WAVE ENERGY SCOTLAND

SIDE EVENT

EWTEC 2017

28th August 2017

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WELCOME

- WES Research and Innovation Team
  - Elva Bannon – Senior Research Engineer
  - Jonathan Hodges – Senior Innovation Engineer
  - Matthew Holland – Project Engineer
  - Niall McLean – Project Engineer
  - Jillian Henderson – Research Engineer
  - Norman Morrison – ETP Business Development Manager

Agenda

- Welcome – Elva
- Programme Summary and Future Activities – Jonathan
- Knowledge Library - Elva
- Novel Wave Energy Converter Testing – Matt
- Contractor presentations
- Working Collaboratively - Norman

Programme Summary & Future Activity

Jonathan Hodges

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Our aims and objectives

Develop cost competitive wave energy technology in Scotland

A Research, Development and Innovation Programme that is:

- Supporting the development of wave devices, key sub-systems and component technology
- Capturing experience from previous technology projects
- Drawing on knowledge from other sectors through effective knowledge exchange
- Fostering collaboration between industry and academia
- Provide Continuity of funding
- Ensuring commercial focus – Advisory Group

How we operate

WES Activities

- Innovation Calls
- Strategic Projects
  - Landscaping studies
  - Structured innovation
  - Stage gate metrics
- Industry engagement and collaboration

WES Funding

- Up to 100% funding for R&D services
- Pre-commercial procurement (PCP)
- Competitive, stage-gated programmes

International Collaboration

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- Avoid duplication
- Encourage collaboration
- Foster standardisation

- Activity on
  - Metric development
  - Structured innovation
  - Industry standards

U.S. DEPARTMENT OF ENERGY

seai SUSTAINABLE ENERGY AUTHORITY OF IRELAND

OES OCEAN ENERGY SYSTEMS

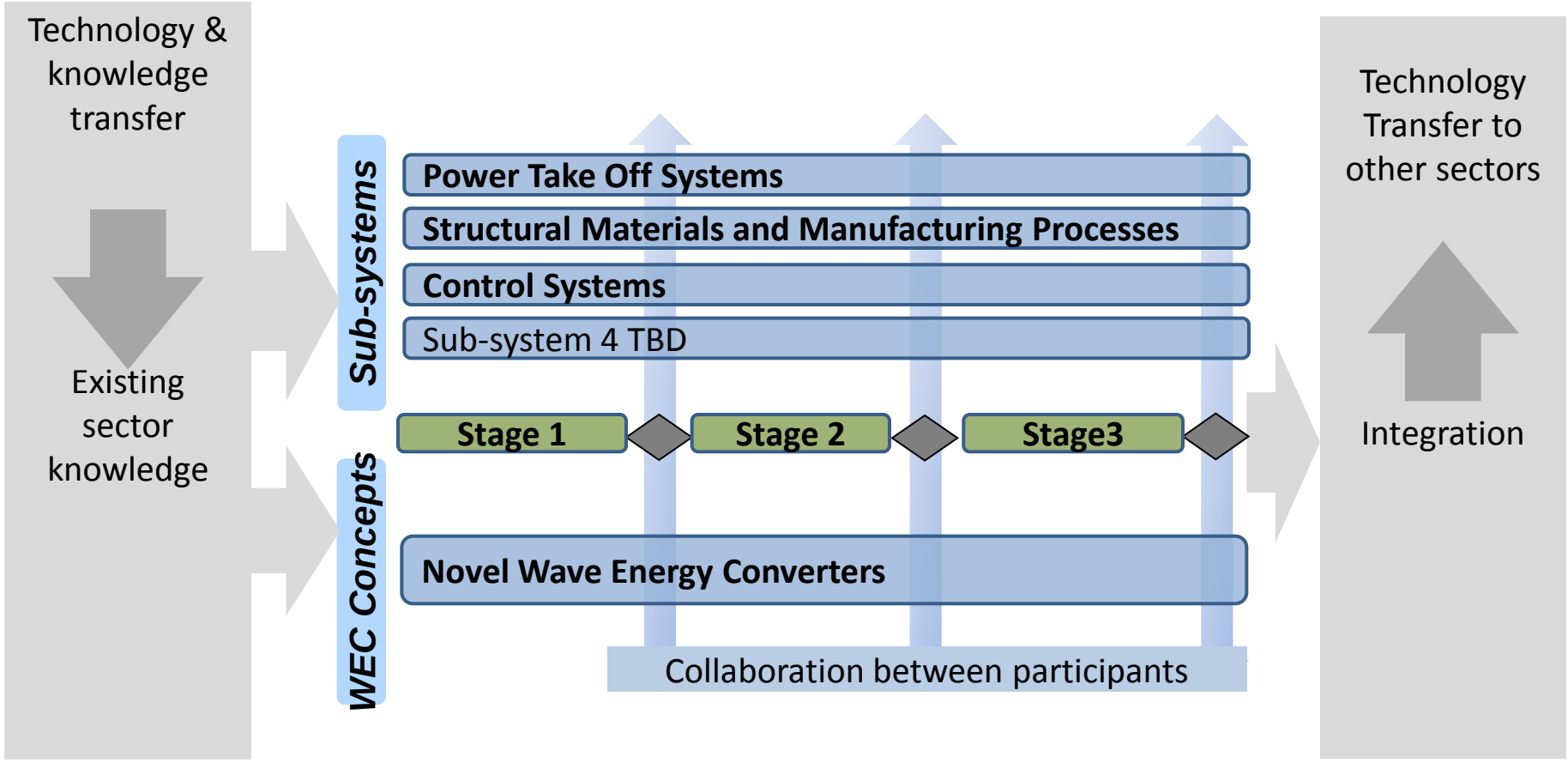
Ocean Energy Europe

OCEAN ENERGY ERA-NET

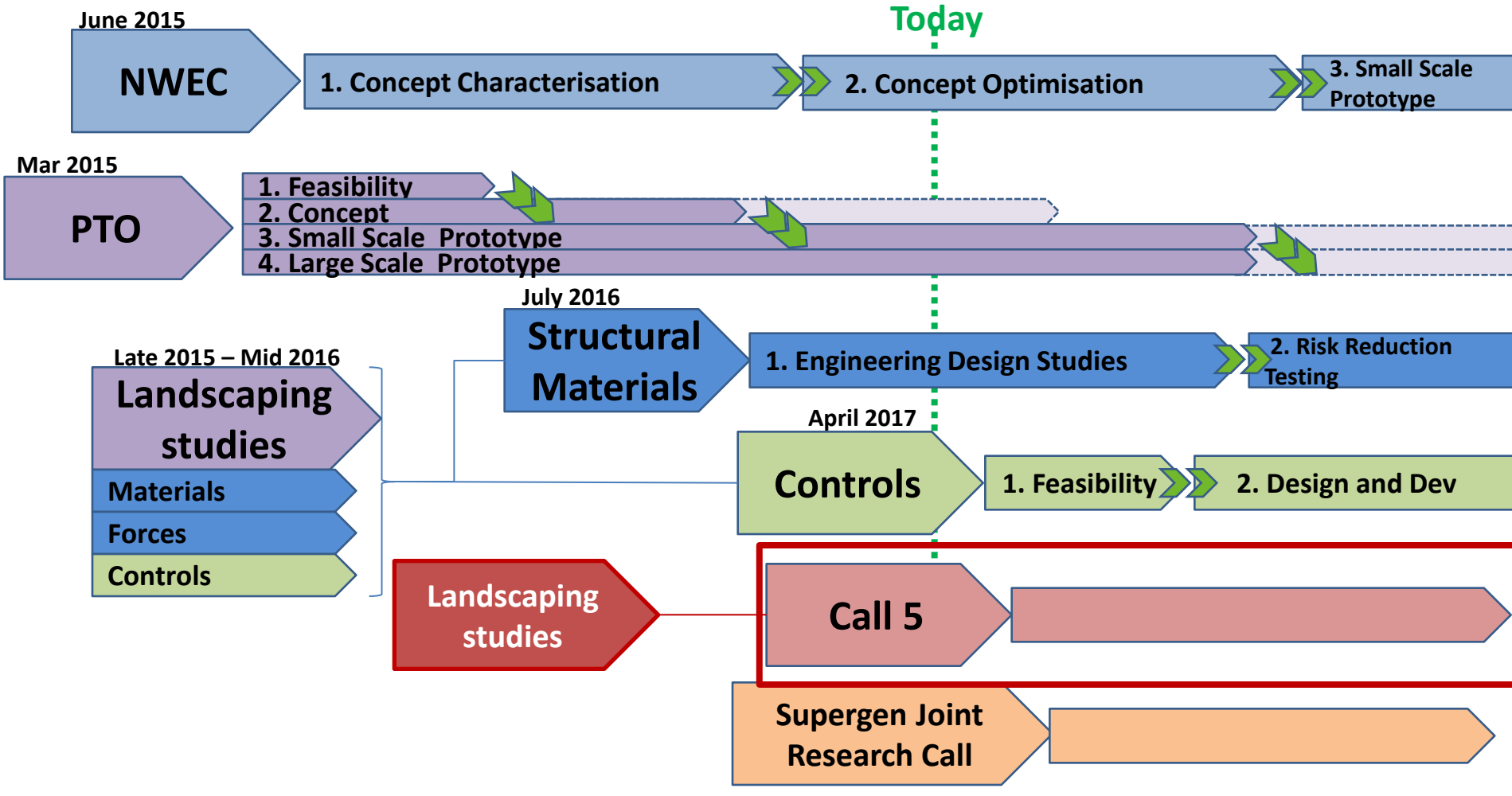
westwave Converting Ireland's Wave Energy Potential

EERA European Energy Research Alliance

WES Activities



WES Work Programme



Landscaping Projects

- **Supporting the competitiveness of the technologies in the WES Programme:**

  Cost Reduction in Supporting Infrastructure

  1. Electrical Connection

  2. Moorings & Foundations

- **Seeking the next generation of competitive solutions:**

  3. Very Large Scale Wave Energy Generation

  4. Alternative Generation Technologies

Landscaping Projects

- 4 projects
- 3-4 months duration each
- £70-80k each excl. VAT each
- Open tender via Public Contracts Scotland – open shortly
- For public contracts scotland

publiccontractsscotland.gov.uk

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waveenergyscotland.co.uk
twitter.com/waveenergyscot

WES Knowledge Library

Elva Bannon

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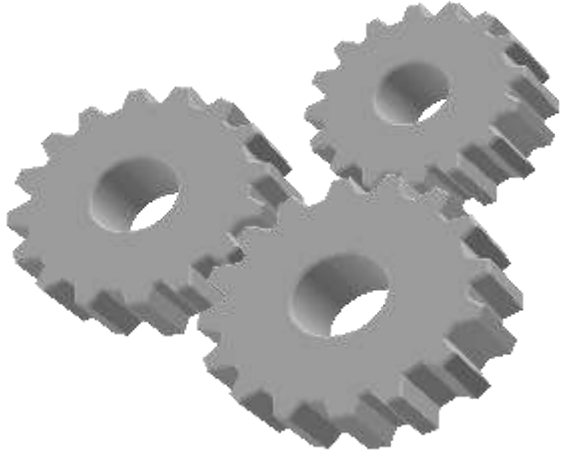
Reports Available

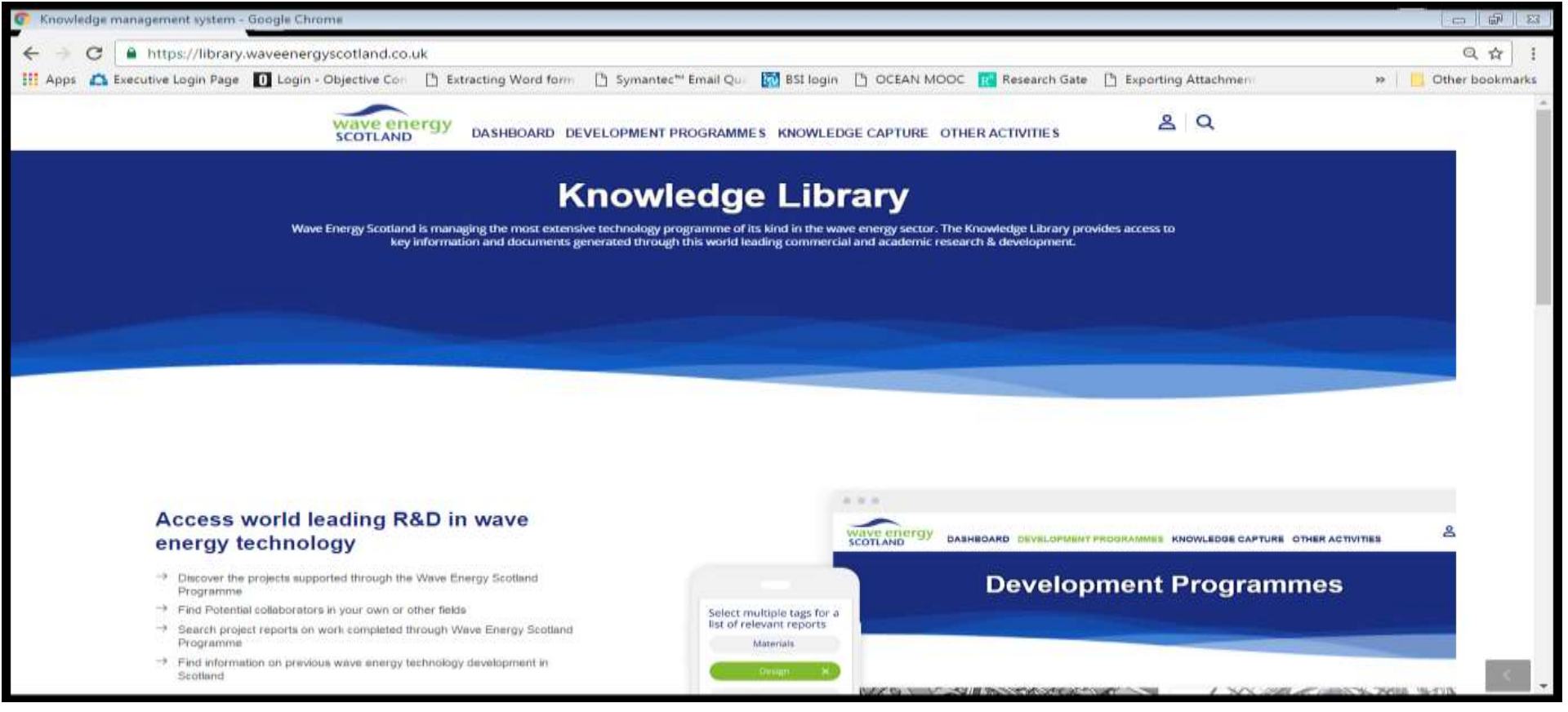
- Development Programmes
  - Power Take Off systems (24)
  - Novel Wave Energy Converters (8)
  - Structural Materials and Manufacturing Processes (10)
  - Control Systems (future)

- Knowledge Capture
  - Aquamarine
  - AWS
  - EMEC & Orkney Supply Chain



Reports Available

- Other Activities
  - Landscaping
    - Structural Forces and Stresses for Wave Energy Devices
    - Control Requirements for Wave energy Converters
    - Materials
    - Technology Transfer
  - WES Annual conference
    - Presentations
  - IDCORE (2 EngD projects on Control Systems and O&M)


Knowledge management system - Google Chrome
https://library.waveenergyscotland.co.uk
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DASHBOARD DEVELOPMENT PROGRAMMES KNOWLEDGE CAPTURE OTHER ACTIVITIES
Knowledge Library
Wave Energy Scotland is managing the most extensive technology programme of its kind in the wave energy sector. The Knowledge Library provides access to key information and documents generated through this world leading commercial and academic research & development.
Access world leading R&D in wave energy technology
Discover the projects supported through the Wave Energy Scotland Programme
Find Potential collaborators in your own or other fields
Search project reports on work completed through Wave Energy Scotland Programme
Find information on previous wave energy technology development in Scotland
Development Programmes
Select multiple tags for a list of relevant reports
Materials
Design

WES NWEC Sea States

Matthew Holland

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Background to Mandatory Sea States

- Competitive appraisal of technology
- Common to all devices / tank facilities
- Project and technical requirements
  - Compliant with best practice
  - Appropriate for stage of development
  - Representative of generic Scottish wave climate
  - % of power matrix covered
  - Comparative conditions to Wave Energy Prize, where possible

NWEC Stage 2 Mandatory Seas

- Based on TC114 62600-103

- 11 regular seas
- 12 irregular long-crested seas
  - Minimum 250 waves
  - JONSWAP, γ = 1.0
- 5 irregular short-crested seas
  - Minimum 1500 waves
  - Spreading, s = 6.0 and 10
  - JONSWAP, γ = 3.3

- Mean direction 0°
- Active control