

A2

Hur kan du strategiskt stärka din ansökan?

Kl. 13:00-13:45

Presenters

PULSE

Disa Hammarlöf and
Kristian Sandberg, SciLifeLab

VALID

Pierre Ingmarsson, IVL (former RISE)

How can you strategically strengthen your application?

Experiences from SciLifeLab PULSE

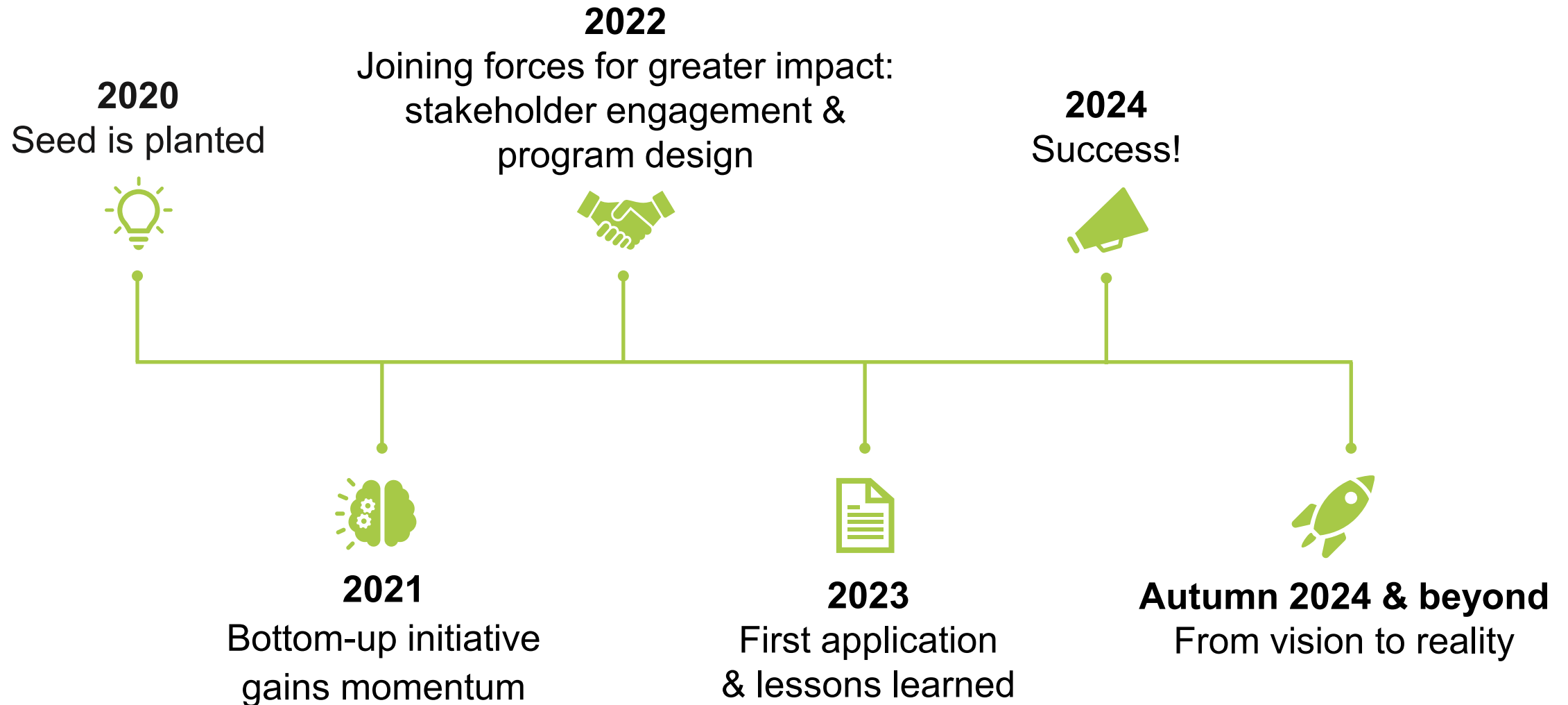
Disa Hammarlöf

*Research Coordinator, SciLifeLab Operations Office
Program Manager SciLifeLab PULSE*

Kristian Sandberg

*Platform Co-Director, Drug Discovery and Development Platform (DDD)
Co-Director SciLifeLab PULSE (entrepreneurial track)*

Timeline of the initiative



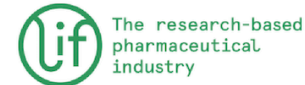
SciLifeLab PULSE postdoctoral program



Implementing Partners



Associated Partners



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The background of the slide is a photograph of the European Union flag, which is a blue field with twelve yellow stars arranged in a circle. The flag is waving in the wind against a clear blue sky. A semi-transparent teal banner is overlaid across the middle of the image, containing the main text.

How can you strategically strengthen your application?

Experience writing the VALID project from idea to success

Be strategic to be successful!



1. Lobbying & Influence



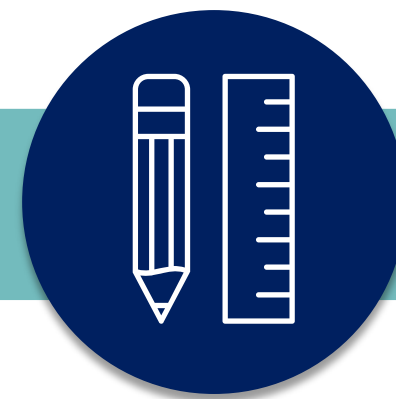
2. Draft preparation



3. Sell your idea



4. Build Project Value Chain



5. Writing Process

Timeline of the VALID project 2017 - 2024

Verification through Accelerated testing Leading to Improved wave energy Designs
(Grant agreement ID: 101006927)



Duration: 42 Month project (extended by 6 month)

Budget: 5 MEURO

Partners: 14 + 5 reference group

Countries #: 7

2020.07.20
Project Approved and Notified

Visibility

- 23 Articles
- 13 Industry articles
 - Arcos Hydraulics
 - Trelleborg Seals
 - Bosch Rexroth
 - Alkit Communication
 - Minesto
 - Corpower Ocean
 - Armatec
 - Sweparts
 - Ocean Harvesting Technologies
 - Waves4Power
 - DHI
 - NKT
 - Synective Labs
- Clusters: OffshoreVäst , Maritime Cluster
- Academia: Chalmers University of Technology
- Research projects

[Link to magazine and articles](#)





Swedish R&D powers Wales' low-carbon transition

From ABBA to H&M, from IKEA to Volvo, Sweden has a strong history of global export

With its R&D base in Gothenburg, tidal energy developer Minesto intends to add its product Deep Green to the vast list of northern export successes.

Although its name suggests something else, the ground-breaking Deep Green technology is through and through a yellow and blue invention. Originally invented by aircraft manufacturer SAAB, Deep Green has been developed by Minesto for the last ten years.

"Collaboration with Swedish academia and industry expertise has played a vital part to this journey but value is created both ways," says Dr Heide Westberg, CTO at Minesto. "Sweden has a proud history of engineering and innovation. However, it is a tradition that needs to be diversified. You often hear about the need of reindustrialising Sweden. To do that, you have to get medium-sized industries to prosper. What's exciting with developing new technology such as ours, is that we are actually doing that. We utilise existing supply chains and engage in collaborations domestically and internationally to build a new export industry at high technology."

HOLYHEAD DEEP PROJECT

After five years of scale model prototype testing, Minesto

prepares for the first installation on a commercial scale – in current design a 0.5MW device – in Holyhead Deep off the coast of Anglesey, North Wales. The focus for commercialisation is Welsh tidal streams and Minesto are looking to expand its Holyhead Deep project to up to 80MW installed capacity. Such a scale would take the development of Deep Green from demonstrator to full industrial roll-out in Holyhead Deep, playing a significant part of Wales' transition to a low-carbon, secure energy system.

It will also pave the way for global market expansion. Thanks to its unique design and operating conditions, Deep Green exploits a completely different natural resource than the rest of the tidal energy industry. Combined with its heavy IP protection, this high-end innovation has every potential of being Sweden's next export success – offering clean, reliable and affordable electricity worldwide.

Minesto



INVESTING IN THE FUTURE

Innovation and new thinking are keywords for Trelleborg Sealing Solutions, which makes it important for them to support research and development projects like Corpower Ocean's WaveBoost.

A global company within precision seals with the main focus on developing sealing systems for demanding applications, Trelleborg Sealing Solutions has been supplying parts for wind turbines since the technology began. Numerous advanced seals contribute to the effective operation of hydraulics, withstanding rigors on land and the tough conditions of offshore installations.

A NEW ERA

Now the company are facing a new era for renewable energy together with the wave power industry, meeting driven teams with a strong vision to improve their future. Their concepts challenge today's technology and require innovative design and close collaboration, just like the wind power segment did when it began its development. By engaging with Trelleborg Sealing Solutions from an early stage, the company can do more

than just provide seals and bearings as their know-how and technical advice can help the design process. The seals are often optimised or new sealing solutions are developed when operation conditions change and new requirements are pushing the limits.

SOLVING CHALLENGING TASKS

Important in any hydraulic system is the sealing configuration. Designing and specifying the right combination of sealing solutions is crucial for a reliable and long service life.

Among the company's proven solutions you will also find seals for water hydraulics and the well-regarded Otkoff® bushings and bearings for non-lubricated & water lubricated environments.

To meet new demands, Trelleborg Sealing Solutions need to provide enhanced seal designs. With the help

of their local technical teams, they bring the knowledge from their R&D departments in to the projects.

ENERGY EFFICIENT

In the WaveBoost project, seals are needed that work for long periods of time without leakage and that display low-friction to work in an energy-efficient manner. In addition, they should demonstrate low stick-slip and good sealing effect to ensure that components work consistently.

With a worldwide network, the company can support their customers no matter where their operations are situated, offering an outstandingly comprehensive sealing portfolio that provides the best in elastomer, thermoplastic, PTFE and composite technologies.

Trelleborg Sealing Solutions



COST-EFFICIENT HYDRAULIC SOLUTIONS

PMC Cylinders develop, manufacture and sell cost-efficient hydraulic solutions, with hydraulic cylinders as a base, to customers with high demands in northern Europe in selected segments.

The company delivers products that meet customer requirements for quality, lead-time and delivery performance.

Experience and product range They have vast experience of supplying hydraulic solutions for customers' applications, supplying cylinders of all

sizes as well as complete systems for various environments.

The company also provide integrated systems including hydraulics and control systems. In addition to customised solutions, they offer a wide standard range of their own cylinders, piston accumulators, pulsation dampers and valve blocks.

UNIQUE KNOWLEDGE

PMC Cylinders has unique know-how in the area of systems and components for different energy systems – everything

from development and production to installation and maintenance – and is a major supplier to energy producers around the world including industrial, mobile and marine sectors.

LEADING SUPPLIER

Production takes place at five facilities in southern Sweden and one in Näsäls, Finland and is one of Scandinavia's leading suppliers of hydraulic solutions.

PMC Cylinders



TAKING ADVANTAGE OF LARGE VOLUMES OF DATA

The more prominent challenges within the energy industry is to prove satisfactory levels of accessibility and the reliability in the output of energy

Governments and enterprises around the world are becoming increasingly alerted to the effects of the continuing use of fossil fuels in our societies. Ocean-based energy sources including wave and tidal-based technologies, seem to be the most environmentally friendly and sustainable energy alternatives to turn to. To be successful in an increasingly competitive market, manufacturers of these technologies have to overcome a multitude of challenges.

POSSIBLE SOLUTION

A possible solution to achieving a basis for measuring these performance factors is the collection of performance

data, diagnostic data and statistics. Since the volumes of data collected from equipment using telematics services can be very high, it is important to design a system and framework in a way that is highly scalable and efficient.

The challenge in the design of the system is to ensure high enough reliability and cost-efficiency to motivate the manufacturer and to make the system a part of knowledge-driven product development, since the source of the data collected comes from equipment in work and online. Additional benefits for the system owner is the possibility to monitor the condition of the equipment and predict maintenance intervals based on real data as a contrast to theoretical facts.

Learning from other industries in the automotive industry manufacturers have for many

years embraced the possibilities of the connected car for using Big Data technologies for conducting intensive knowledge-driven product development. The knowledge from the automotive industry is applicable to the problems facing the offshore energy product manufacturers. Tools from the Hadoop portfolio are available and can be adopted to be part of the solution.

Knowledge driven product development Alkit Communications AB is an R&D company in ICT, based on the west coast of Sweden. The company is heavily involved in the development of a platform for knowledge-driven product development for the Volvo Car Corporation.

The company is a partner in the Ocean Era Net project "RisSor II" and is also a partner in the Offshore West Consortium and the West Sweden SubSea network.

Alkit Communications

A pioneer in renewable energy solutions

The development of marine energy is an important factor when it comes to minimising the environmental impact. Bosch Rexroth provides solutions that use the motion energy found in waves and currents.

The global company Bosch Rexroth has several production and customising sites in Sweden. The company is a specialist at various drive technologies.

For wave energy plants hydraulics is the key factor. With it comes the possibility to transform linear oscillation into a controlled rotation (for driving a generator) efficiently and with a minimum on mechanics. In addition very high transmission ratios can be achieved in an economical way, i.e. the conversion of high forces respectively torques at the input of a wave energy converter (WEC) into considerably lower torques at high rotational speeds at the generator shaft.

The widely known force density of hydraulics allows a very compact design. The small inertial forces and good damping properties typical for hydraulics ease the handling with a highly varying power input.

The maximum forces that occur during extreme situations can be kept away from sensitive parts of the device with the help of hydraulic elements.

"At wave energy plants all over the world, Bosch Rexroth's solutions are a contributing factor of their efficiency loading the way to sustainable energy production," says Thomas Eriksd, Engineering Manager at Bosch Rexroth in the Nordic Region.

POWER PLANTS WITH MORE EFFICIENCY

Bosch Rexroth also provide solutions for tidal- and continuous current power plants. These have several advantages

compared to wind turbines. "For example it is possible without costly and comparably fault-prone power electronics and mechanical gearbox, to optimally adapt the rotor speed to the current water flow velocity. Additionally, due to a low moment of inertia and good damping properties of a hydrostatic transmission, this allows to filter load peaks close to their origin," concludes Thomas.

By use of the distributed design of the hydraulics it is possible to reduce the number of components under water. Merely the robust rotor pump for generating hydraulic flow is placed in direct proximity of the rotor, whereas the hydro motor generator set can be installed in a machine house easier to access.

Bosch Rexroth



SWEDISH WAVE POWER CAN SUPPLY THE WORLD WITH CLEAN ENERGY

Imagine a clean energy source, inspired by the human heart, with the potential to generate 10-20 percent of all electricity needed globally

Corpower Ocean is determined to create wave power that can handle tough storms and tight budgets. Amatec has supplied vital components for this, until now, secret project.

A STRANGE PHONE CALL

In late 2013 a man called Fredrik Johansson at Amatec and asked many questions about pressure relief. To get involved with the mysterious project Fredrik had to sign a document of confidentiality. Fredrik commented "The technical challenges were out of the ordinary which was the first of it for me."

EXTREME ENVIRONMENT

The ocean's energy supply is endless but nobody has been able to develop wave power robust enough to withstand its power while delivering energy at a reasonable price –

Corpower is changing that. Patrik Möller, CEO of Corpower Ocean explained: "We have developed highly efficient wave power converters inspired by the human heart – behind the technology is cardiologist Stig Lundberg. A buoy with an air spring inside generates energy, similar to the heart muscle's movement when pumping blood."

"The buoy extracts five times more energy than traditional wave power plants for a third of the cost, which makes the technology highly relevant."

ELEVATED TECHNOLOGY

The buoys of 20 metres will be in constant use for 20 years which makes maintenance difficult and complicated. That's why each product in the redundant system is selected with great care.

Amatec supply the ball and safety valves. When a wave sweeps in, a giant air spring in the buoy is pressed and then retracted. If pressure gets too high, the safety valves have to be trusted to let the right amount of air out.

Patrik concluded "Amatec are technically experienced and understand our high demands, who have the knowledge to suggest the best solution which is a perfect match for us".

Corpower Ocean will carry out tests off the Orkney Islands in Scotland later this year. If successful it will be a huge industrial breakthrough and the map of global energy supply will be redrawn.

Amatec



MODELS AND STRATEGIES

The Wave Energy Group on the Division of Marine Technology on the Department of Mechanics and Maritime Sciences, Chalmers University of Technology, develops simulation models for structural integrity analysis of mooring lines and umbilical cables used in wave energy converter (WEC) systems.

The main purpose of the work is to achieve structurally safe solutions with as low LCOE as possible.

HOLISTIC SIMULATION MODEL

The Swedish Energy Agency has supported the group in a number of projects to develop a holistic model suitable for parametric studies of specific WEC system components such as the mooring lines and the umbilical cable (dynamic cable) between the WEC buoy and a power-collecting hub. The simulation model is used to assess a WEC system's performance during various operation conditions (wind, sea-state, ocean current, biofouling), to maximise the energy harvesting and to minimise the maintenance the LCOE.

MOORING LINES AND DYNAMIC CABLES ARRAY SYSTEMS

These system components are critical for a WEC system's performance and functionality. The group works in

cooperation with among others Waves4Power AB and CorPower Ocean AB on the assessment of mooring solutions and materials and with NKT Cables AB on the development of the next generation of dynamic cables designed for the maritime environment. A new novel cable simulation model is under development which should be used for detailed design and analysis of a cable's mechanical life and ensure no loss of electrical conductivity. Mechanical testing is carried out in cooperation with RISE Research Institutes of Sweden.

Large scale harvesting of wave energy requires array systems of wave buoys. Different types of array system solutions are studied, assessed and optimised using the holistic simulation model. Each array system is evaluated with regard to LCOE, LCA and risk analysis.

MODEL AND FULL SCALE EXPERIMENTS, ELASTIC MOORINGS AND ARRAY SYSTEMS

The simulation model has been validated against model scale experiments (1:20 and 1:30) in an ocean basin. In an ongoing project funded by the Swedish Energy Agency, it is used to assess and improve the performance of Waves4Power's WaveEL wave buoy which is installed outside Runde in Norway.

The group is one of the partners in the OCEANERA-NET project ELASTMOOR led by Instituto Superior Técnico in Lisbon, Portugal. The project emphasis is on comparing elastic mooring systems for WEC systems and developing simulation models for their assessment. The WaveEL wave buoy is one of the demonstration cases.

Chalmers University of Technology
Division of Marine Technology

www.waves4energy.network.co.uk

SOLUTIONS FOR A SUSTAINABLE FUTURE

Svepart focus resources in projects for a sustainable future and has a number of different projects in progress, contributing to the development and production of smart solutions for tomorrow's transmission needs

Hans Hansson, Technical Director at Svepart commented: "We have a high interest in contributing to a sustainable future and with our experience from the automotive industry we can also step up the level of quality and efficiency in mechanical transmissions used for renewable energy solutions."

LEARNING FROM OTHERS

Hans continued: "The industry in general has a lot to learn from the automotive industry."

In collaboration with international and Swedish Universities, as for example the Royal Institute of Technology in Stockholm (KTH) and Lund Technical University (LTH), Svepart is taking part in projects to improve efficiency and power density in gear boxes and transmissions by new design features, new materials and new manufacturing technologies.

INVESTMENT

Hans explained further regarding Svepart's investment in R&D and production resources in those projects: "It is a question of surviving. A growing population and increased standard of living is a challenge for the energy supply while we must decrease the CO₂-emissions. Offering products with less waste of energy will increase competitiveness and new methods to produce energy will create a lot of jobs."

CORPOWER OCEAN WAVE POWER

Svepart is one of the main partners in Corpower Ocean Wave Power project, and are taking part in the design and calculation of the gear boxes. The prototypes are machined and built at their site in Lofnor, Sweden.

Patrik Möller, CEO at Corpower Ocean, says that he expects a great potential to benefit from Svepart's knowledge in gear technology and experience as a supplier

to the automotive industry especially when heading for serial production.

Hans clearly stated that Svepart, already in the prototype phase, have serial production in mind. The company follows the APQP-process and knows the importance of high quality and effectiveness in projects.

"The APQP-process is a standardised way of working in the projects from design to serial production developed by the automotive industry," he concluded.

DEDICATED R&D

Other products in the Svepart portfolio that can support a sustainable future are

planetary gear boxes, including some pending patents that can be used, for example, in solar energy power plants and electrified vehicles.

The company is now busy designing and manufacturing prototypes of those gear boxes and have a dedicated R&D department and two modern and highly automated production plants in South Sweden, including machines for all different methods for gear machining, hardening and gear box assembly. Both plants are certified acc to ISO/TS 16949 and ISO 14001.

Svepart



The industry in general has a lot to learn from the automotive industry.

Rack and gearbox that transforms vertical movement from waves to rotation. The gearbox is connected to one generator at each side (blue coloured).



The Maritime Cluster of West Sweden – a tool for regional development



Region Västra Götaland's Smart Specialisation Strategy (RIS3) is an integrated part of the regional strategy for growth and development in Västra Götaland 2014-2020

The organisation sets out an ambition to become a leading knowledge and industrial region with world renowned research and innovation within prioritised sectors such as Life Science, Sustainable Transportation, Green Chemistry and the Marine Environment and Maritime Sector.

MARITIME SECTOR

The Region has been working with the maritime sector for more than a decade and have worked parallel with EU policy, regionalising it to fit the way the sector looks in the region. In 2008, VGR adopted its first strategy for the maritime sector, which was updated in 2015. They also conducted an in-depth analysis of the maritime sector in the region.

The report suggested the Region continued to work with the maritime sector, focusing on six areas: maritime operations, maritime tourism, seafood, marine biotechnology, ocean governance and marine energy and to continue the

work in form of a triple helix cluster. Hence, since 2013 they have been working through a cooperation platform called the Maritime Cluster of West Sweden. The work in the field of marine energy is largely represented by the platform Offshore West and Ocean Energy Sweden.

ACTION PLAN

This cluster is partly financed by public funding provided by the Region of Västra Götaland. In June 2016, the Region adopted an action plan with a dedicated budget for a sustainable maritime sector. The Maritime Cluster is one important tool for its implementation.

BUILDING PARTNERSHIPS

Gathering regional participants from the maritime sector has proven a successful method, but one that requires long-term engagement and building partnerships and trust between individuals as well as organisations. The Cluster has subsequently grown to be an important voice also on the national scale, and is starting to connect internationally.

A cluster in itself may exchange ideas and knowledge with other clusters around Europe and the world and thus

may provide new knowledge, contacts and opportunities to the regional and local level.

BENEFITS

The cluster offers partnership with aim to develop maritime competence and business growth, a possibility to cooperate, initiate projects and create hubs for knowledge exchange and transfer between industry, academia and public sector. The participants in the cluster believe in crosspollination between the different focus areas.

The cluster also believes in the importance of working together with other sectors such as chemical industry, life science, transport and digitalisation. Amongst the partners and networks, the cluster has a broad range of knowledge and competences and are always looking for opportunities to spread this knowledge and participate in projects relevant to the partners.

Maritime Cluster

Technology and robotics takes a leap

The Swedish Centre for Ocean Observing Technology (SCOOT) is an initiative that brings together small and medium enterprises with leading academic institutions into a central space designed to promote innovation and the use of cutting edge marine observing technology and robotics.

The state-of-the-art centre will be located strategically in Gothenburg to support university-industry-management collaboration committed to create advanced technological development, nurture a critical mass in technical and engineering capacity and spur advancing our knowledge through R&D activities and innovation.



BRIDGING THE GAP

Core to SCOOT is bridging the current gap between scientific and engineering disciplines, set within a marine domain need for advancing technologies for basic and applied science, industrial activities and monitoring. SCOOT aims to be integrated with university infrastructure and expertise, connected to the growing needs of the marine industry, as well as to government institutions. This will create a synergistic environment that is aligned to promote R&D and open up business and job opportunities.

LOCAL PSYCHE AND CULTURE

The facility is a resource that should be utilised to actively stimulate collaboration between parties in marine activities, especially given that it is in a Swedish setting where the marine environment is such a critical part of the local psyche and culture in Western Sweden.

STRATEGIC NEED

There are currently no private-public partnerships bringing together expertise in marine technology in Sweden. An international perspective previously placed Sweden critically behind in the area of advanced marine technology and robotic capability. This domain is becoming an ever-important strategic need for the country if it is to maintain world-class activities in marine and climate sciences, technological development for the needs of industry and the blue economy.

NEW CAPABILITIES

These new capabilities attract experts that promote education and advance human resource development in the scarce, but critical, skills of marine technology, robotics engineering and scientific sensor development.

Current partners are University of Gothenburg, MMT AB, SMHI and Chalmers.

Swedish Centre for Ocean Observing Technology



OCEAN ENERGY CONVERSION

SSPA combines hydrodynamic testing facilities with extensive knowledge of hydrodynamics, design experience within the field of Naval Architecture and CFD to offer assistance in the design and testing of Ocean Energy Conversion (OEC) devices.

WHAT DO THEY OFFER?

Key facilities to this end are Marine Dynamics Laboratory (wave basin), towing tank and cavitation tank, making it possible to test more or less any OEC device, ranging from tidal/current devices to wave energy devices.

Beyond just testing and model/measurement manufacturing, SSPA also offers consultancy for design or design improvement utilising their vast experience in hydrodynamic design, often in connection with the use of CFD. The organisation's bridge simulator can also be used for safety/risk assessment of the devices either individually or in an OEC park.

CURRENT OEC PROJECTS

SSPA has acted as a consultant or research partner in several OEC projects over the years and is currently involved in three OEC-related research projects...

- PowerKite (EU research project)
- Cost Efficiency of Marine Energy Conversion (Swedish Energy Agency)
- MaRNET2 (EU research project)

All of the above projects use the organisation's testing facilities in connection with measuring support, hydrodynamic design or CFD. Testing the devices in downscaled but realistic conditions improves the reliability of the performance prediction of the device.

NEXT STEPS

SSPA has been improving the design of vessels to save energy for decades. The leap from hydrodynamic design and testing of vessels to hydrodynamic design and testing of OEC units is not a large one.

A general understanding of hydrodynamics can offer a wide variety of testing facilities, model construction, advanced measurement methods, CFD, propeller/turbine design, simulation of installation and service and risk/safety assessments. To support this development, SSPA therefore actively seeks projects within the area of OEC both as a research partner and for commercial consultancy.

SSPA

www.waveitalienenergynetwork.co.uk



NEXT GENERATION DATA ACQUISITION SYSTEM

Synective is a partner in the Offshore West network and will be engaged in the RisøFRII project together with other European players. Their focus is aimed towards creating a reliability framework for conditional monitoring of wave power units.

BACKGROUND

The company's background is from automotive, defence and high-tech industry which served as a competence platform in achievements to support the needs of this exciting clean energy arena.

In the high technology industry, advanced sensor and camera systems are increasingly important for complex monitoring, active security, autonomous driving and other applications.

Development of these products requires test systems and infrastructure to collect sensor data to train, evaluate and demonstrate algorithms, for instance for object classification. System authentication with Hardware-in-the-

Loop is another important part of many projects.

APPROPRIATE INPUT DATA

Training and self-learning systems require appropriate input data. Hence during the development of such a system there is a need for communication with the surrounding environment through its sensors and interfaces. A vision system for vehicles typically obtain data from cameras, radar, lidar over communication buses such as CAN, FlexRay, and Automotive Ethernet.

The data needs to be recorded with high precision and bandwidth and reproduced while relationships between the different data streams are maintained.

DEVELOPING SYSTEMS

Synective Labs have significant experience in developing such systems for the automotive industry. Based on these experiences, they are developing the next generation data acquisition system (DART).

SYSTEM DESCRIPTION

DART has a modular architecture including a configurable motherboard and separate interface card tailored to the sources to be recorded. The motherboard is based on programmable circuits, called SoC FPGAs, allowing low latency and flexible performance. The devices programmability also enables easy modification to customise the interface to any set of sensors and system buses.

SUMMARY

By combining Synective Labs' expertise in image processing with FPGAs and their extensive experience in development of rapid real-time systems in areas such as automotive, finance and defence, they have been able to create DART. This datalogger is versatile and has a small form factor, low power, flexible feeding, passive cooling and can efficiently be adapted to each project's needs.

Synective Labs



FIRST FIELD TRIAL

The first field trial is now underway at Waves4Power demonstration site in Runde, Norway. The second trial will take place alongside CorPower's deployment at the European Marine Energy Centre (EMEC) in Scotland later this year. Following the trials, models will be validated against data collected by monitoring equipment mounted on the wave energy converters and on the cable itself. The project has had to overcome the considerable challenges associated with using such monitoring equipment in a harsh marine environment.

Based on the model and field trials, the project will develop a method of accelerated fatigue testing in a laboratory environment which will evaluate different cable designs – an important tool for the ocean energy industry.

NKT

THE NEXT GENERATION OF CABLES

NKT (formerly NKT cables) is one of Europe's largest cable manufacturers, with a strong history of innovation.

Today, they are developing a new generation of cables to service the unique requirements of wave and tidal energy by working with Swedish technology developers CorPower, Minesto and Waves4Power.

Irrespective of the principle used to convert waves or tides into electrical energy, power cables play a vital role in getting that energy to shore so it can generate revenue. Finding the optimal way to achieve this is both complex and necessary for the developers of ocean energy projects.

CENTRAL FOCUS

For more than 125 years, innovation and technology development has been a central focus of NKT's. The Danish company now also aims to support the transition to more sustainable forms of energy. Today, they are bringing their experience and expertise to bear on the challenge of developing optimal cable

solutions for ocean energy, through a collaborative industry/research project. The project centres around the energy generating technologies of Waves4Power, CorPower and Minesto, three ocean energy technology developers with completely different energy capture concepts. The developers are supported by the Research Institutes of Sweden (RIS3) and Chalmers University.

SERVICE-FREE OPERATION

The project will develop cables for connecting the energy converters to a central collection hub, as well as high voltage cables from the hub to the shore. The aim of the project is to offer cables that will last for 20-25 years of service life operation.

RSE and Chalmers University have developed a mathematical model for 1kv power cables to simulate cable movements and calculate fatigue failure through the project. The model can be calibrated using different prototype cables that are produced by NKT and tested in six-month field trials.

www.waveitalienenergynetwork.co.uk

Roadmaps and SRIA

CASE STUDY 3: Strategic collaboration leverages stronger competitiveness for Swedish developers on the European market

One third of the economy of Sweden is based on export of products – predominantly machines, vehicles and electronic equipment – with 70% going to the European market. Sweden does not have significant tidal or wave resources; consequently, developers collaborate from the outset in building strategies for competitiveness, innovation and productivity outside Swedish boundaries. This entrepreneurial behaviour needs strong support in business-friendly regulation, physical and intangible infrastructure and inclusiveness.



Collaboration is built upon trust and openness and experience sharing. The nkt low voltage cable project (part of the Waves4Power deployment) is one of many supported by the Swedish Energy Agency, and is built on this principle. The project is built upon human elements linked together to tackle the technical challenges.

In order to drive costs down, a single common challenge needs to be established. Thus, new ways of developing products have been created by building on consensus and identifying key deliverables. The nkt low cable project is successful by identifying a market need; working only on a few key components; utilising the latest academic research; and developing a strong client/customer relationship.

European funding and national funding need to complement one another; in a similar way collaboration is needed between Member State and the national funding to underpin these possibilities and lead the sector in each country. Sweden has no other choice but to go down this path due to budget restrictions and resources. The OCEANERA-NET²⁶ project links these funding sources into the future.

Ocean Energy Forum

OCEAN ENERGY STRATEGIC ROADMAP BUILDING OCEAN ENERGY FOR EUROPE



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Nordic technology developers learn through ocean deployment

Programme

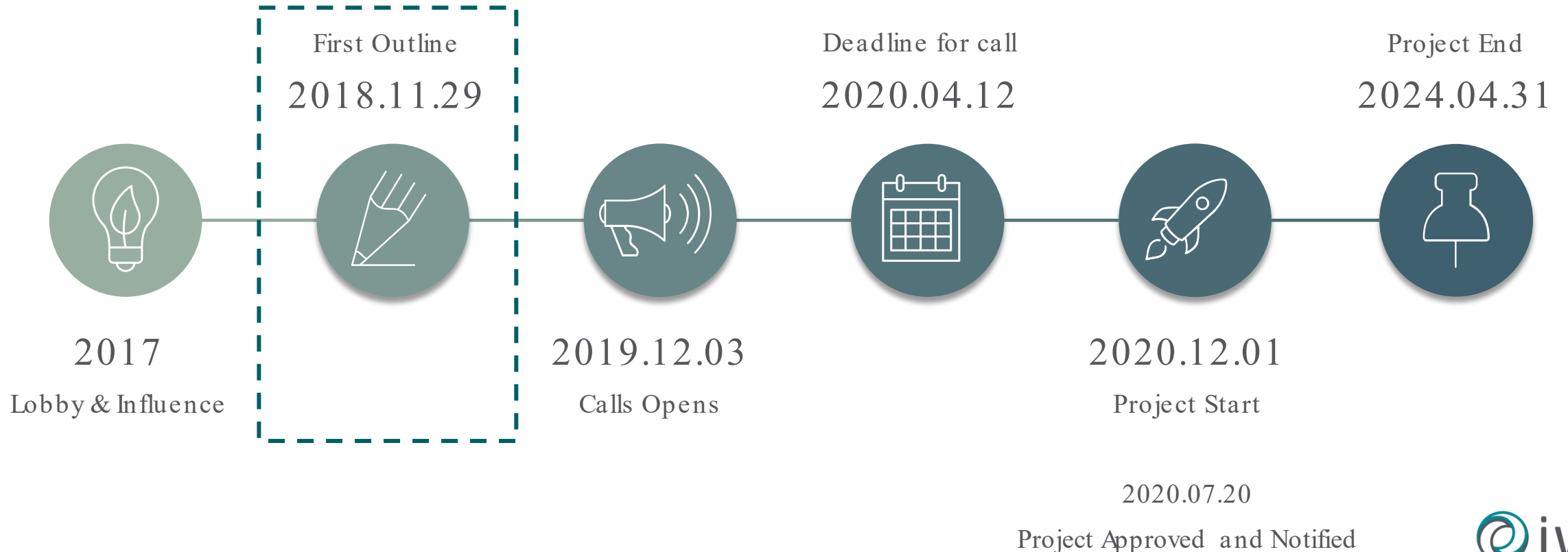
Moderator: Rémi Gruet, Ocean Energy Europe

- 11:00 – 11:15 **Welcome from VINNOVA**
Introduction and opening comments
Pierre Ingmarsson, Ocean Energy Sweden
- 11:15 – 12:15 **Global leadership: Maintaining Europe's technological advantage**
Patrik Möller, CEO Corpower Ocean
Michael Henriksen, CEO Wavepiston
Geir Arne Solheim, CEO Havkraft
Joakim Nyström, Key Segment Manager – Energy & Offshore | SSAB AB
Matthijs Soede, Research Programme Officer, European Commission
- 12:15 – 12:45 *Lunch*
- 12:45 – 13:45 **Route to market: Supporting testing and pre-commercial arrays**
Erik Friis-Madsen, CEO Wave Dragon
Heikki Paakkinen, CEO Wello
Fredrik Ahlström, CFO Minesto
Anders Olsson, Sales | Arcos Hydraulik AB
Xavier Guillou, Policy Officer, DG MARE, European Commission
- 13:45 – 14:00 **Wrap-up and concluding remarks**
Rémi Gruet, Ocean Energy Europe



Timeline of the VALID project 2017 - 2024

Verification through Accelerated testing Leading to Improved wave energy Designs
(Grant agreement ID: 101006927)



2

Why do you prepare an outline, what does it need to include and how do you use it?

<Name of the call
<Call and link>

DRAFT

<TITLE>
<explaining text>

Preliminary Project Consortium

Participant Organisation Name	Status	Short Name	Country

Call information (remove if not needed)

For further information please contact us:
<Contact Person, Name & Email>
<Contact Person, Name & Email>

- 1 -

CONFIDENTIAL

<Name of the call
<Call and link>

DRAFT

- DESCRIPTION OF THE CALL
- INTRODUCTION (BACKGROUND, WHAT IS THE CHALLENGE?)
- AIM OF THE PROJECT (OBJECTIVES)
- CONCEPT OF THE PROJECT
- PROPOSED WORK PLAN
- INDICATIVE BUDGET

For further information please contact us:
<Contact Person, Name & Email>
<Contact Person, Name & Email>

- 2 -

CONFIDENTIAL

ACCORD_H2020-LC-SC3-RES-32_Project Outline_v20100108_clean.docx	2019-01-08 18:41
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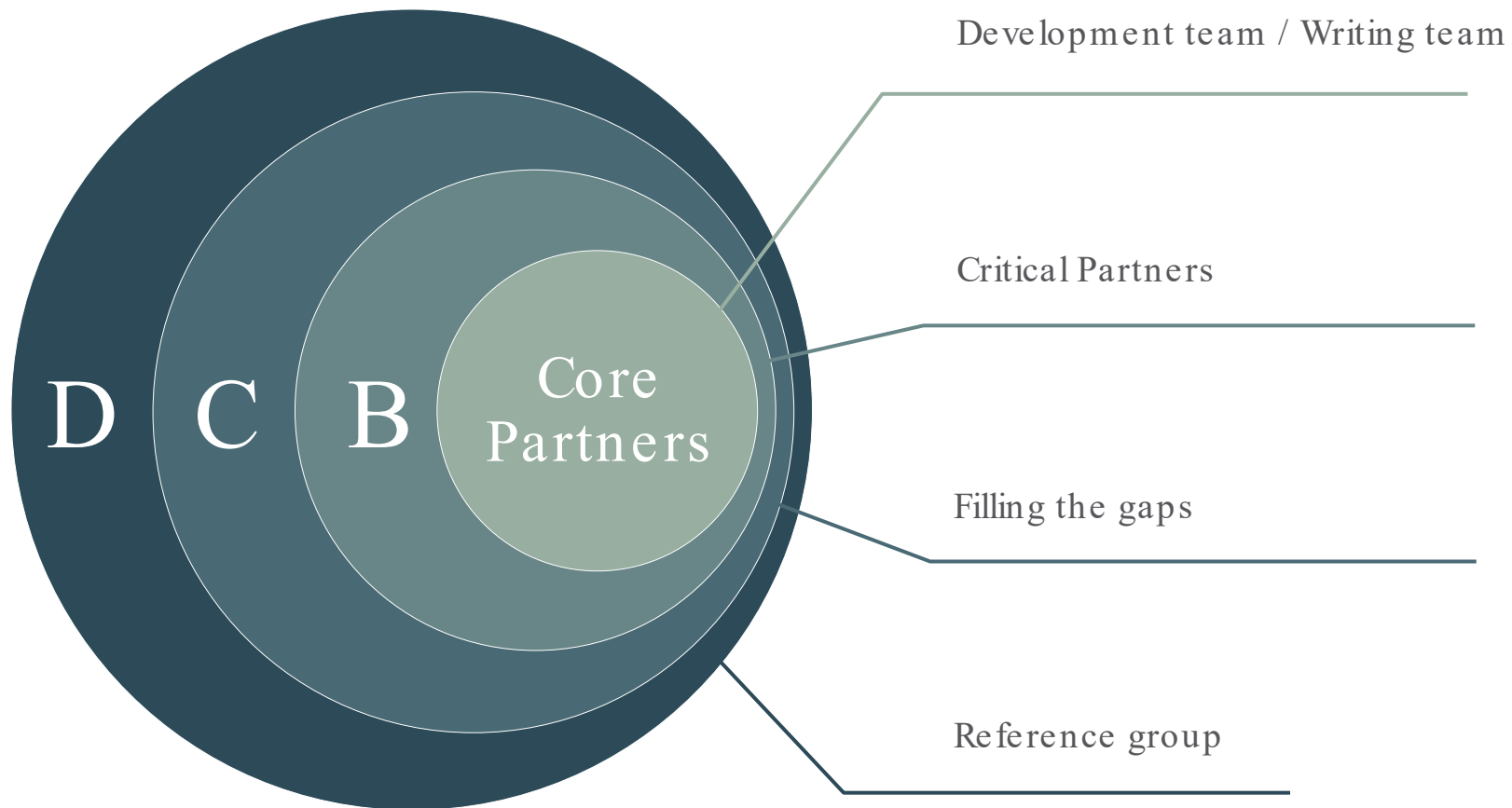
3

How do you sell your idea and build trust as coordinator/partner?

- The outline!
- Selling an idea is never hard if you decide to coordinate! Why?
- Is the proposal idea aligning with business strategies? Why is this important?
- Knowledge about the call and the process, what does it mean for respective organisation?
- Financially what does it mean for each organisation?
- Time plan for the proposal
- Setting up the collaboration structure
- Lots of patience and support!

4

How do you build the project value chain?



VALID value chain

INDUSTRY
(LARGE)



INDUSTRY
(SME)



JULIA F. CHOZAS
CONSULTING ENGINEER



RESEARCH TECHNOLOGY
ORGANISATION (RTO)



HIGHER EDUCATION
STUDIES (HES)



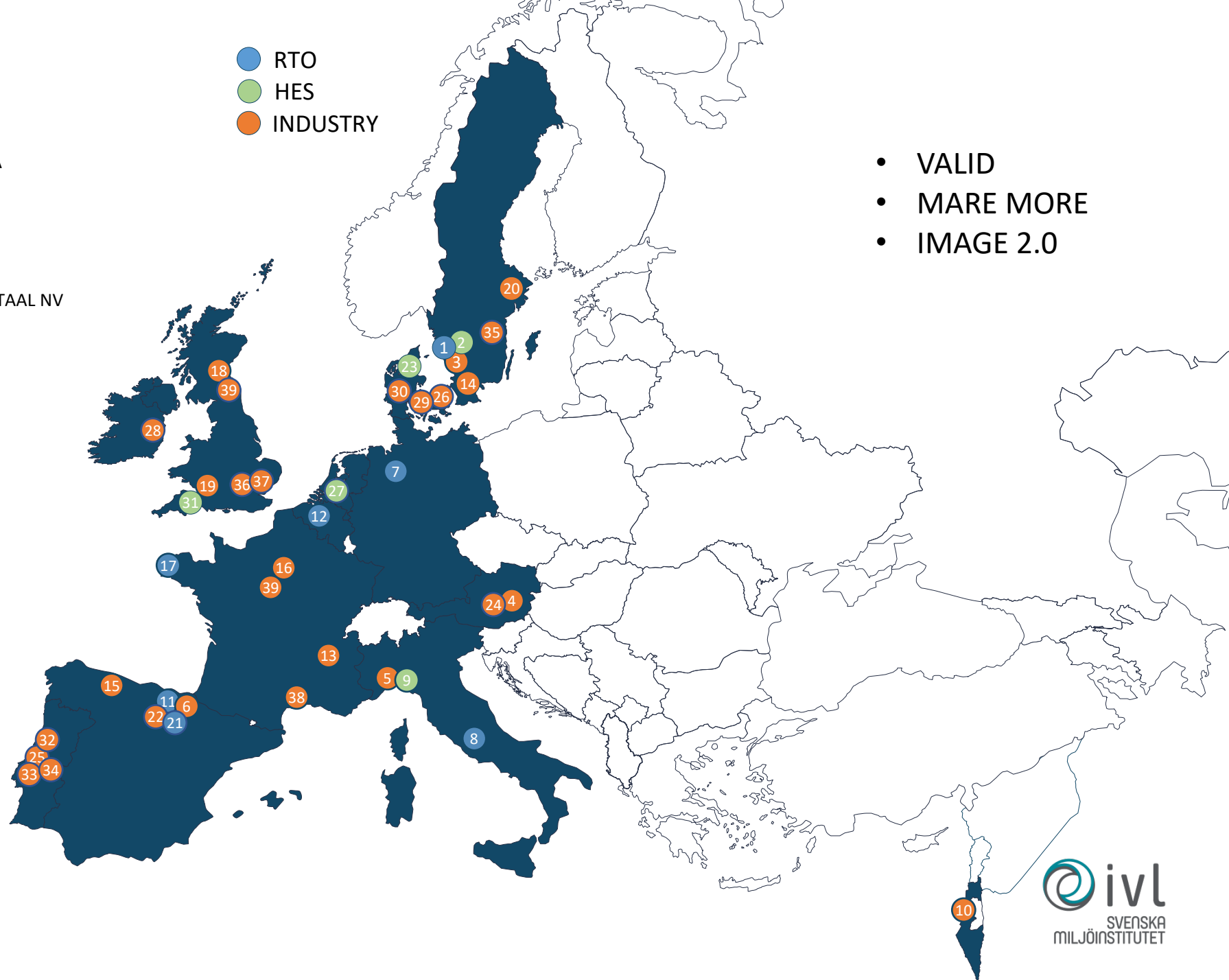
SUPPORT



1. RISE RESEARCH INSTITUTES OF SWEDEN
2. CHALMERS UNIVERSITY OF TECHNOLOGY
3. I-TECH AB
4. BIONIC SURFACE TECHNOLOGIES GMBH
5. RINA CONSULTING SPA
6. NAUTILUS FLOATING SOLUTION SOCIEDAD LIMITADA
7. FRAUNHOFER IFAM
8. CONSIGLIO NAZIONALE DELLE RICERCHE
9. UNIVERSITAT DEGLI STUDI DI GENOVA
10. NANTO CLEANTECH IS
11. FUNDACION TECNALIA RESEARCH & INNOVATION
12. ONDERZOEKSCENTRUM VOOR AANWENDING VAN STAAL NV
13. LAFARGE CENTRE DE RECHERCHE SAS
14. MWA COATINGS AB
15. WINDAR RENOVABLES SL
16. ELECTRICITE DE FRANCE
17. INSTITUTE DE LA CORROSION SASU
18. NOVA INNOVATION
19. SIMEC ATLANTIS ENERGY
20. CORPOWER OCEAN AB
21. BISCAY MARINE ENERGY PLATFORM
22. IDOM
23. AALBORG UNIVERSITY
24. AVL
25. K2MANAGEMENT
26. WAVEPISTON
27. TECHNICAL UNIVERSITY OF DELFT
28. AQUATERA
29. JULIA CHOZAS CONSULT ENGINEER
30. EIVA
31. UNIVERSITY OF EXETER
32. EDP
33. PRINCIPLE POWER PORTUGAL
34. INESC TEC
35. SAAB
36. SONARDYNE
37. EDF UK R&D
38. PRINCIPLE POWER FRANCE
39. EDF RENEWABLES

- RTO
- HES
- INDUSTRY

- VALID
- MARE MORE
- IMAGE 2.0



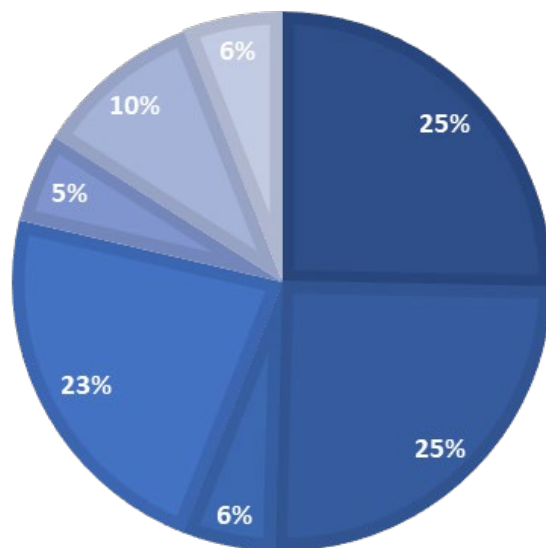


Writing the proposal, where do you start?

VALID Budget distribution

TOTAL BUDGET DISTRIBUTION €

■ Sweden ■ Spain ■ Italy ■ Denmark ■ Netherlands ■ Portugal ■ Austria



Country	Partners	Total Budget €	Distribution
Sweden	2	1 258 358	25%
Spain	4	1 246 193	25%
Italy	1	275 568	6%
Denmark	4	1 129 478	23%
Netherlands	1	265 903	5%
Portugal	1	499 755	10%
Austria	1	293 424	6%
		4 968 676	

The background of the slide is a photograph of the European Union flag, which is a blue field with twelve yellow stars arranged in a circle. The flag is waving in the wind against a blue sky with some light clouds. A semi-transparent teal horizontal band is overlaid across the middle of the image, and the text "Many thanks!" is centered within this band in a white, bold, sans-serif font.

Many thanks!

Pierre Ingmarsson (pierre.ingmarsson@ivl.se)
Innovation Coordinator Blue Economy
IVL Swedish Environmental Research Institute