



PROMOTiON

PROGRESS ON MESHED HVDC
OFFSHORE TRANSMISSION
NETWORKS



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PROgress on Meshed HVDC Offshore Transmission Networks



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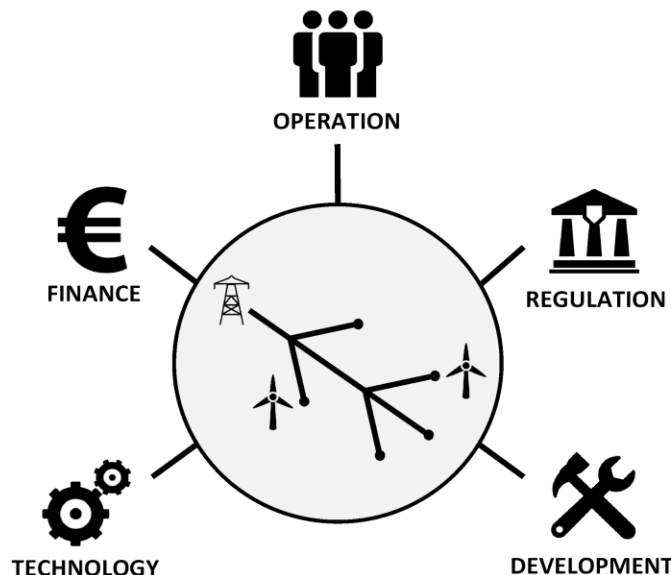
PROMOTION SEEKS TO DEVELOP MESHED HVDC
OFFSHORE GRIDS ON THE BASIS OF COST-EFFECTIVE
AND RELIABLE TECHNOLOGICAL INNOVATION



The Project

Challenges for deployment of meshed offshore HVDC grid

- Cost effective and reliable converter technology
- Grid protection systems
- Financial framework for infrastructure development
- Regulation for deployment and operation
- Agreement between manufacturers, developers and operators of the grid



Objectives

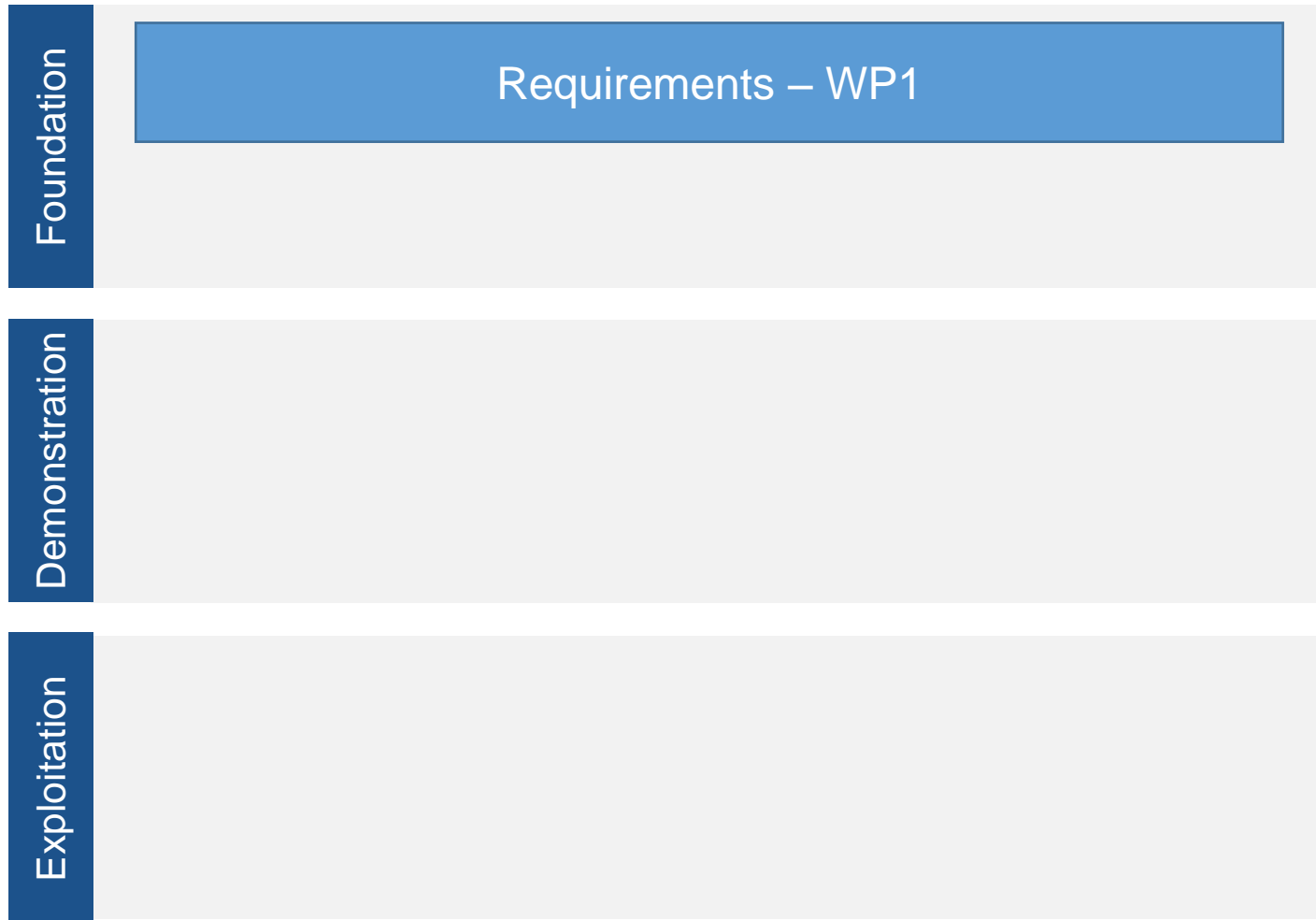
- Identify **technical requirements** and investigate possible **topologies** for **meshed HVAC/DC offshore grids**
- Develop **protection components** and **schemes for offshore grids**
- Establish components **interoperability** and **initiate standardisation**
- Develop recommendations for a coherent EU and **national regulatory framework** for DC offshore grids
- Develop **recommendations for financing mechanism** of offshore grid infrastructure deployment
- **Demonstrate cost-effective** Offshore HVDC equipment
- Develop a **deployment plan** for HVDC grid implementation



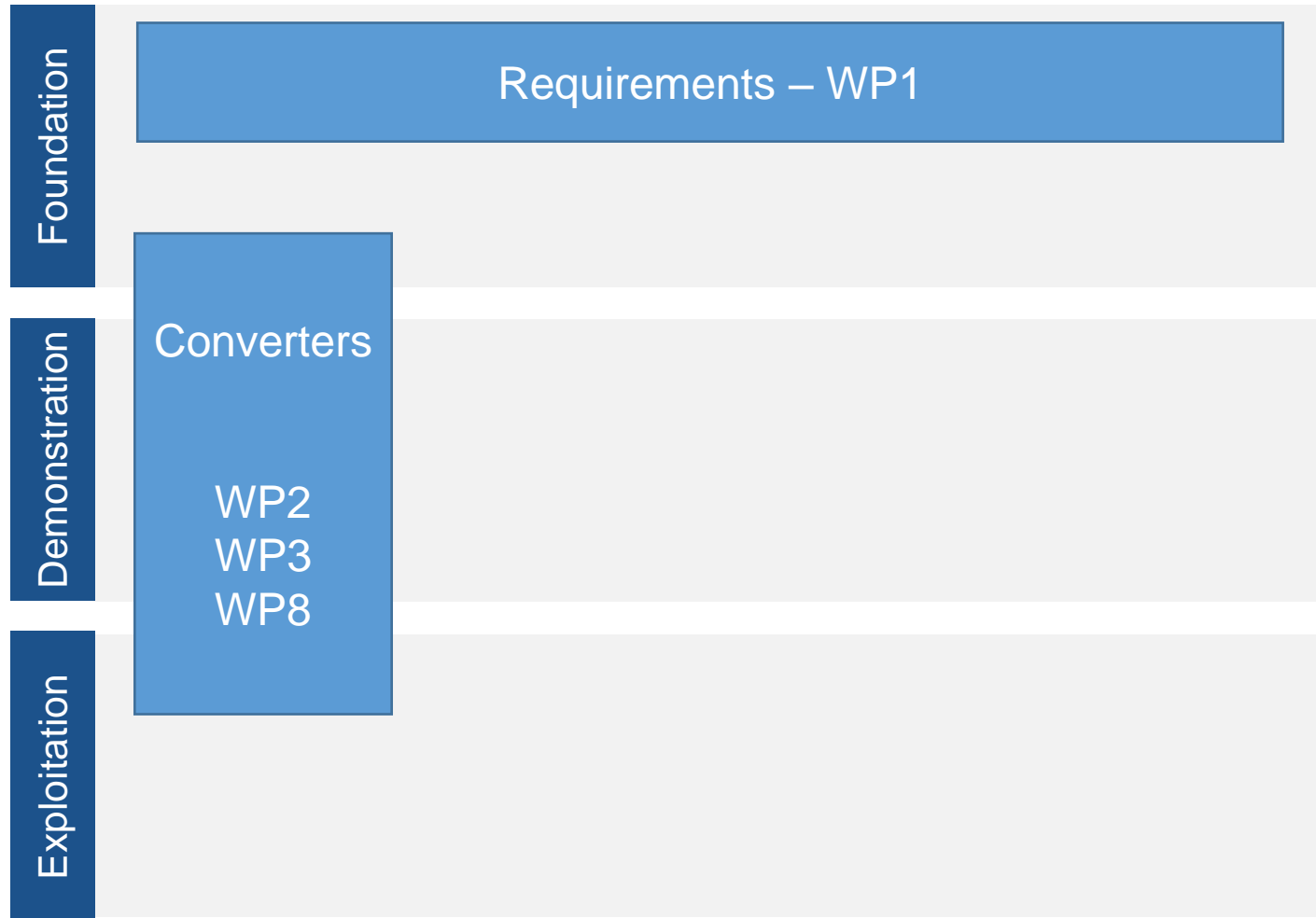
Project Structure



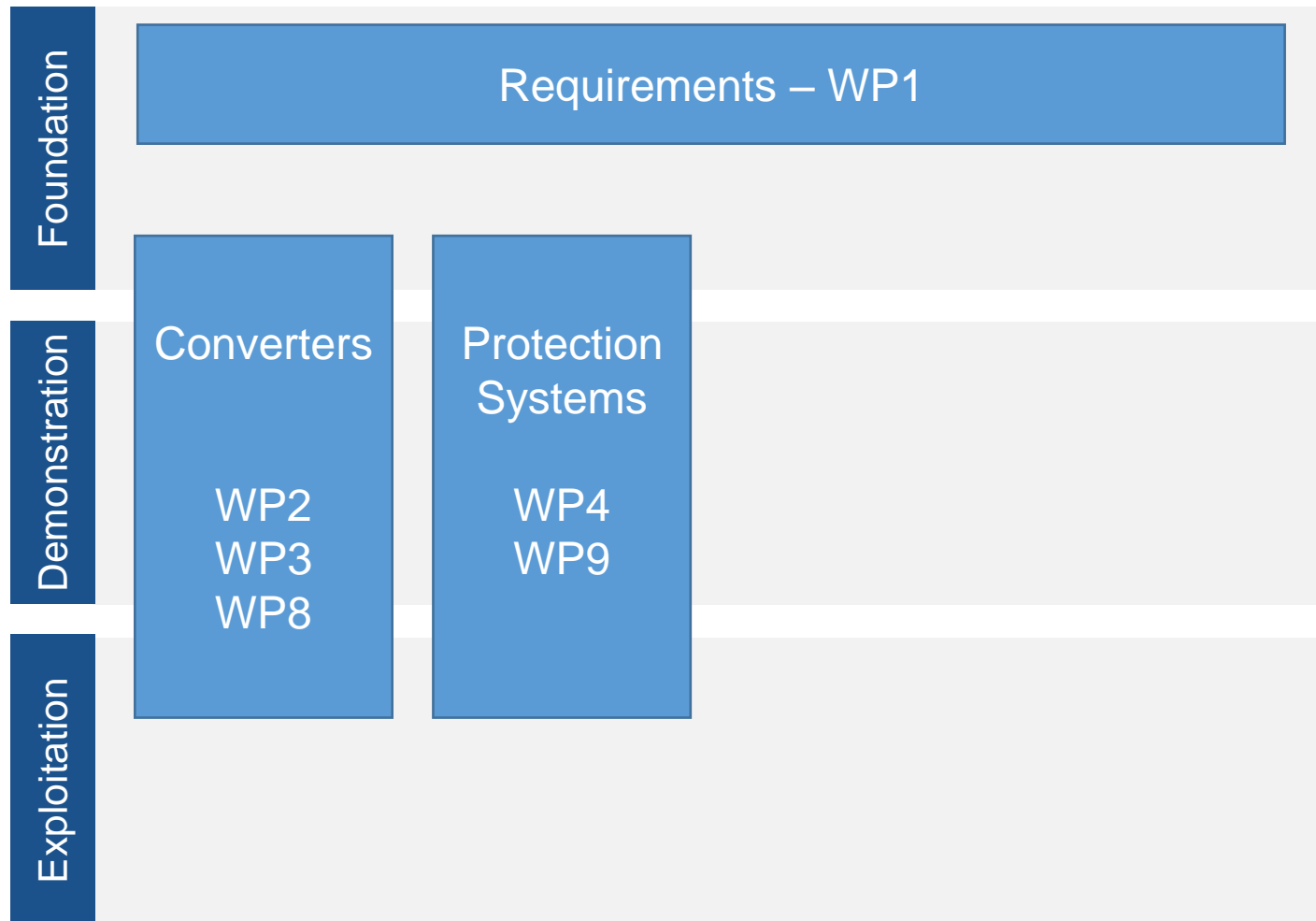
Project Structure - Requirements



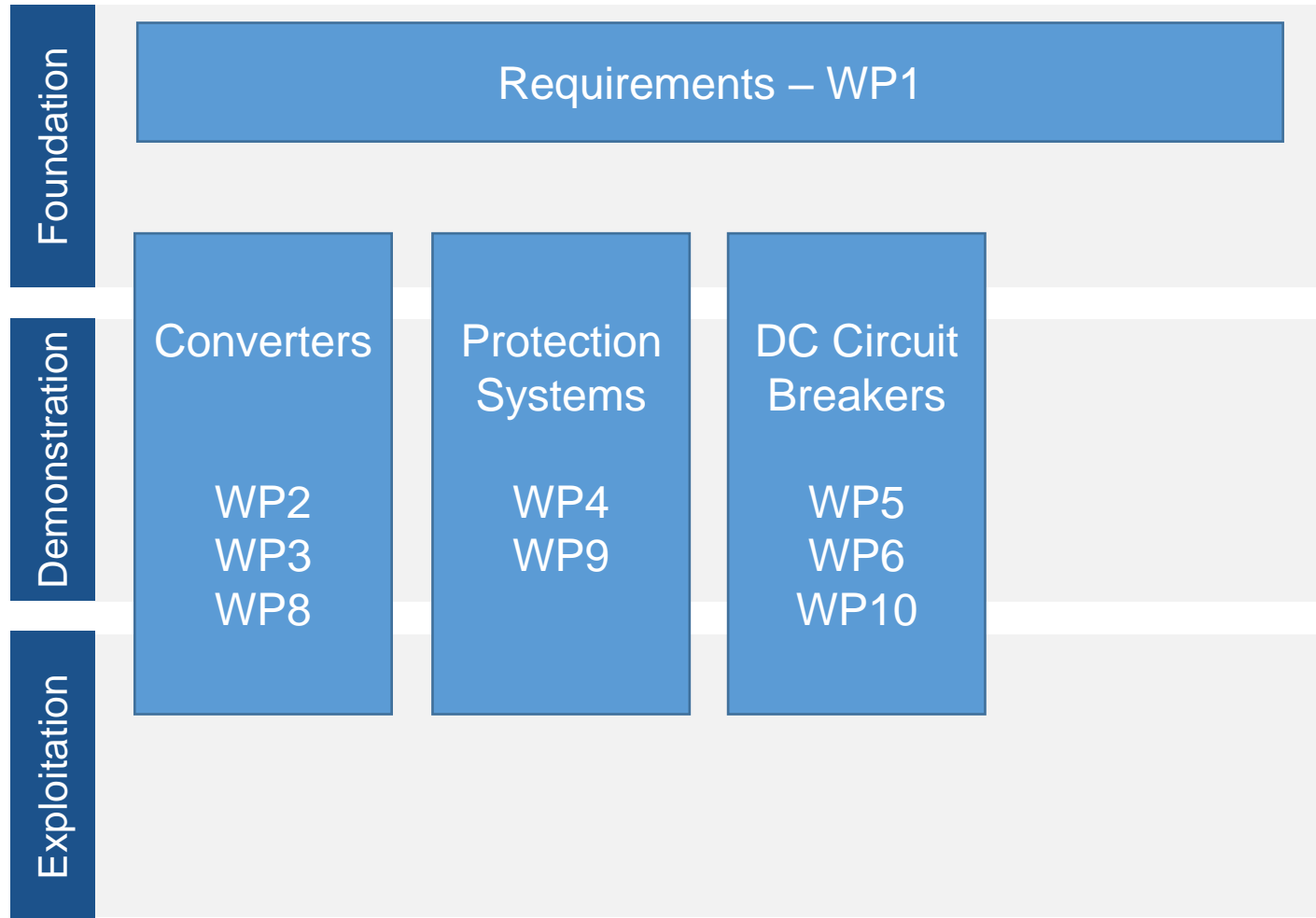
Project Structure - Converters



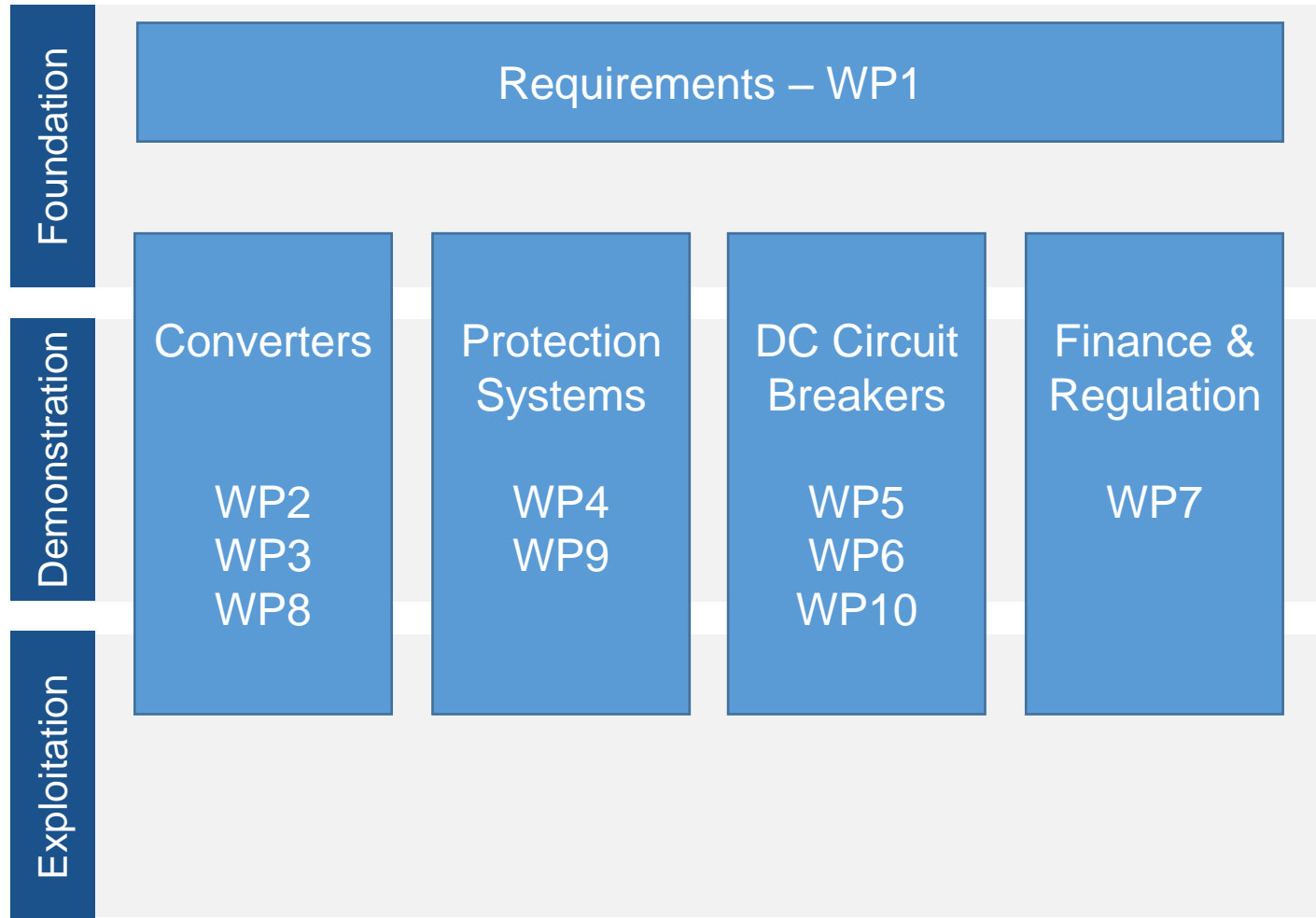
Project Structure – Protection Systems



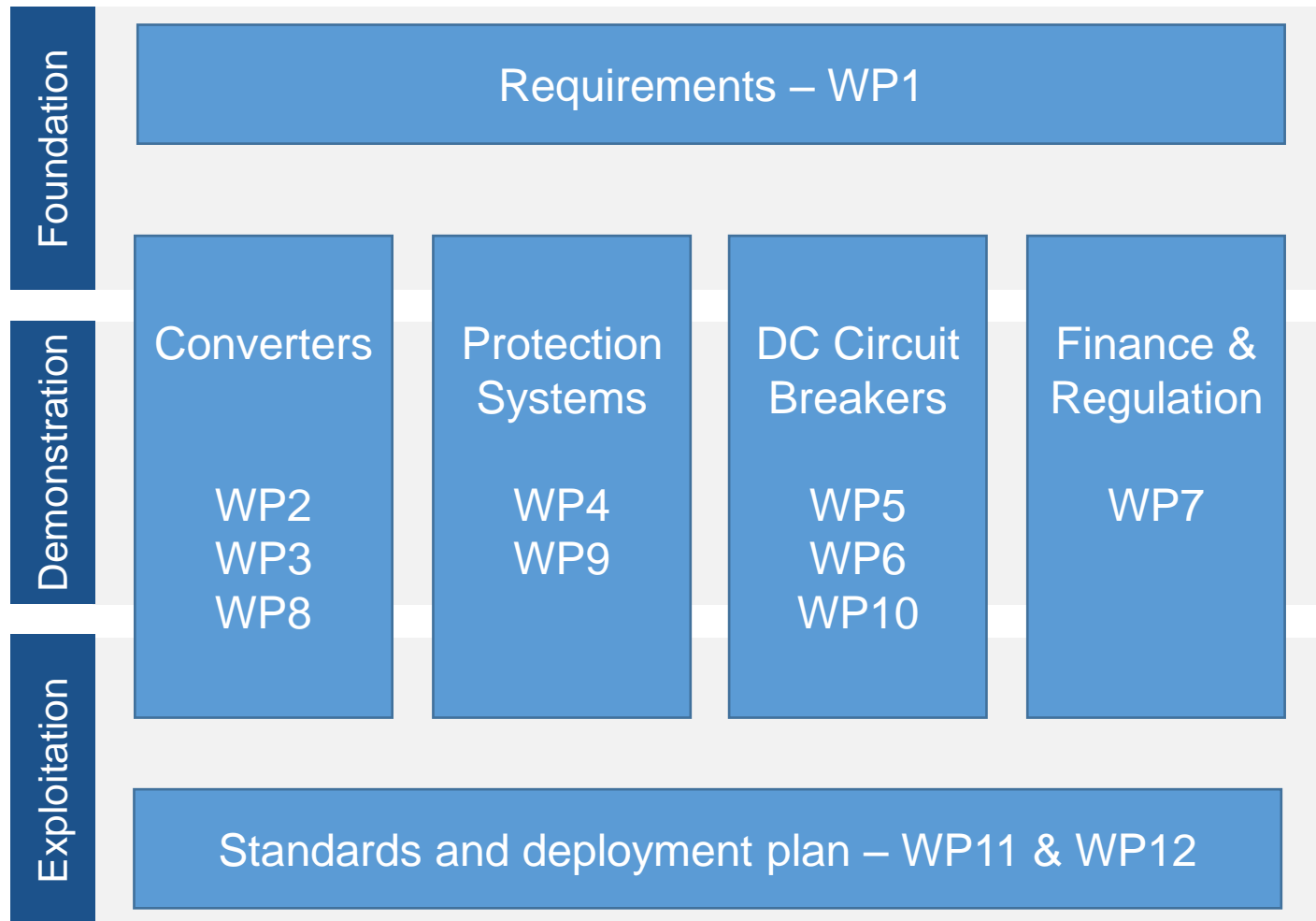
Project Structure – DC Circuit Breakers



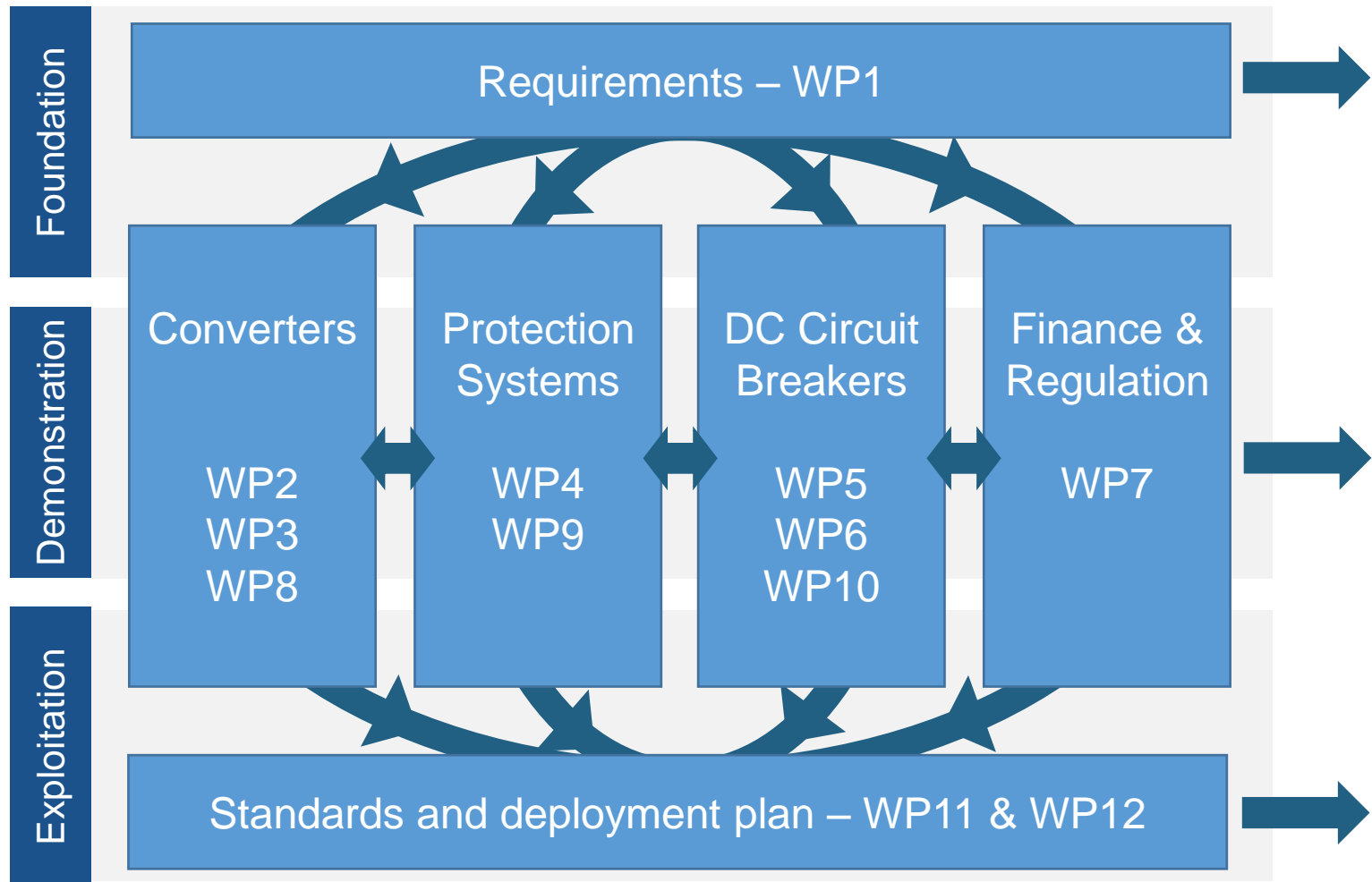
Project Structure – Finance & Regulation



Project Structure – Standards & Deployment plan

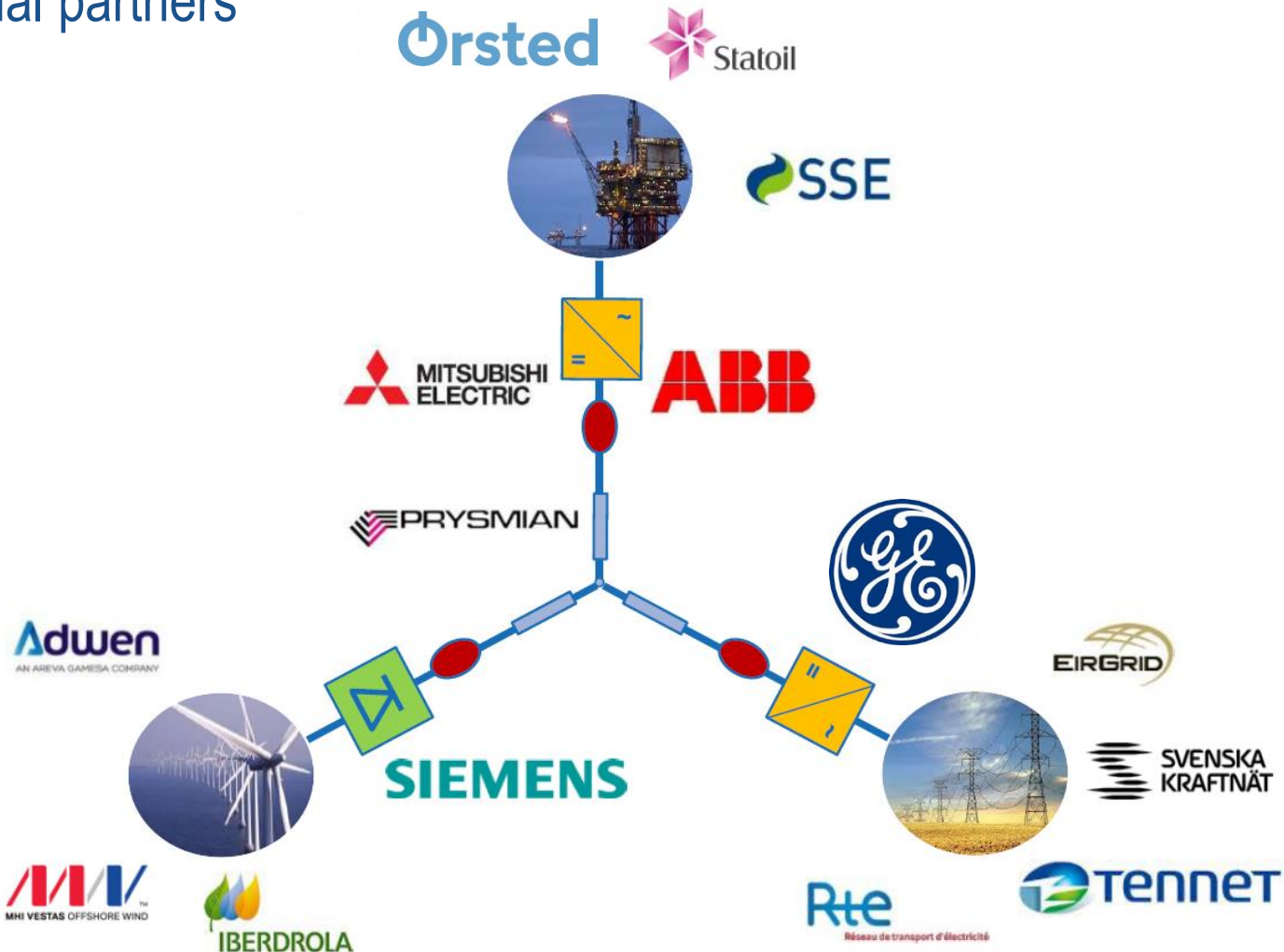


Project Structure – Coordination & dissemination



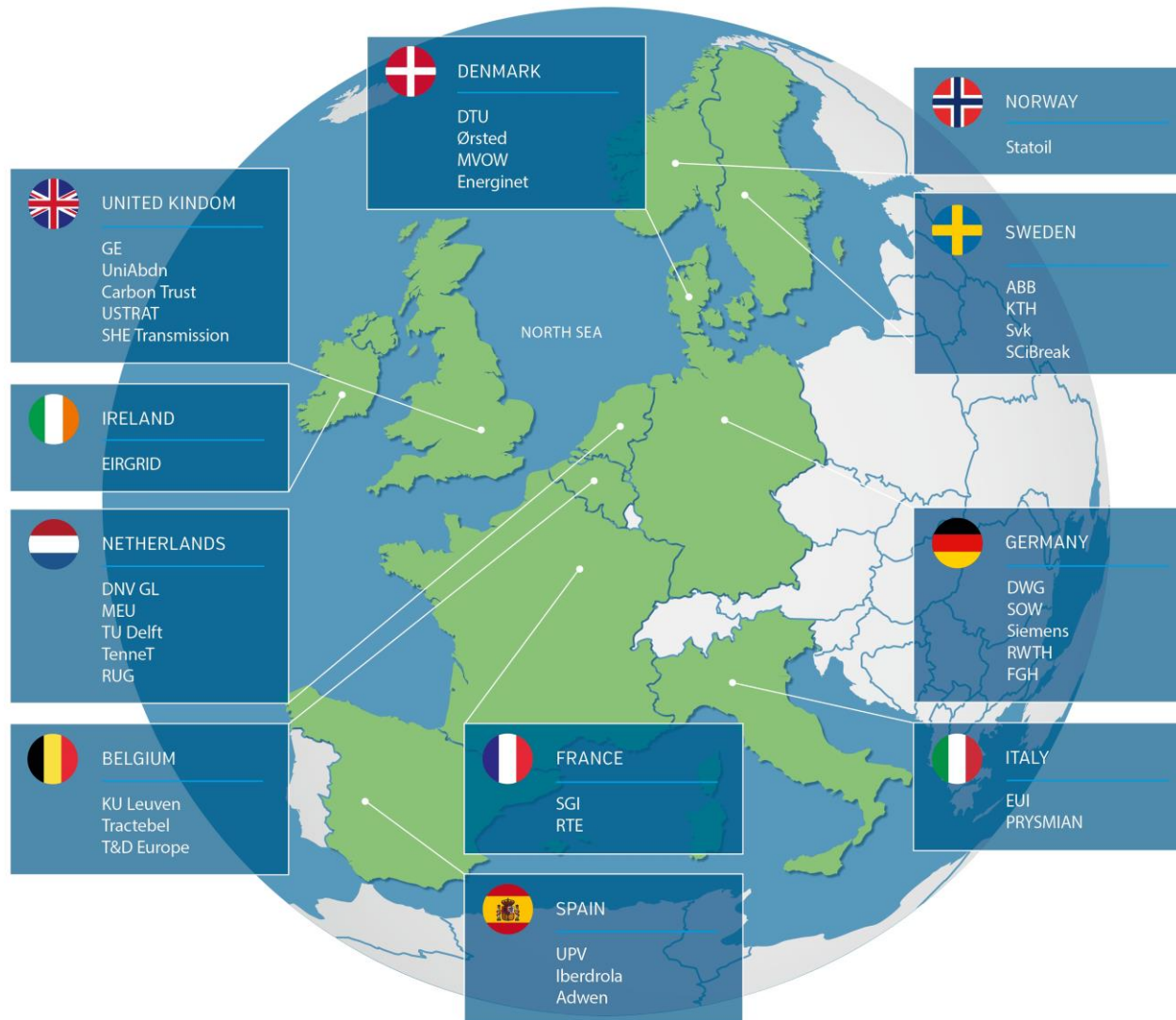
Offshore Energy Value Chain

industrial partners



European Partners

35 leading experts in HVDC grids



Project Partners

SHORT NAME	LEGAL NAME	COUNTRY
ABB	ABB AB	Sweden
Adwen	ADWEN Offshore, S.L.	Spain
Carbon Trust	The Carbon Trust	United Kingdom
DNV GL (Coordinator)	DNV GL Netherlands B.V.	Netherlands
DTU	Danmarks Tekniske Universitet	Denmark
DWG	Deutsche WindGuard GmbH	Germany
EirGrid	EirGrid plc	Ireland
Energinet	Energinet.dk	Denmark
EUI	European University Institute	Italy
FGH	Forschungsgemeinschaft für. Elektrische Anlagen und Stromwirtschaft e.V.	Germany
GE	Alstom Grid UK Ltd (Trading as GE Grid Solutions)	United Kingdom
Iberdrola	Iberdrola Renovables Energía, S.A.	Spain
KTH	KTH Royal Institute of Technology	Sweden
KU Leuven	Katholieke Universiteit Leuven	Belgium
MEU	Mitsubishi Electric Europe B.V.	Netherlands
MVOW	MHI Vestas Offshore Wind AS	Denmark
Ørsted	Ørsted Wind Power A/S	Denmark
Prysmian	Prysmian	Italy
RTE	Réseau de Transport d'Électricité	France

SHORT NAME	LEGAL NAME	COUNTRY
RUG	Rijksuniversiteit Groningen	Netherlands
RWTH Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	Germany
SCiBreak	SCiBreak AB	Sweden
SIG	SuperGrid Institute	France
SHE Transmission	Scottish Hydro Electric Transmission plc	United Kingdom
Siemens	Siemens AG	Germany
SOW	Stiftung OFFSHORE-WINDENERGIE	Germany
Statoil	Statoil ASA	Norway
Svk	Affärsverket Svenska kraftnät	Sweden
T&D Europe	European Association of the Electricity Transmission & Distribution Equipment and Services Industry	Belgium
TenneT	TenneT TSO B.V.	Netherlands
Tractebel	Tractebel Engineering S.A.	Belgium
TU Delft	Technische Universiteit Delft	Netherlands
UniAbdn	The University Court of the University of Aberdeen	United Kingdom
UPV	Universitat Politècnica de València	Spain
USTRAT	University of Strathclyde	United Kingdom





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APPENDIX

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