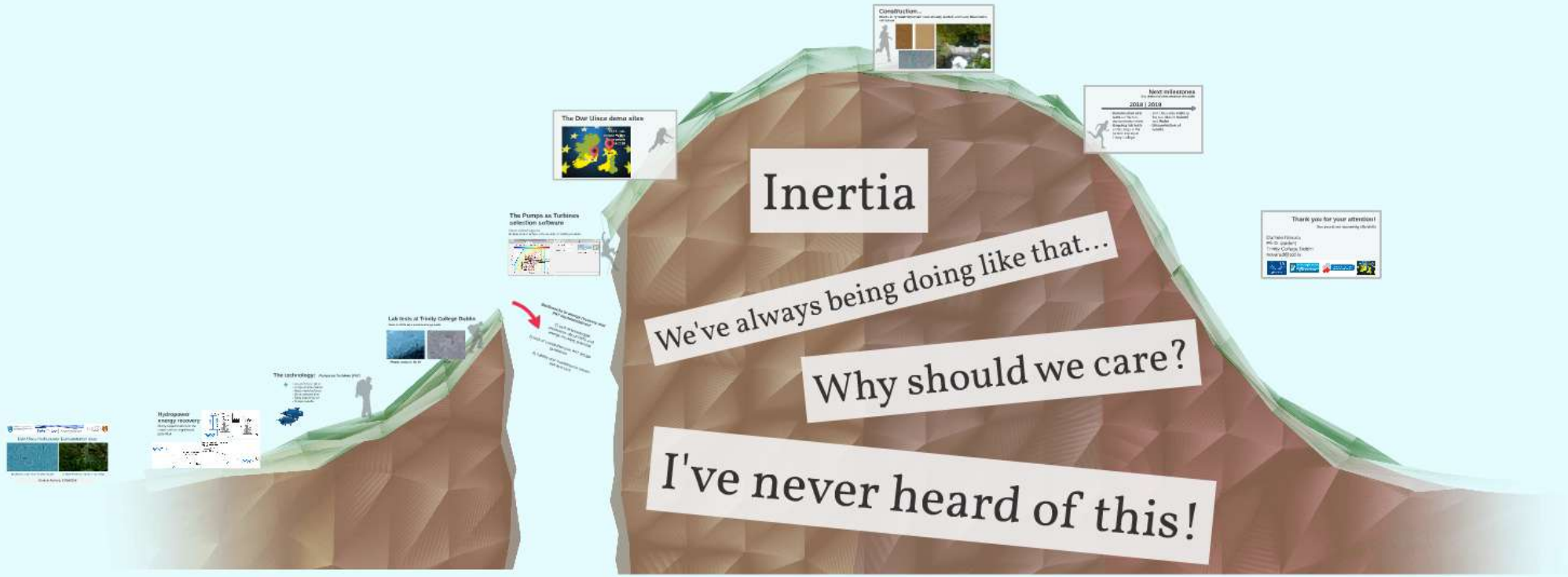
Demonstrate to innovate!

Journey through the Dŵr Uisce hydropower demonstration sites



Prezi

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Dŵr Uisce

Energy Recovery in Water Services
Adennill Ynni yn y Diwydiant Dŵr

PRIFYSGOL BANGOR UNIVERSITY

Dŵr Uisce Hydropower Demonstration sites

Blackstairs Group Water Scheme, Ireland

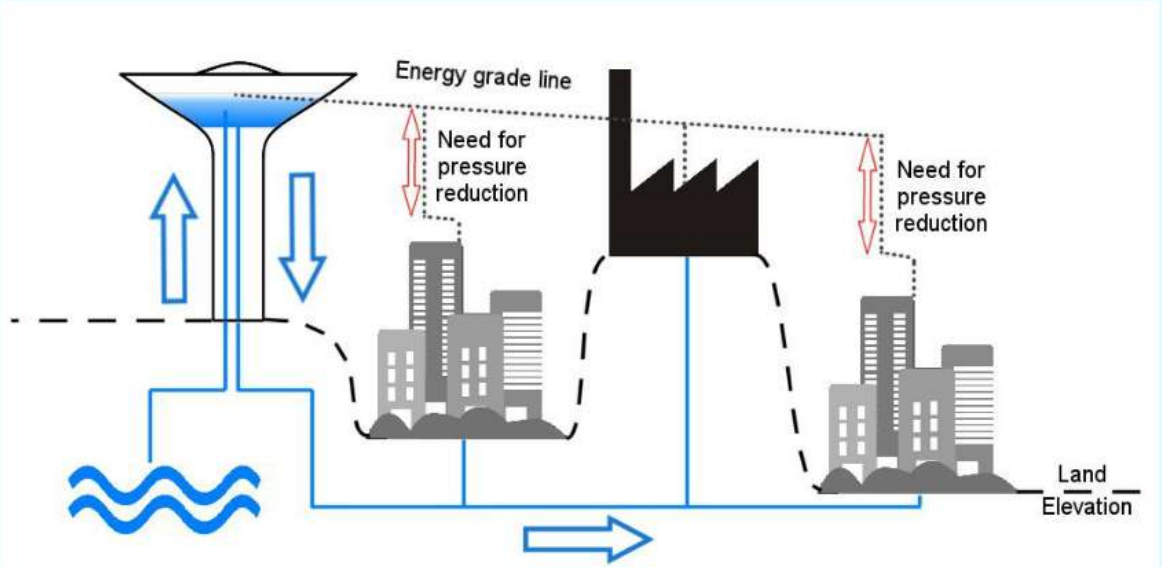
Tŷ Mawr Wybrnant, National Trust, Wales

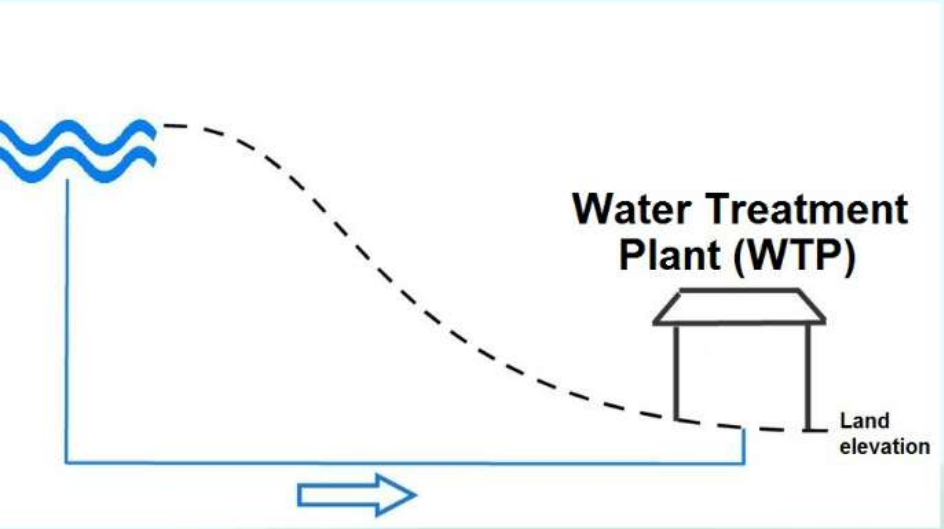
Daniele Novara, 23/10/2018

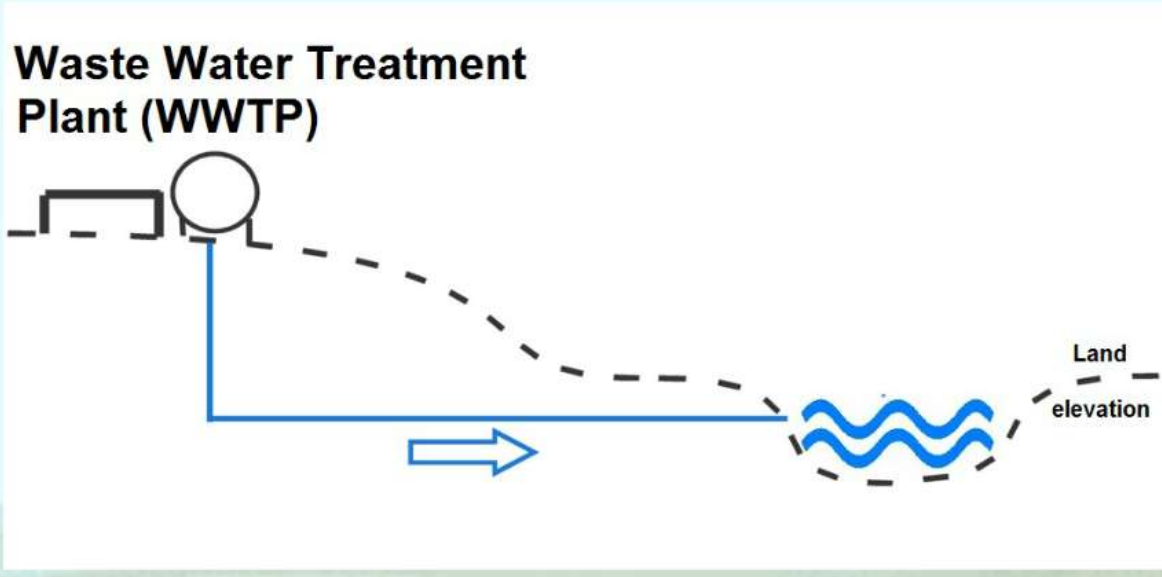
Prezi

Hydropower energy recovery

Many opportunities in the water sector, significant potential







Prezi

The technology: *Pumps as Turbines (PAT)*

- Low purchase price
- Compact dimensions
- Mass manufactured
- Short delivery time
- Easy maintenance
- Proven results

Prezi

Lab tests at Trinity College Dublin

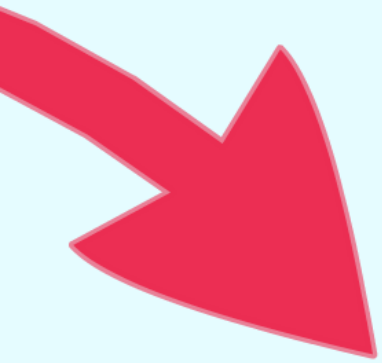
Tests on PATs on a small and large scale

Power output: 30 W

4 kW

Prezi

Bottlenecks to energy recovery and PAT implementation?



1) *lack of knowledge/ awareness* about PATs and energy recovery potential

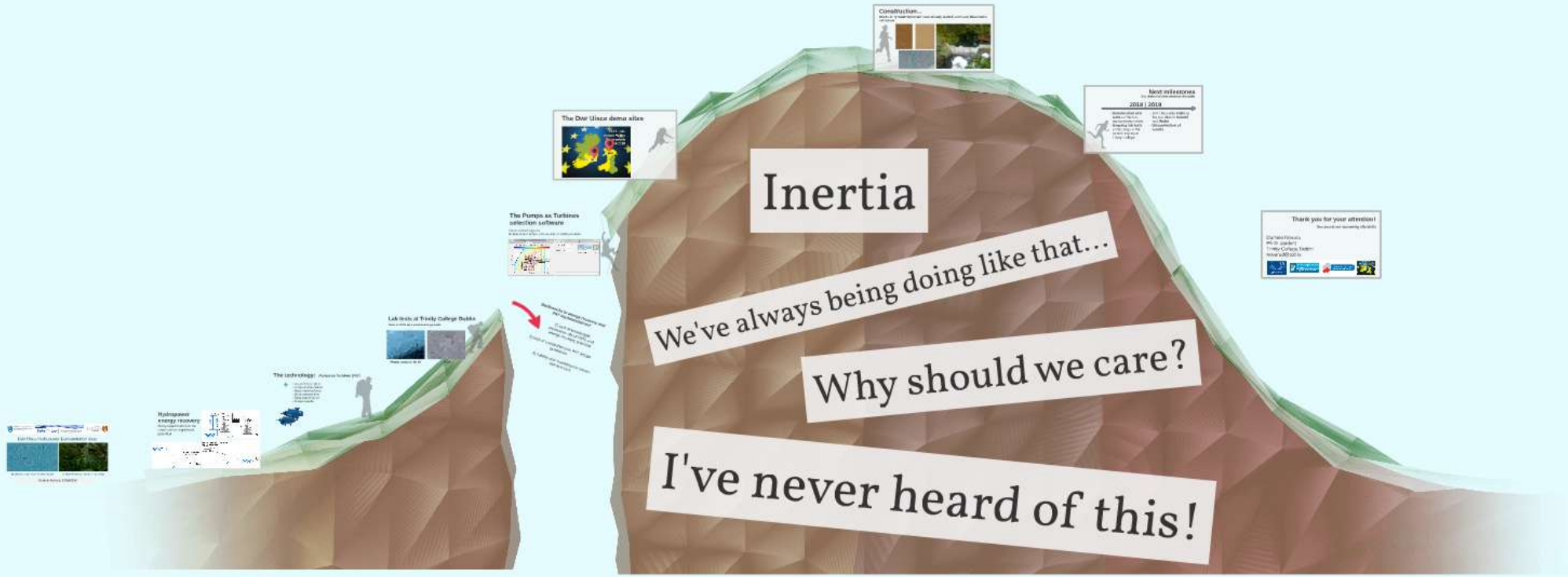
2) lack of *comprehensive PAT design guidelines*

3) liability and maintenance issues, *risk aversion*

Prezi

Demonstrate to innovate!

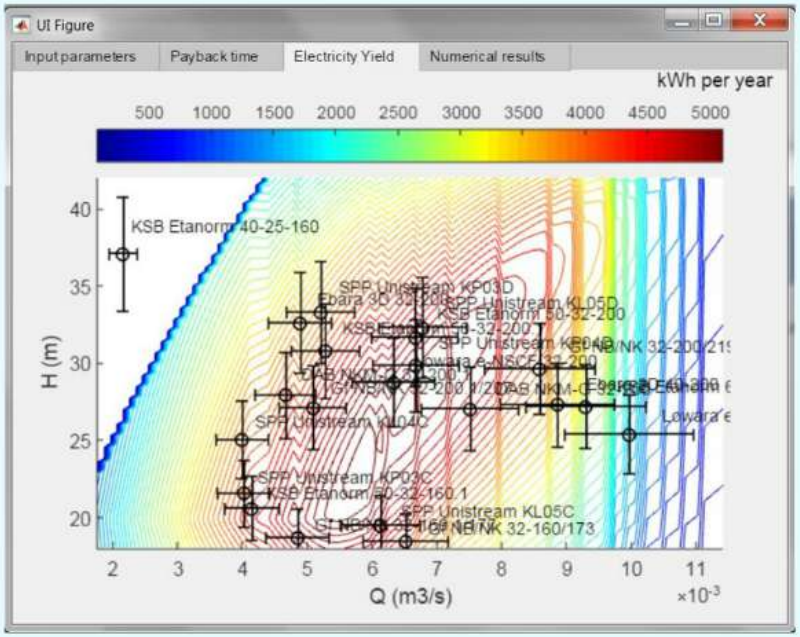
Journey through the Dŵr Uisce hydropower demonstration sites

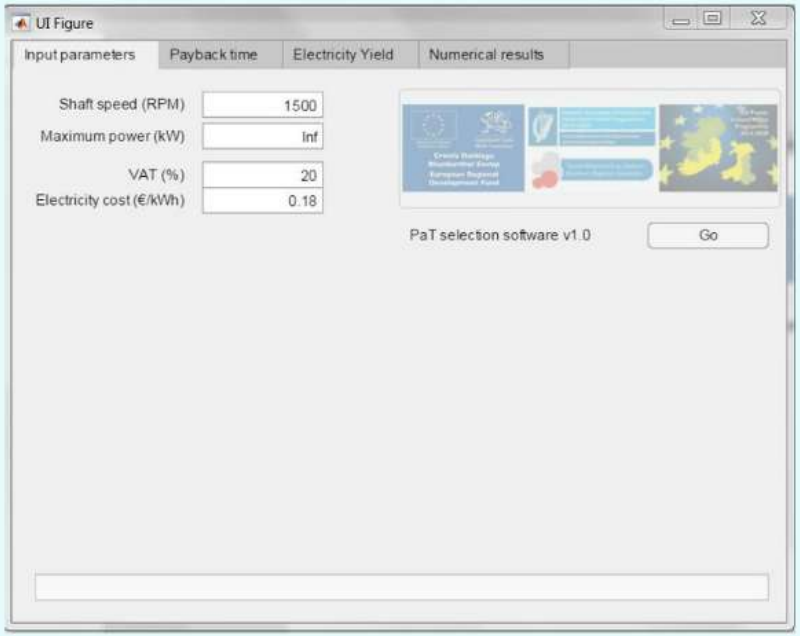


Prezi

The Pumps as Turbines selection software

Visual aid to designers
Robust choice between thousands of existing models

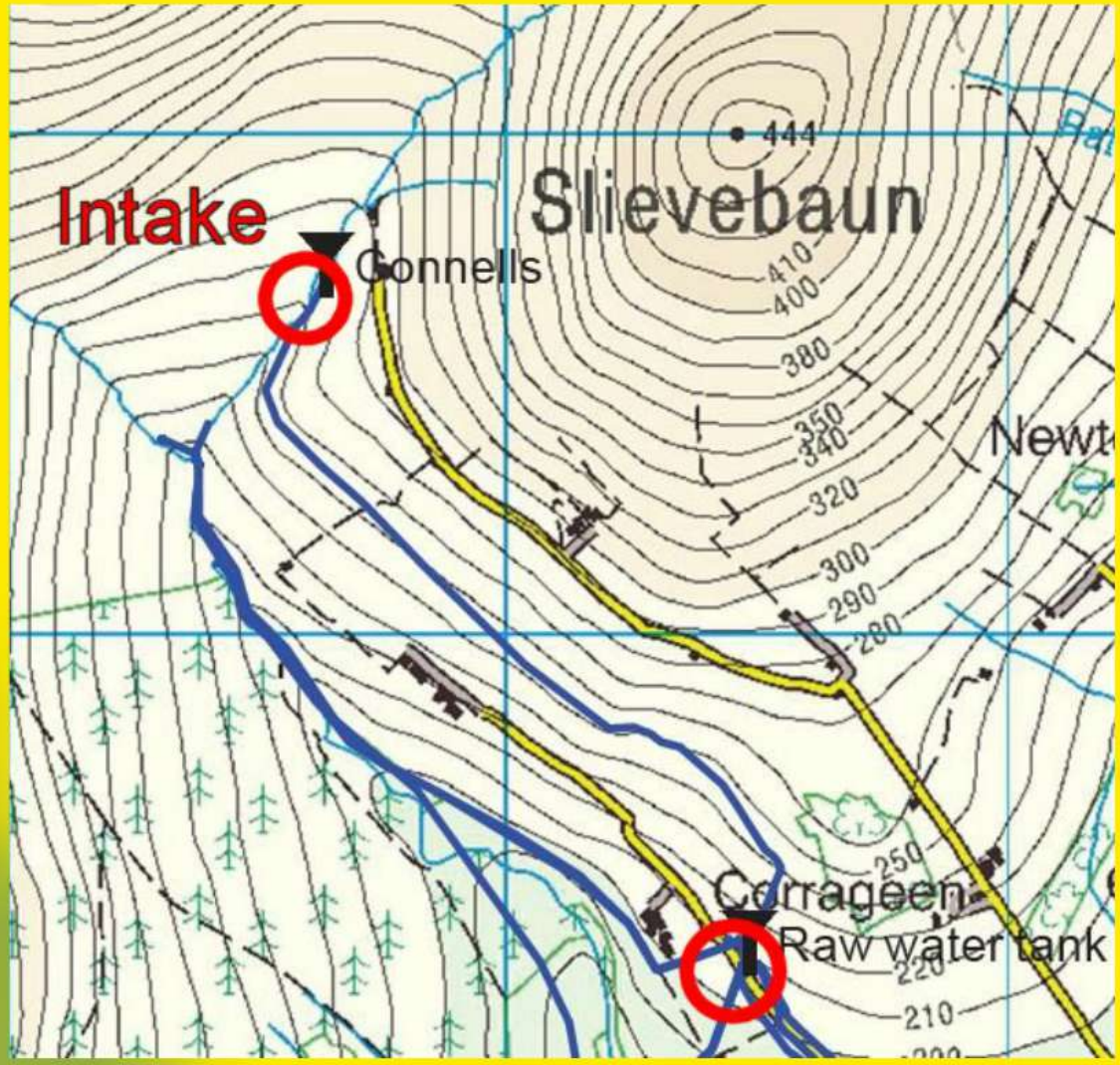




The Dwr Uisce demo sites

Prezi

Blackstairs Group Water Scheme (Co. Wexford)

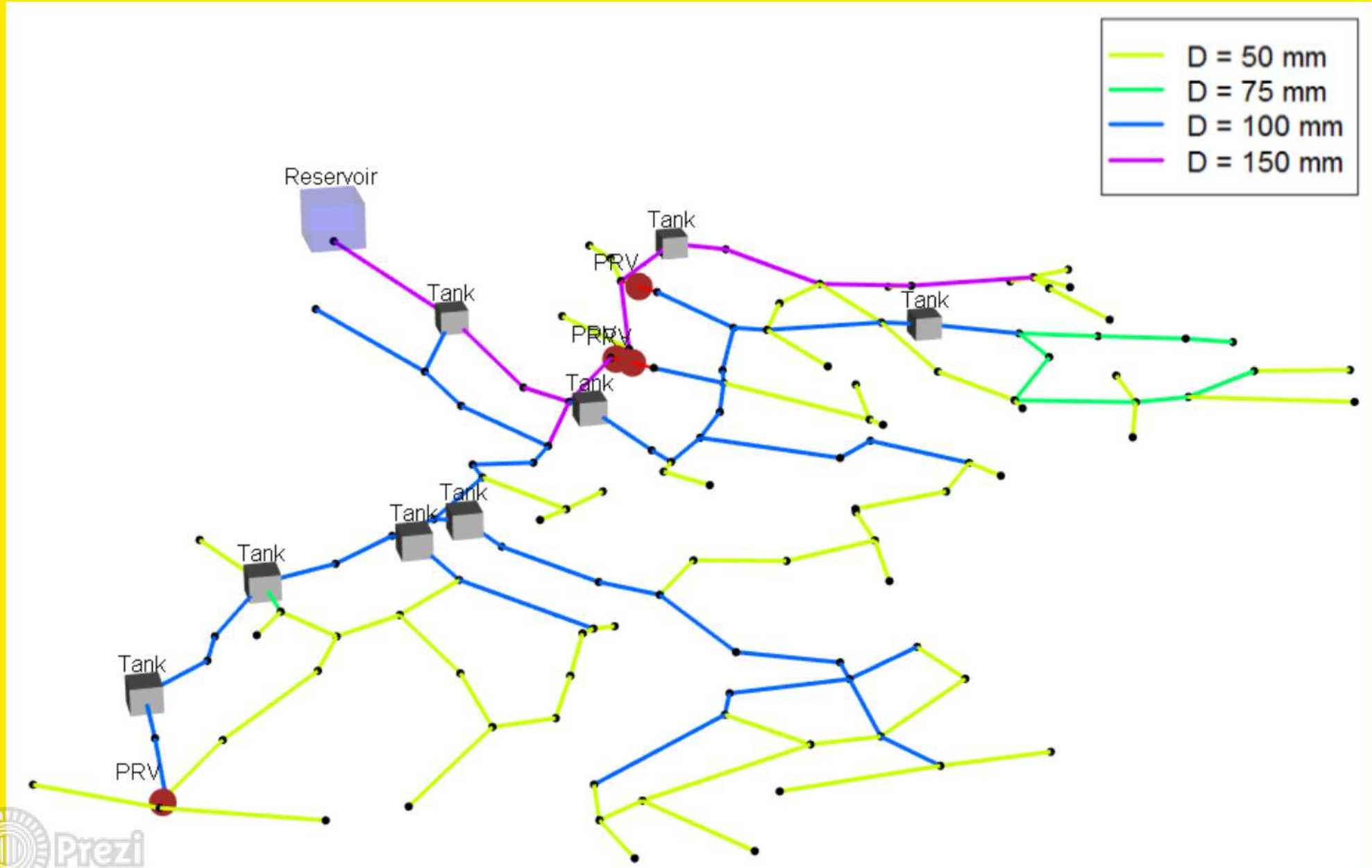


Prezi

National Federation of Group Water Schemes

eps GROUP

1) Digital model of the network, evaluation of the potential for energy recovery

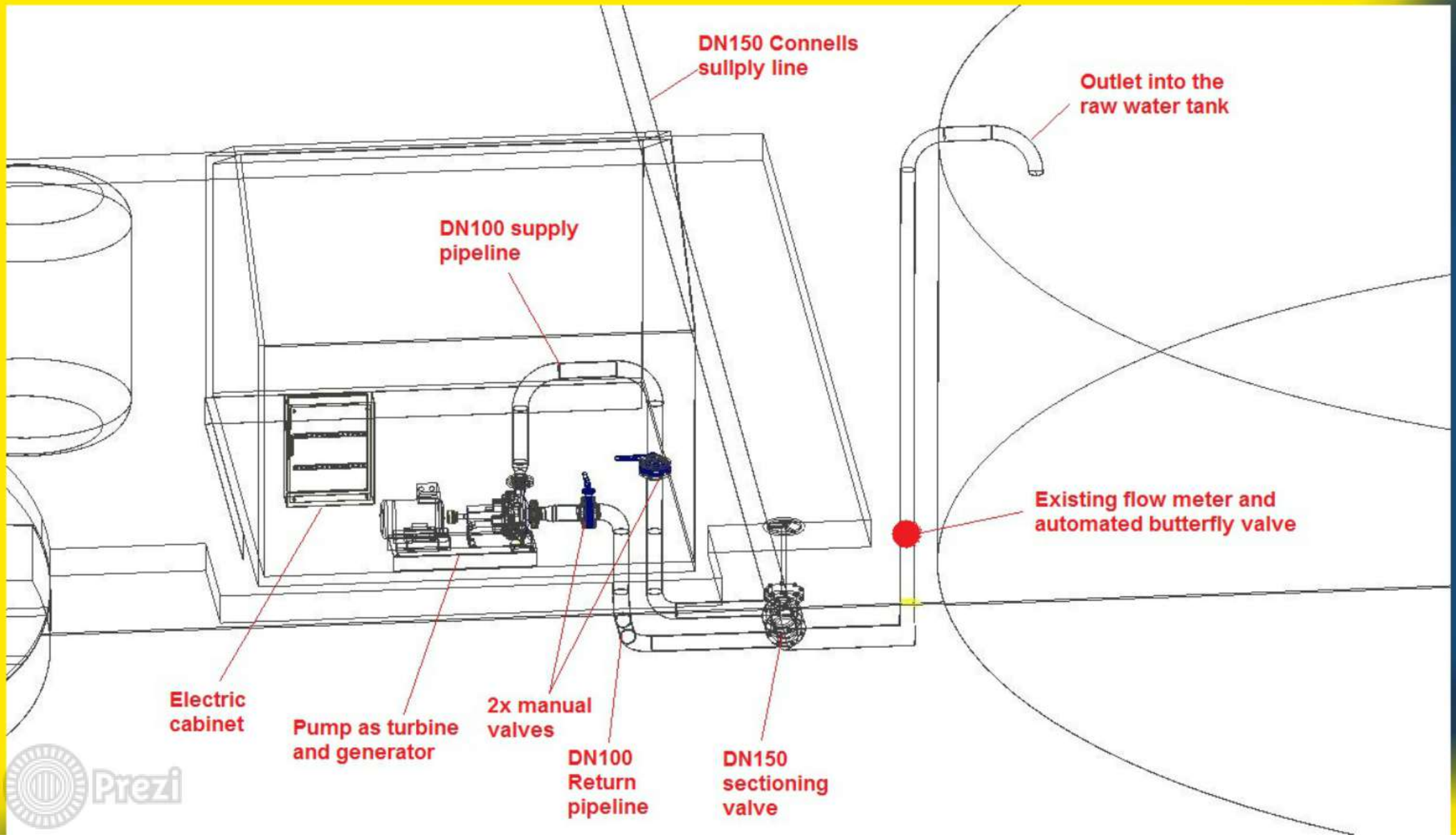


2) Verification of the potential: measurement campaign and site visits

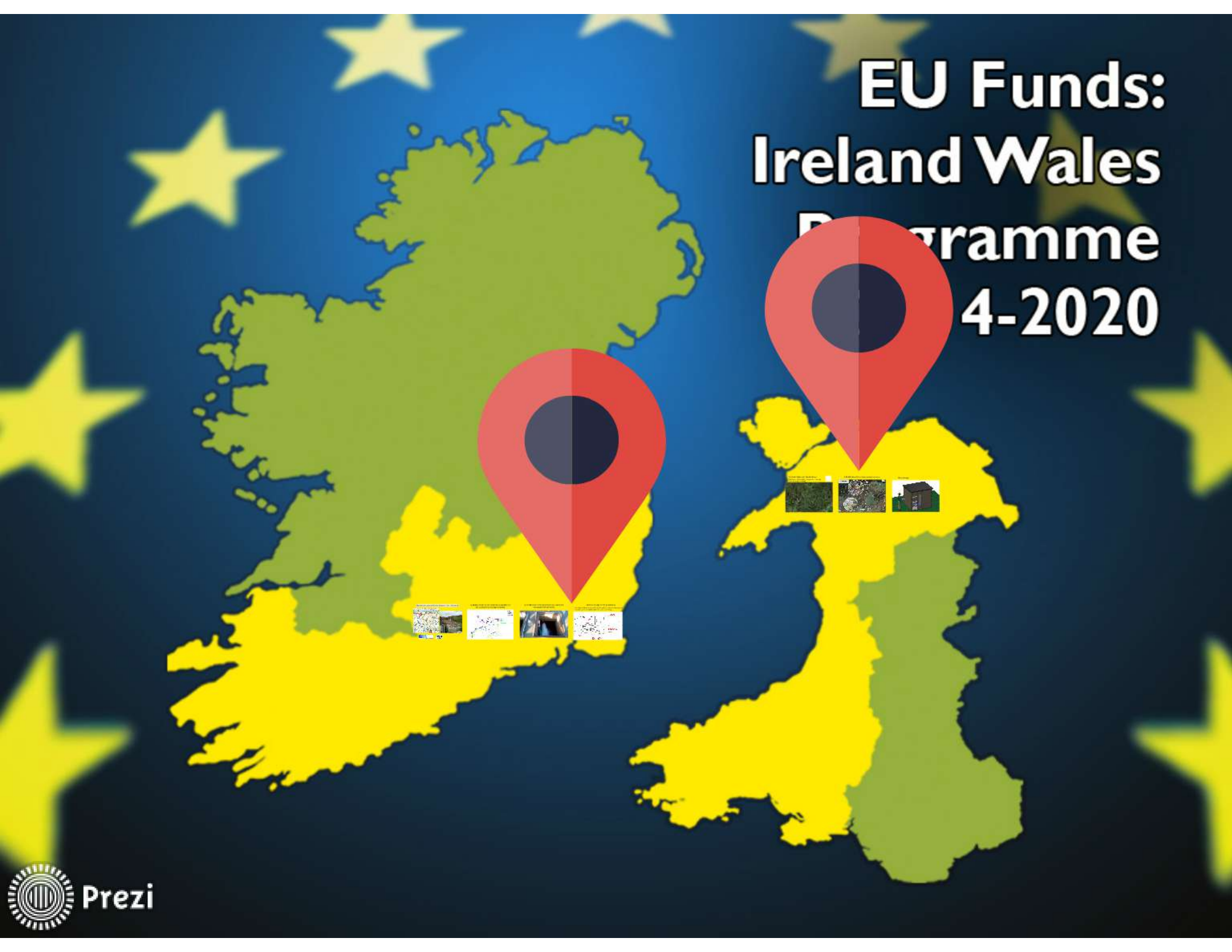
Prezi

3) Final design of the installation

- Gradient of **60 m** between the intake and the water treatment plant
- Available power: **4.3 kW** (**25%** of electricity savings)



EU Funds: Ireland Wales Programme 2014-2020



Prezi

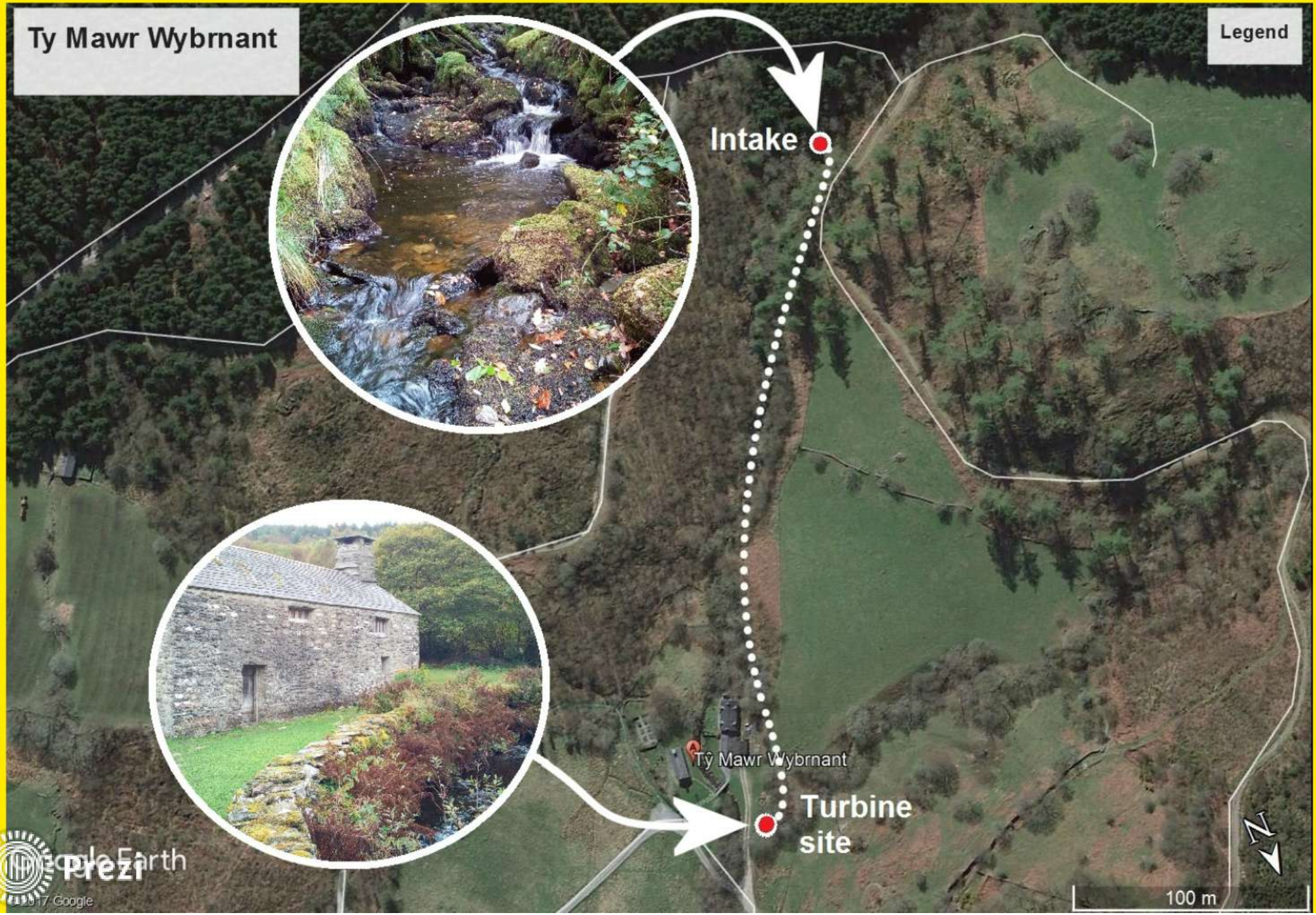
Ty Mawr Wybrnant, North Wales

Birthplace of Bishop William Morgan, first translator of the Holy Bible into Welsh

Ymddiriedolaeth Genedlaethol National Trust

Prezi

3.68 kW run-of-river hydropower scheme



Final design

The Dwr Uisce demo sites

Prezi

Construction...

Works at Ty Mawr Wybrnant have already started, and soon Blackstairs will follow

Prezi

Next milestones

Site visits and dissemination of results

2018 | 2019

- **Construction and tests** on the two demonstration sites
- **Ongoing lab tests** on the large 4 kW turbine test rig at Trinity College
- Dwr Uisce **site visits** to the two sites in **Ireland** and **Wales**
- **Dissemination of results**

Prezi

Thank you for your attention!

See you at our upcoming site visits

Daniele Novara
Ph.D. student
Trinity College Dublin
novarad@tcd.ie

UNDEB EWROPEAIDD EUROPEAN UNION
Llywodraeth Cymru Welsh Government
Cronfa Datblygu Rhanbarthol Ewrop
European Regional Development Fund

Ireland's European Structural and Investment Funds Programmes 2014-2020
Co-funded by the Irish Government and the European Union

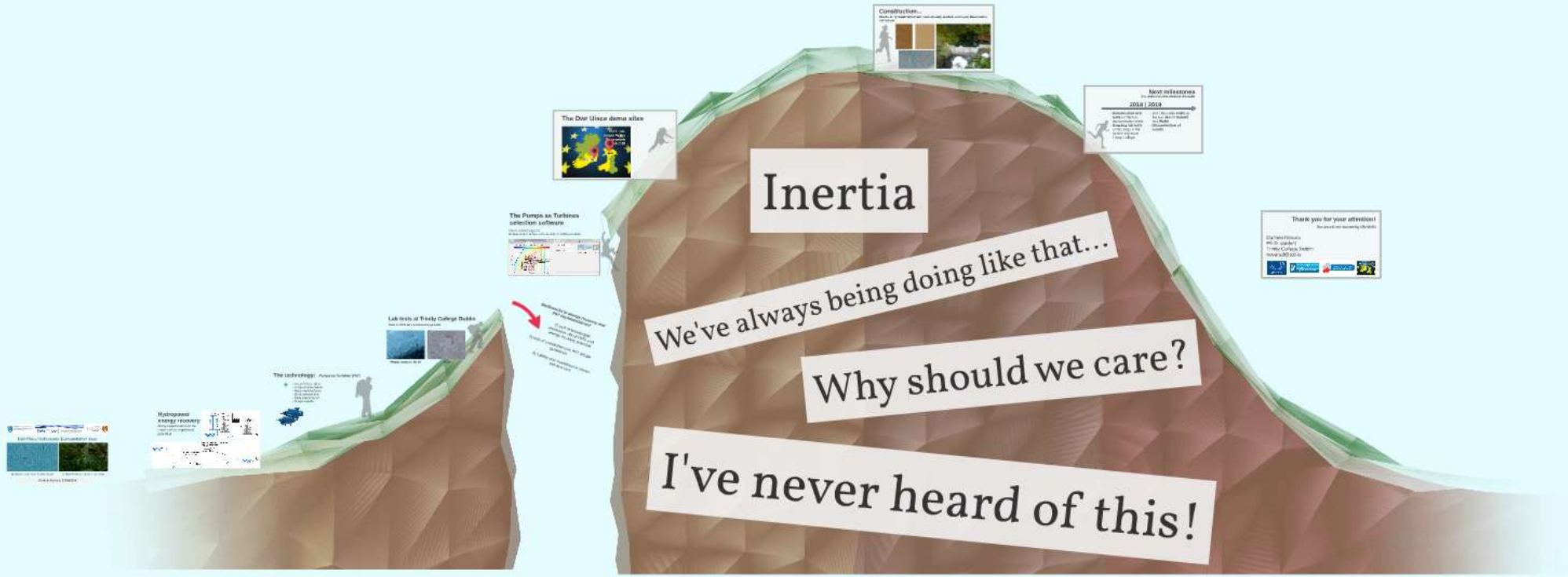
Tionól Réigiúnach an Deiscirt
Southern Regional Assembly

EU Funds: Ireland Wales Programme 2014-2020

Prezi

Demonstrate to innovate!

Journey through the Dŵr Uisce hydropower demonstration sites



Prezi