ETIPOCEAN

European Technology & Innovation Platform for Ocean Energy

Maintaining grant funding for early TRL technologies!

27 February 2018

Agenda

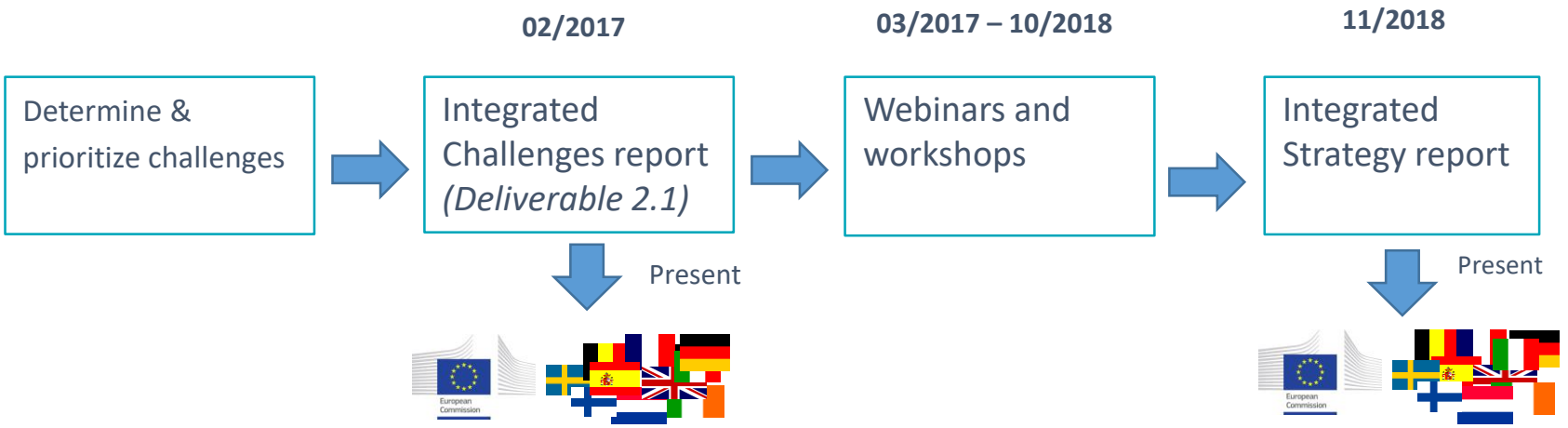
Moderator: Kasparas Kemeklis, Ocean Energy Europe, ETIP Ocean

Presentations:

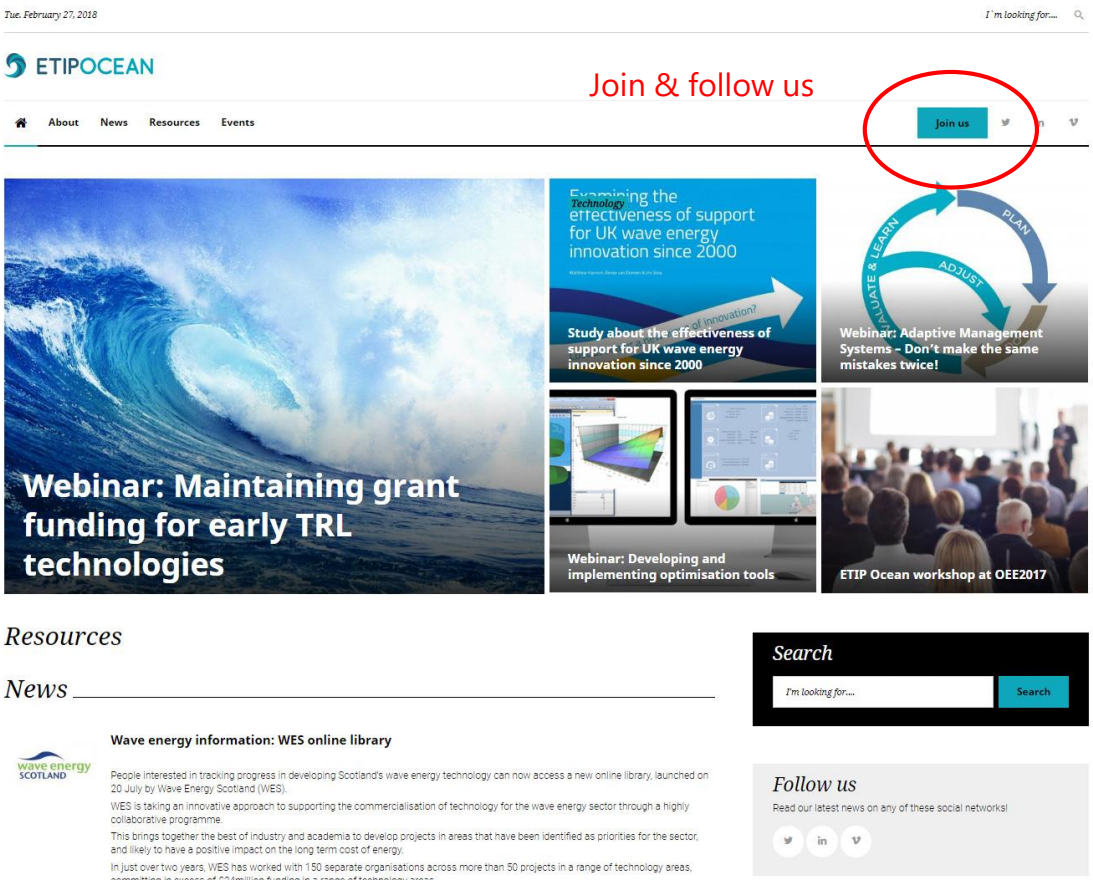
Peter Coyle - The Marine Renewables Industry Association (MRIA)
Andrew Smith - Deja Blue Consulting

Q&A session with the audience

ETIP Ocean, objectives and timeline



A recording and summary report will be available on www.etipocean.eu



Maintaining grant funding for early TRL technologies

Peter Coyle

Marine Renewables Industry Association

27 February 2018

Background

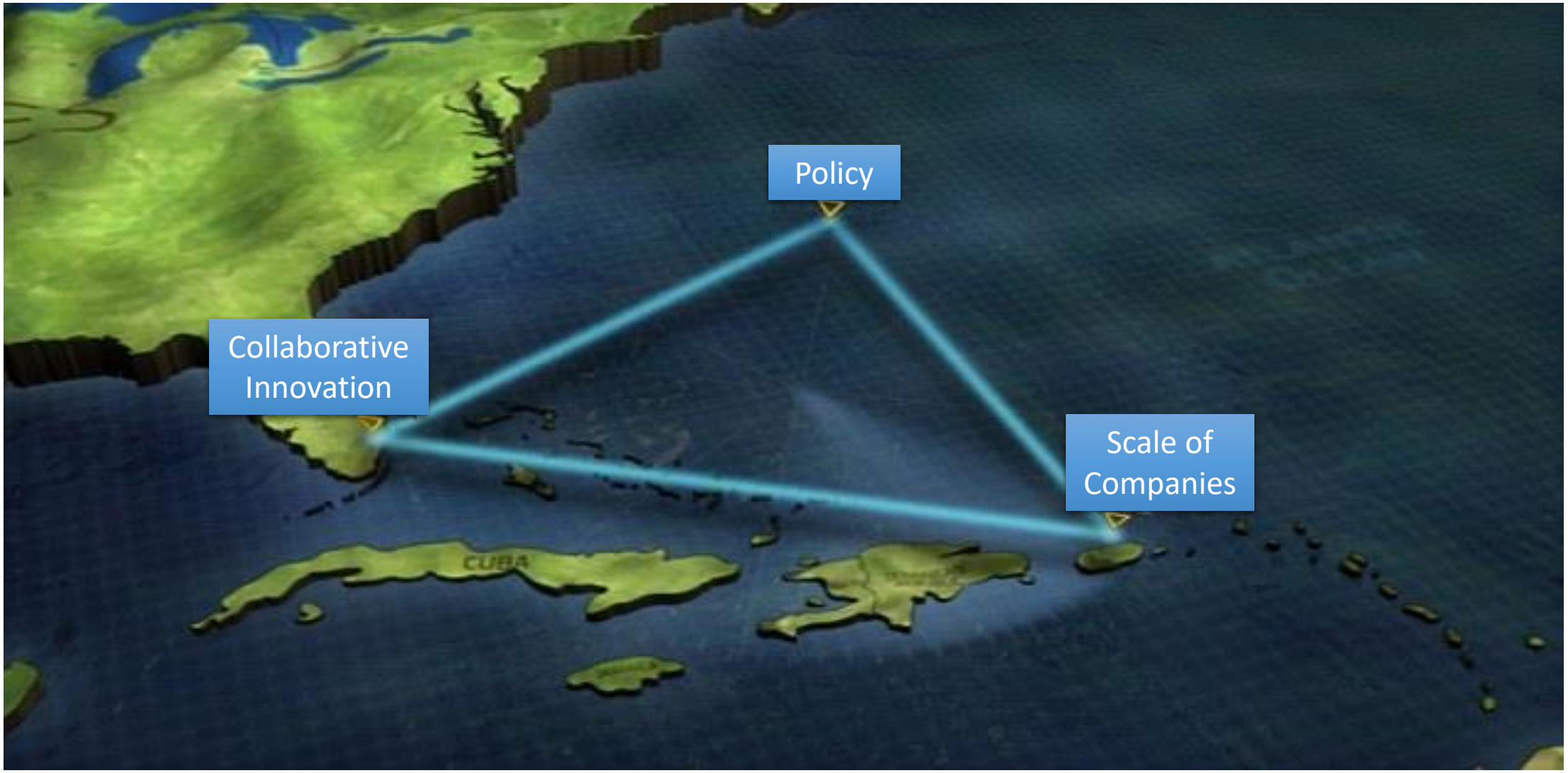
- Biggest policy challenge for Ocean Energy (OE) is to get decision-takers at EU and national levels to:
  - Appreciate the economic opportunity for Europe represented by OE
  - Accept a realistic timeframe (tidal: 2025+; wave 2030+ ?) for deployment at scale
  - Understand that substantial scale (000's MW) deployments needed to achieve competitive LCOE
  - Above all, appreciate that OE cannot develop without significant national/EU support
  - Contrast position with gas(military R&D)/solar (space R&D)/wind (composite R&D for military and aerospace)/Nuclear (military R&D)

Reality of Ocean Energy

- Grant schemes for early TRL must deal with reality of OE
- 286 OE companies worldwide*- 202 wave and 84 tidal
- Average annual turnover** of wave companies is €250kpa and tidal is similar
- None are commercial i.e. have a sustained stream of commercial revenue which, in turn, enables attraction of private capital
- All have an ongoing need for significant extra funding to support R&D
- Duplication of effort is widespread and wasteful
- A grant and company development strategy at EU and national levels must address the pre-commercial nature of the sector

- ** Source: EMEC ** Source: Exceedence Ltd*

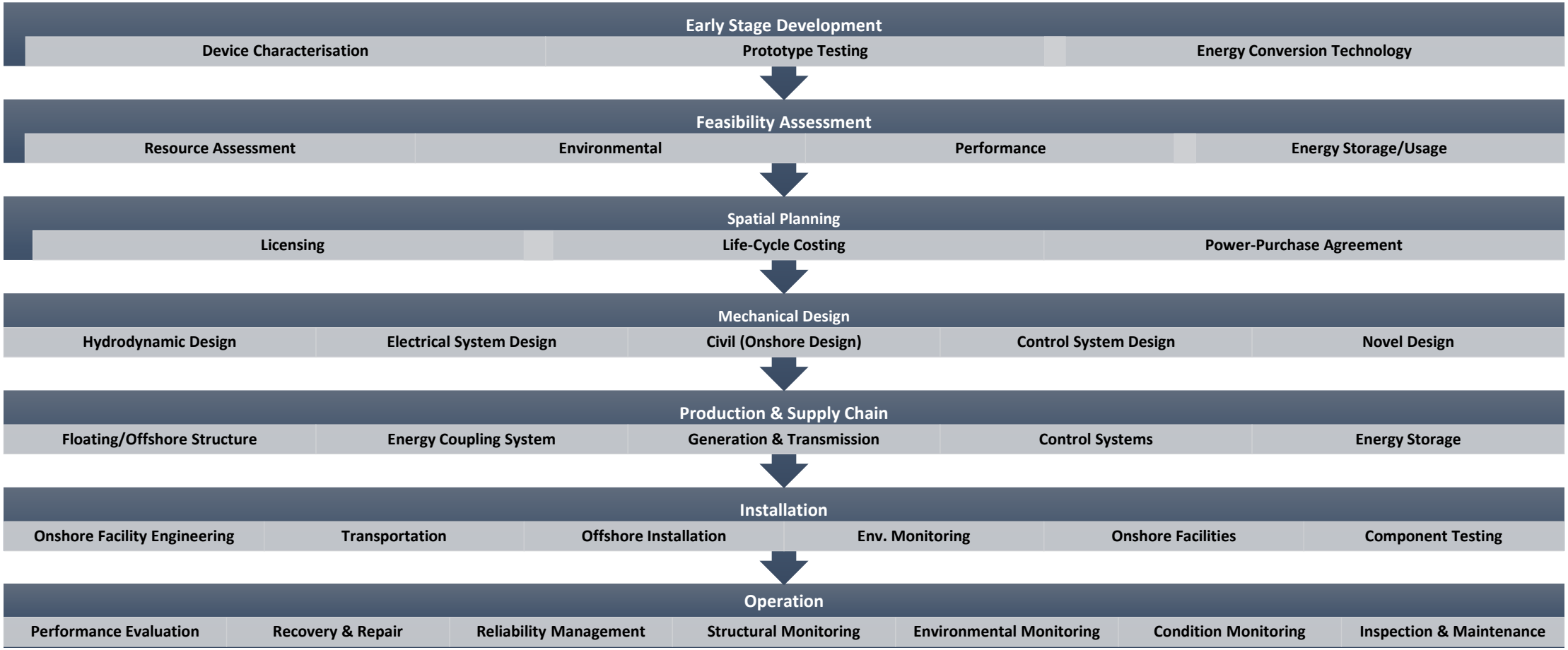
Ocean Energy's Bermuda Triangle



3 – Stage Solution

1. ‘Europeanise’ OE company development to encourage collaboration
2. Tailored grant and other financial instruments
3. Educate the commercial financial world about OE

Ocean Energy's Value Chain



What is the *Ocean Power Innovation Network* ?

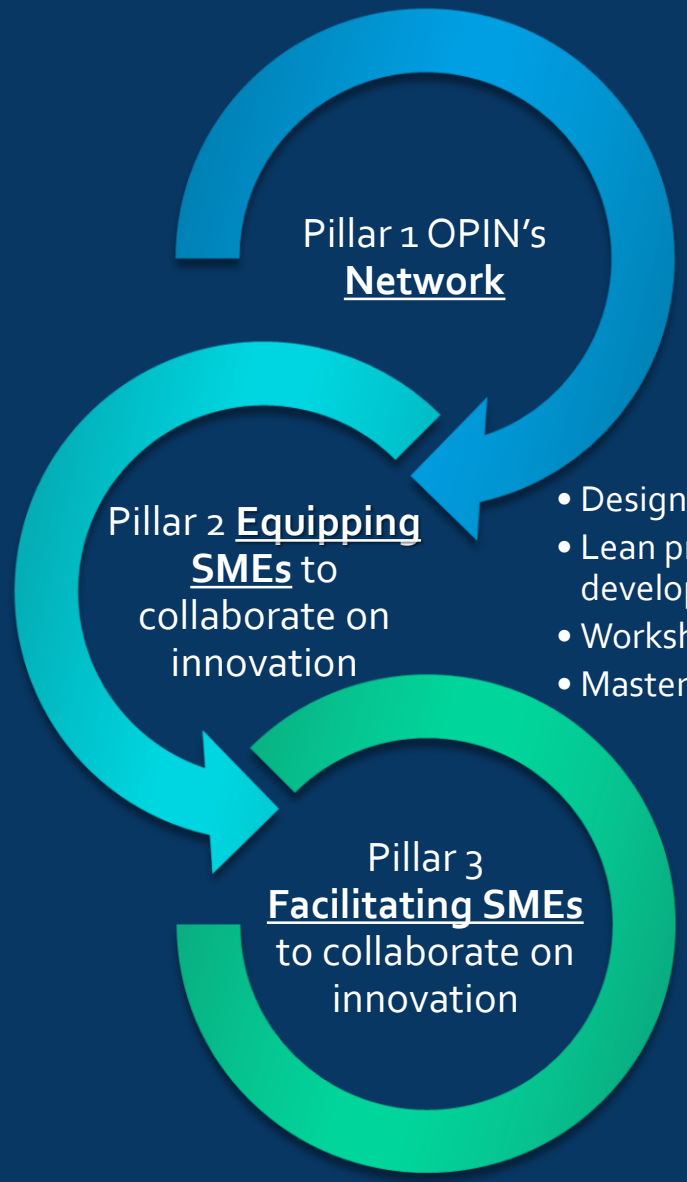
~OPIN focuses on wave and tidal energy companies – most are small; majority of global population is located in EU

~Challenges face this emerging sector…but there is a big job and income creation opportunity for the EU too

~Collaboration on innovation *between* ocean power companies and ,also, *with* the value chains of firms in complementary sectors (e.g. oil & gas)) is vital to create new value chain

~OPIN – *initially* based on 4 countries / 12 partners but open to all Europe - will drive the innovation collaboration agenda for the three years envisaged for this project through three Pillars…

~…..and leave ocean power with the legacy of a new, stronger value chain and a network for more collaborative innovation



- Symposia and sectoral workshops
- Innovation-practice study visits, LinkedIn, website etc.

- Design thinking
- Lean product development
- Workshops
- Masterclasses

- Participation support for micro/small firms
- Innovation collaboration support
- Open and thematic calls
- Help, advice: sourcing challenges, forming groups

Moving up the value chain ladder

Value Chain Level	Features
0 No real VC	Mostly small companies working alone. Slow progress of 'sector' in dealing with identified challenges. No real or evident value chain. Ocean energy is at about Level 0.5 today.
1 First steps to a VC	A large number of companies meet in networking spaces, some collaborations emerge but most firms not equipped to do so. External value chains start to engage with ocean energy.
2 Outline of VC emerges	Sense of identity of ocean energy value chain grows, companies gain skills/exposure and are more capable of collaborative innovation.
3 Early VC as substantial number of companies develop ideas	A range of companies start to work together and seek support on e.g. funding their development; assessing their TRL level prior to an OPIN Challenge Call.
4 Emergence of Collaborative Innovation Groups	A number of companies emerge as potential leaders, key actors in various parts of the ocean energy value chain form groups and seek out long-term solutions to value chain development
5 Basic VC with capacity to grow	The value chain is now clearly identifiable, has potential success stories in at least some parts of the chain and has some capacity for self-starting growth e.g. by attracting commercial financial support. Level 5 is the basic level which a sector must attain before real commercialisation begins.

Typical Financial Structure of OE companies at early TRLs

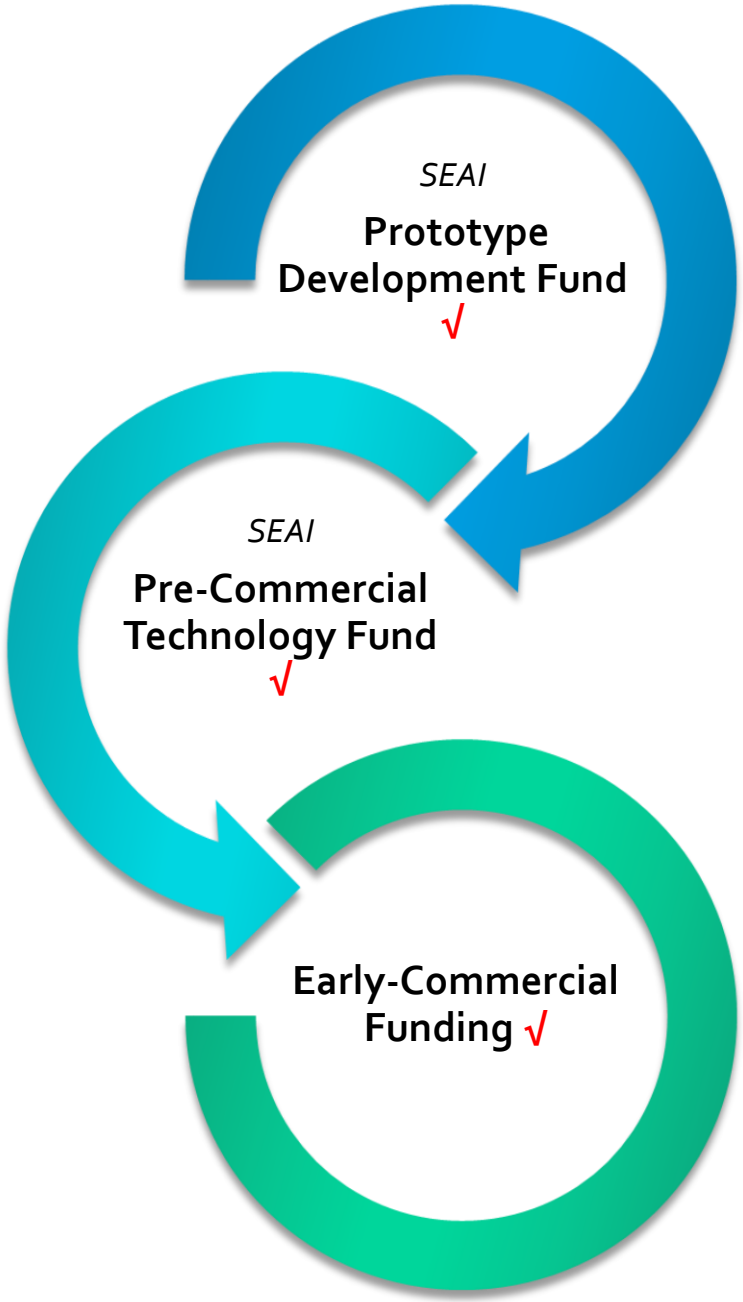
- Sources of finance
  - Friends and family – equity and some soft loans
  - Grants
  - Private investors who can afford a long –term perspective: a rare species!
- Unique challenge for development policy-makers
  - OE companies are in a unique position
    - Pre commercial
    - Capital hungry
    - Generally, normal grant arrangements for pre- commercial companies provide relatively little support e.g. Ireland's *Local Enterprise Offices* provide grants with max of, say, €30k
  - Pressure for pre-dominant commercial funding at low TRLs leads to *wrong outcomes* e.g. Scottish experience with Aquamarine and Pelamis

SEAI Prototype Development Fund

Research Category	Base Level	Type of Company		Collaboration	Maximum Level
		Small Enterprise	Medium Enterprise		
Fundamental Research	—	—	—	—	100%
Industrial Research	50%	+20%	+10%	+15%	80%
Experimental Development	25%	+20%	+10%	+15%	60%
Feasibility Studies	50%	+20%	+10%	—	70%

Tailored Instruments for Low TRLs (and beyond…)

- A special fund for early TRLs which is OE sector specific
  - Ireland's Prototype Development Fund (100 projects supported to date; €14m +)
  - Scotland's Renewable Energy Investment Fund
  - Similar schemes in France, Denmark etc
- To provide a path for companies out of early TRL's, there is a need for Wave Energy Scotland (WES)initiatives but with a Prototype funding dimension
- Ireland is preparing a WES equivalent (will complement topics of WES) and EU is drafting something similar in the SET Plan



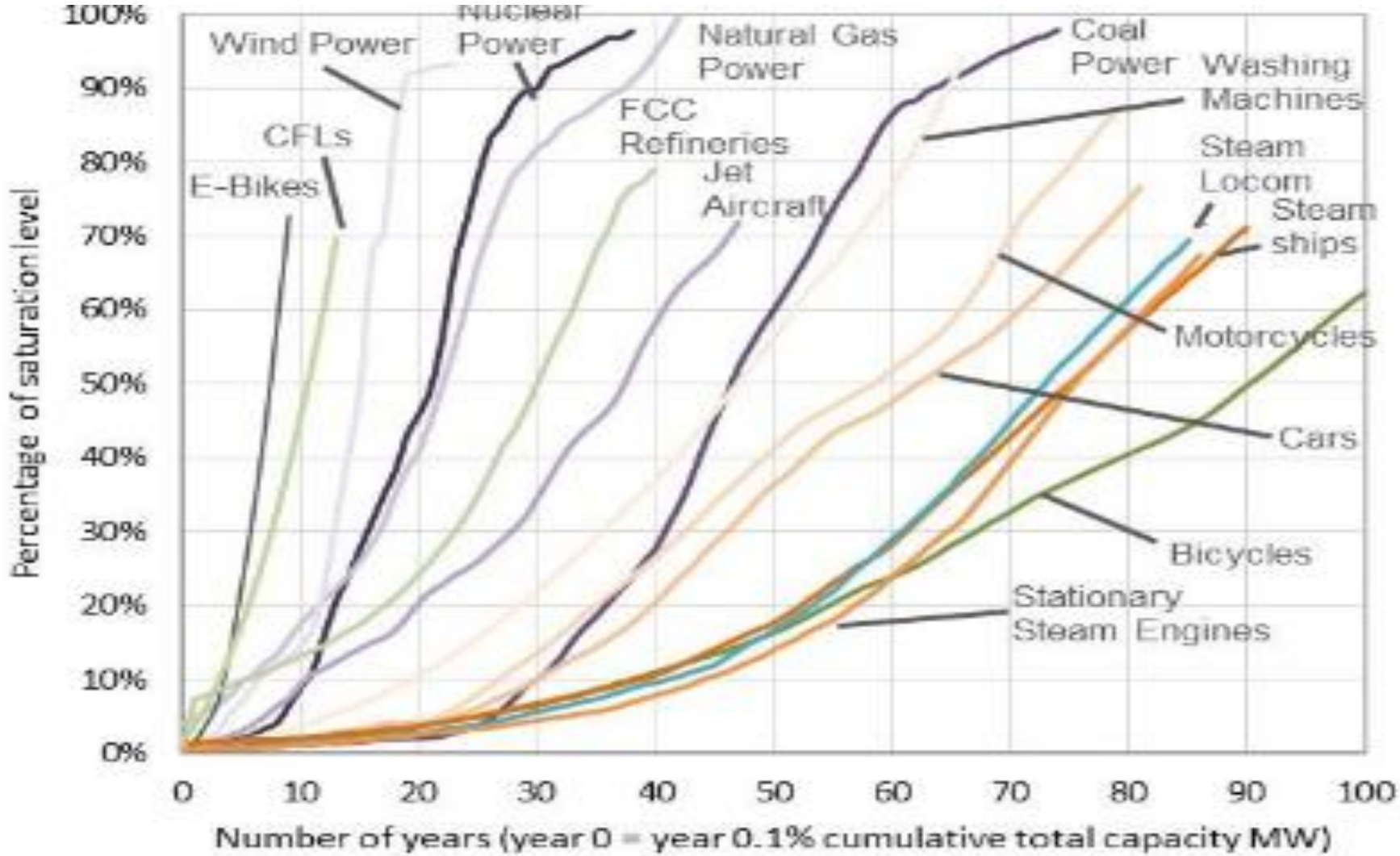
- Tried and tested
- Meets early stage needs in particular
- c€5m pa + 'Apple'
- Keep flexible-could be key to finacing major prototypes later

- For TRL 3+-c6 area
- Involve agencies
- Draws on SBIR but made fit for purpose
- Build up to 2 x €2.5m calls pa on issues/sub-systems; 100% funding; 1 x pa call for project funding- *total* €2.5m

- Financing the early commercial deployment projects at TRL 8+
- Engage SIF etc
- Start design soon

The underlying Issues

- Europe is at an ‘Airbus’ moment with OE
- Commission has so far failed to grasp the opportunity to facilitate the emergence of a European-dominated new industry....initiatives so far are both modest and complex
- Perhaps SET plan implementation will change this (a bit).....
- Stop the obsession with early commercialisation, early ‘competitive’ LCOE
- We are leaving the ‘era of ferment’ in OE
- Look at experience of offshore wind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Number of years (year 0 = year 0.1% cumulative total capacity MW)
Wind Power
Nuclear Power
Natural Gas Power
Coal Power
Washing Machines
CFLs
E-Bikes
FCC Refineries
Jet Aircraft
Steam Locom
Steam ships
Motorcycles
Cars
Bicycles
Stationary Steam Engines

Final Thoughts

- OE is in a unique development position
- Support for ‘early TRLs’ must be flexible and cover substantial % of cost of project
- Forget about commercial finance for ‘early TRLs’
- Wider issues of scale and collaboration must be dealt with at same time
- EU wide initiatives for funding and for collaboration needed

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Shape your renewable low carbon clean tech project/business for investment

"…… driven by & passionate about decarbonising through businesses & communities delivering projects……."

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Deja Blue Consulting

- Deja Blue will :
  - assist those companies, communities and third sector organisations seeking to structure businesses/projects in the renewables, clean tech and low carbon sectors; it will enhance the prospects of obtaining debt & equity funding to sustain and grow those businesses and deliver those projects
  - advise those seeking to deploy debt and equity funding into these sectors
  - work with communities and businesses to source, structure and close the financing of projects.
  - work with those developing policy in these areas to help create the best outcomes and
  - help those seeking an understanding of current and proposed policy and signposting of the agencies and background against which projects and business expansion will take place
- Former Head of the Scottish Investment Bank (SIB)'s £103m Renewable Energy Investment Fund (REIF), delivering elements of Scottish Government (SG) energy policy using debt and equity in a range of marine, low carbon and community owned renewable energy projects on commercial terms, leveraging in private debt and equity. These investments included multi million pound project finance deals with public funds at stakewhich REIF managed post financial close against predetermined funding milestones and the largest of which were infrastructure plays.
- Post that I was the private sector lead on the investment work required to fund the portfolio of a renewable energy project development company, with projects across the globe, the largest of these being the AUS $ 700m hybrid wind & solar Port Augusta Energy Park in Australia.
- I am a panel member engaged in final review of the SG Low Carbon Infrastructure Transition Project funding applications ensuring applicant projects are financially viable with a credible business case, and am a SG appointed member of the 5 person Renewable Energy Advisory Group charged with identifying and assisting with the exploitation of additional opportunities for Forestry Commission Scotland's delivery of renewable projects on the FCS estate.

The Right Money in the Right Projects at the Right Time

- It is clear that projects need different types of funding.
- Income support schemes such as Fits CfD's etc support debt
- Equity is a bet by those with the resource and risk appetite
- Grant is a strategic mechanism that supports progress at the right time
- There is a myth that grant is "free" money – it's not
- Grants are often regarded as the poor mans investment – they are not

Grant Conditions

- What are you looking to achieve?
- Too much?
- Too little?
- The wrong things?
- Is matching realistic or an impossible barrier?
- Are the timelines necessary? Achievable?
- Is it funded to fail or funded to succeed?

Grant procedures

- Are you taking comfort from pre award process when you shouldn't?
- The importance of the right team
- Getting the message out
- Working with applicants to shape projects to qualify
- How expert are the experts?
- Who assesses the assessors?

Grant Leverage

- Can you leverage cash?
- Should you try to leverage in learning and acceptance from debt and equity providers rather than cash?
- The need for Advisory Boards
- Taking forwards a sector? A regions interest in a sector?
- Cross border co operation/ involvement as a pre requisite
- Flexibility Vs Accountability – each rule around a grant will preclude a funding opportunity

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