

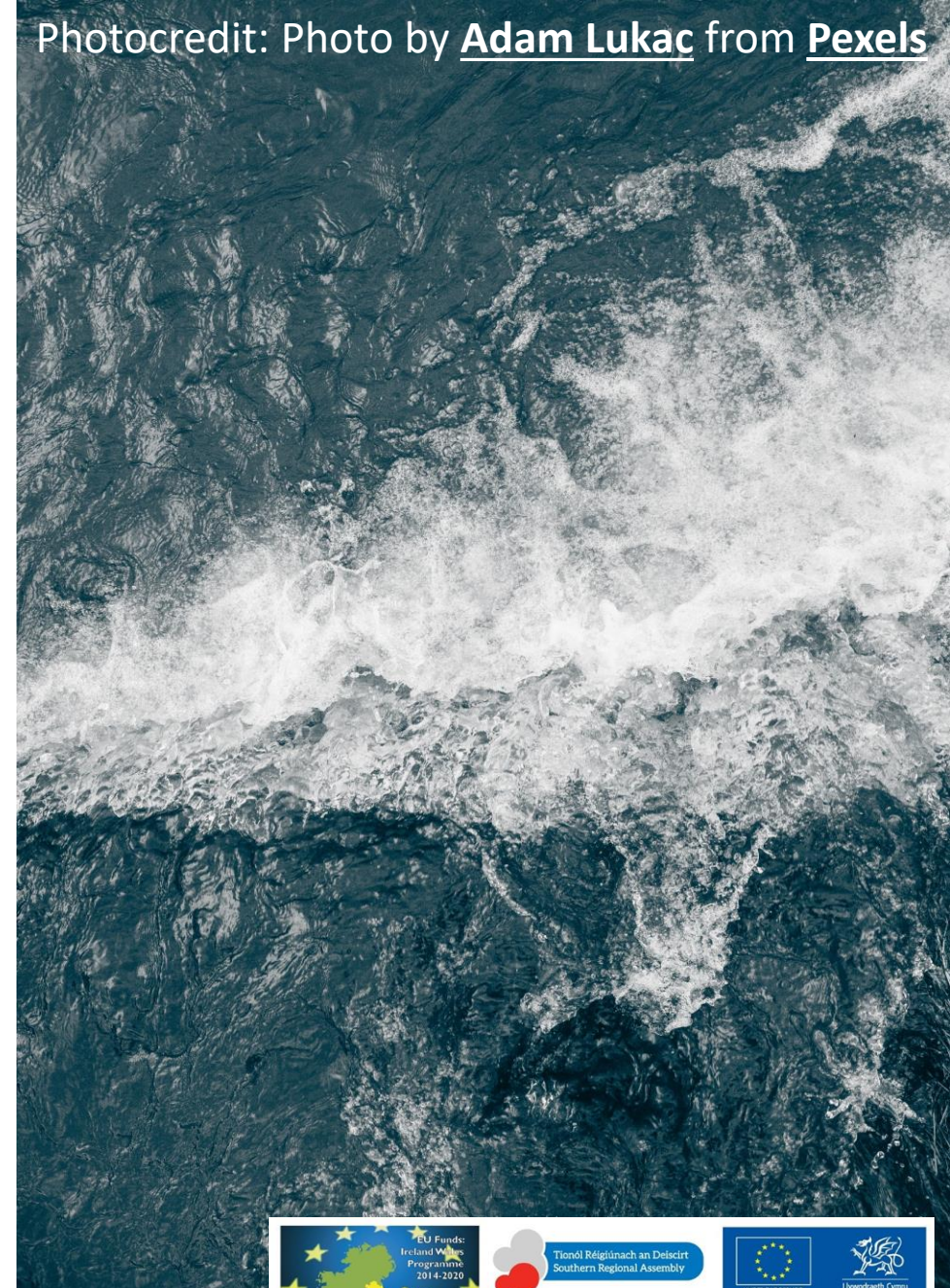
SELKIE



Assessment of Mooring and Foundation Design Practices for Wave and Tidal Energy Converters

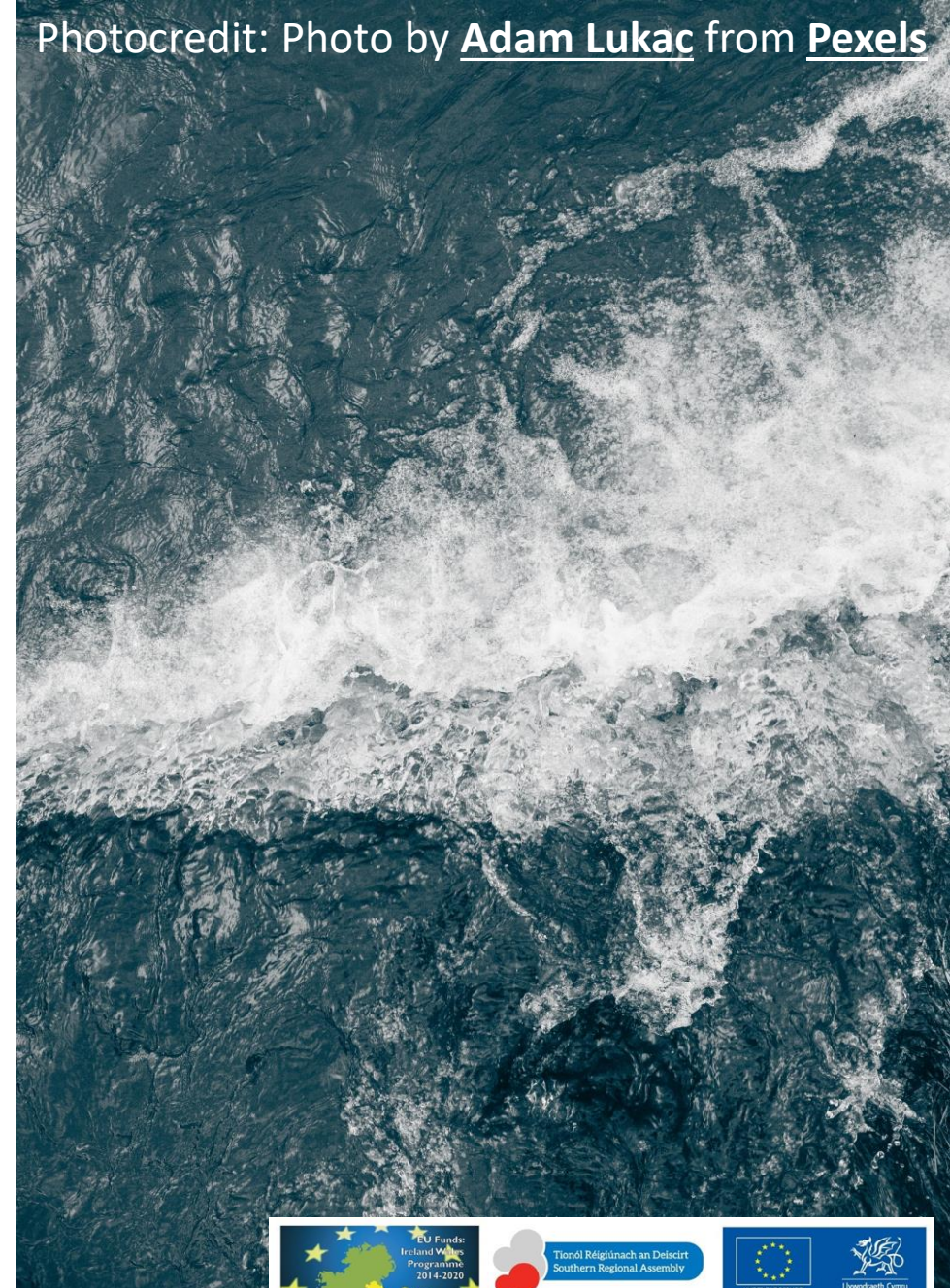
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Project overview

- Create model using existing open-source mooring and foundation analysis tool
- Considerations:
 - Welsh and Irish geology and wave and tidal environments
 - Long term performance of mooring and foundation system
 - Uncertainty and variability in loading
- Numerical testing of model



Existing Offshore Design Guidance

- Typically based on other offshore industries (e.g. oil & gas industry)
- Somewhat applicable to wave and tidal energy
- Limitations to existing guidance regarding wave and tidal energy



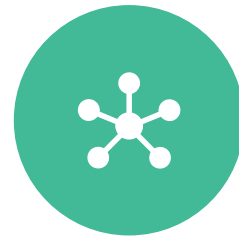
Limitations to Existing Guidance when Applied to Wave/Tidal Energy Mooring and Foundation Design



SAFETY LEVELS
MAY BE OVERLY
CONSERVATIVE



MOORING
SYSTEM MAY
IMPACT ENERGY
EXTRACTION
EFFICIENCY OF
DEVICE



UNSUITABLE FOR
ARRAYS



WEC & TEC
OPERATE IN
AREAS OF HIGH
WAVE ENERGY



WEC & TEC
GENERALLY
MUCH SMALLER
THAN OIL
PLATFORMS



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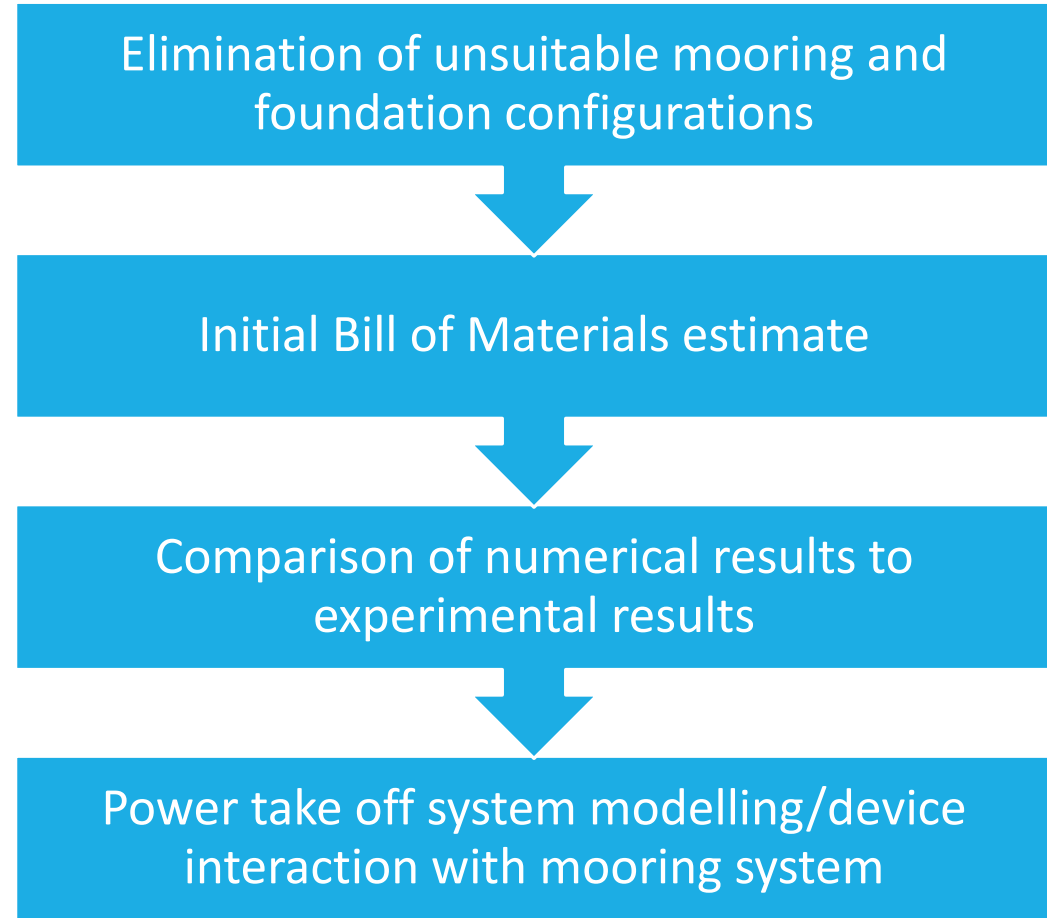


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Mooring and Foundation Design Tools

- Different tools useful for different stages of design
- Higher fidelity tools typically are more expensive and require more computational power
- For project: **DTOcean & Plaxis** software tools



To conclude



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Survey

1. Research project aims to focus on:
 - Reliability
 - Welsh & Irish geology
 - Loading uncertainties
2. Current procedures outlined in design guidance not fully transferable to wave/tidal energy industry
3. Design and analysis tools can aid in mooring and foundation design



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Diolch

Thank you

Go raibh maith agat

