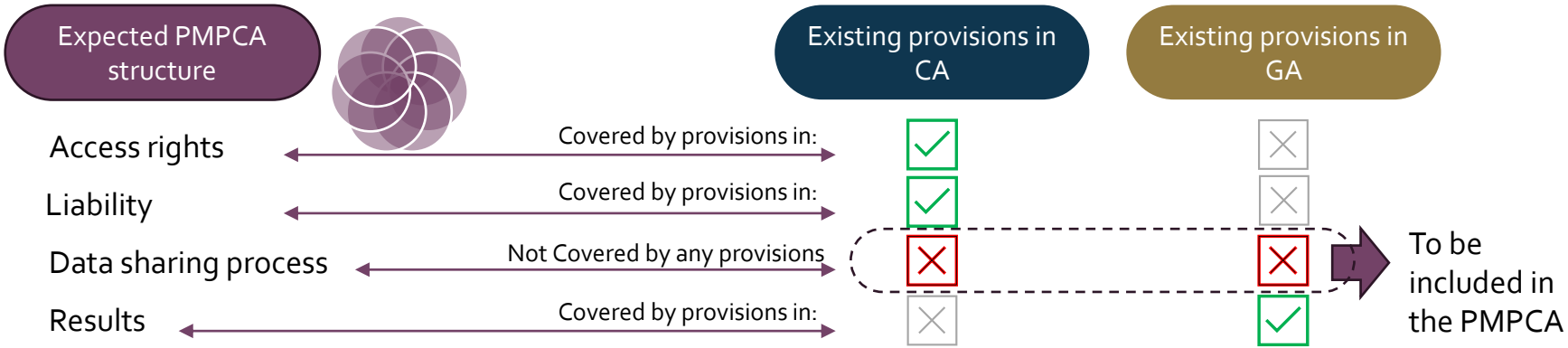
CA + **PMPCA**

Liabilities
Coordination (mission and obligation of the coordinator)
Payments (distribution of the funding to the partners)
Governance
IPR management (ownership of results, access rights for the partners...)
Dissemination (publications...)
Applicable law and jurisdictions (WIPO arbitration, ICC rules from Belgium...)

Additional data sharing and IP protection measures (network data, simulation results, control models...)
Daily rules of engagement inside InterOPERA
Applicable rules and measures when creating a standard (for ex. patent ambush...)
Compliance with EU Competition law
Compliance with EU Energy law
Compliance with any other relevant law (antitrust...)

After some investigations, vendors' lawyers have agreed that only minor integrations to the GA-CA provisions are needed

It was agreed to run an analytical review of the available legal provisions in the GA and in the CA to understand if the requirements set on the PMPCA could have been a repetition of previously agreed terms

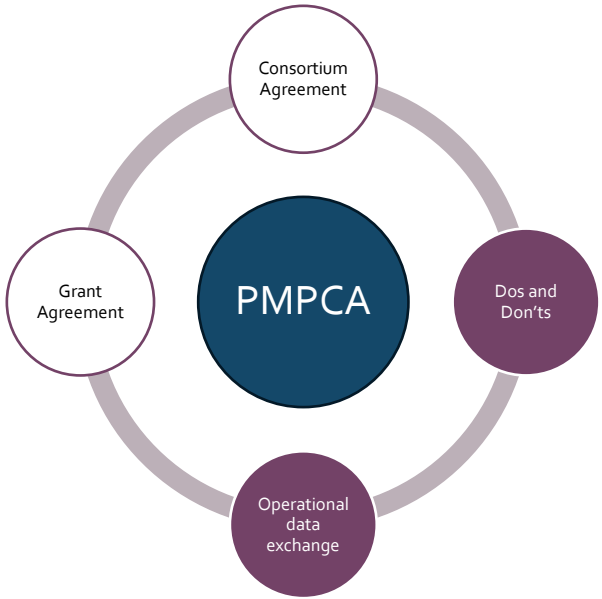


The review has highlighted that the negotiated terms in the CA and the GA are sufficiently robust to support several parts of the expected PMPCA and should not be repeated into the PMPCA, so to avoid duplications

Final structure of the PMPCA

Not a new contract but minor integrations

The final PMPCA is indeed not a new contract, but the bundle of already negotiated provisions plus operational integrations



Key additions to the already negotiated provisions

1. **Dos and Don'ts** – code of conduct to be respected in all environments/situations when potential exchange of information can harm sensitive information/IPRs

2. **Operational data exchange** – process describing how sensitive information can be exchanged between parties

The integration of the confidentiality and IPRs protection provisions with the two addenda provides sufficient terms for an appropriate risk management during the project execution

The code of conduct part explains how to tackle concrete situations which might occur during the project execution

Excerpts from the text:

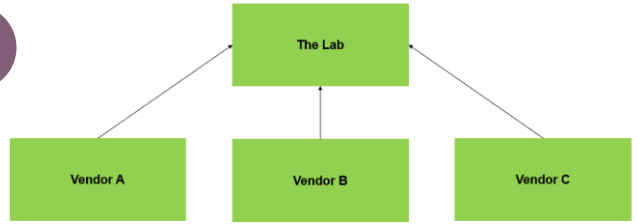
	Do	Don't
About compliance with anti-trust laws	Refer to past or running projects in a generic way when the experience made is required for the technical discussion.	Do not provide any specific information regarding the progress or content of running or past negotiations and projects.

	Do	Don't
About Protection of vendors' IPs	Classify every information / data / document which you make available for other partners according to the InterOPERA document classification rules	Do not introduce any information without proper classification.

	Do	Don't
About standards' setting	Ensure that participation in standards setting is unrestricted and that the procedure for adoption is transparent (good faith disclosure IPRs).	Do not include elements in standards that exclude suppliers or competitors from the marketplace for any reason other than technical considerations.

The Operational data exchange is a process to illustrate a practical approach for a mediated sensitive data exchange

1

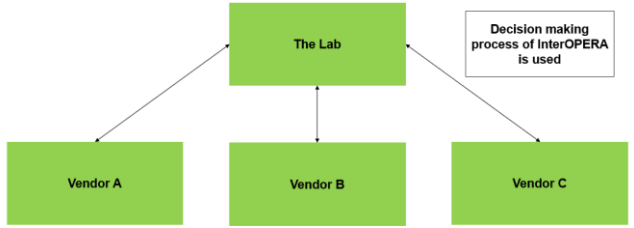


Stage 1: Studies initiation
Vendors exchange models via the responsible Lab according to agreement

2

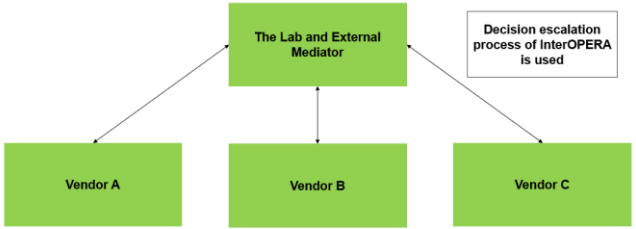
Stage 2: Run studies
Lab perform studies

3



Stage 3: discussion on interactions
In case of uncertain behaviours or issues, the lab consults with the vendors to review the observations

4



Stage 4: in case of disagreement…
Mediated discussion of of interactions. In case of uncertain behaviours or issues that cannot be resolved, the decision escalation process shall be used

Secure multi-stakeholder cooperation, build confidence and uptake of the interoperability frameworks

→InterOPERA will share practical experience in Europe and beyond

WP1
WP2
WP3
WP4
WP5
WP6
WP7

Standards Organisations Proactive Approach

cigré CENELEC IEC

Executive Advisory Board
InterOPERA seeks advice from Industry specialists

InterOPERA
Communication & Dissemination

Stakeholder Committee
Industry specialists gain early review of InterOPERA findings & recommendations

Multivendor Cooperation Framework

Inter OPERA
Enabling multi-vendor HVDC grids

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Let's create a world that runs entirely on green energy

Ørsted
Love your home