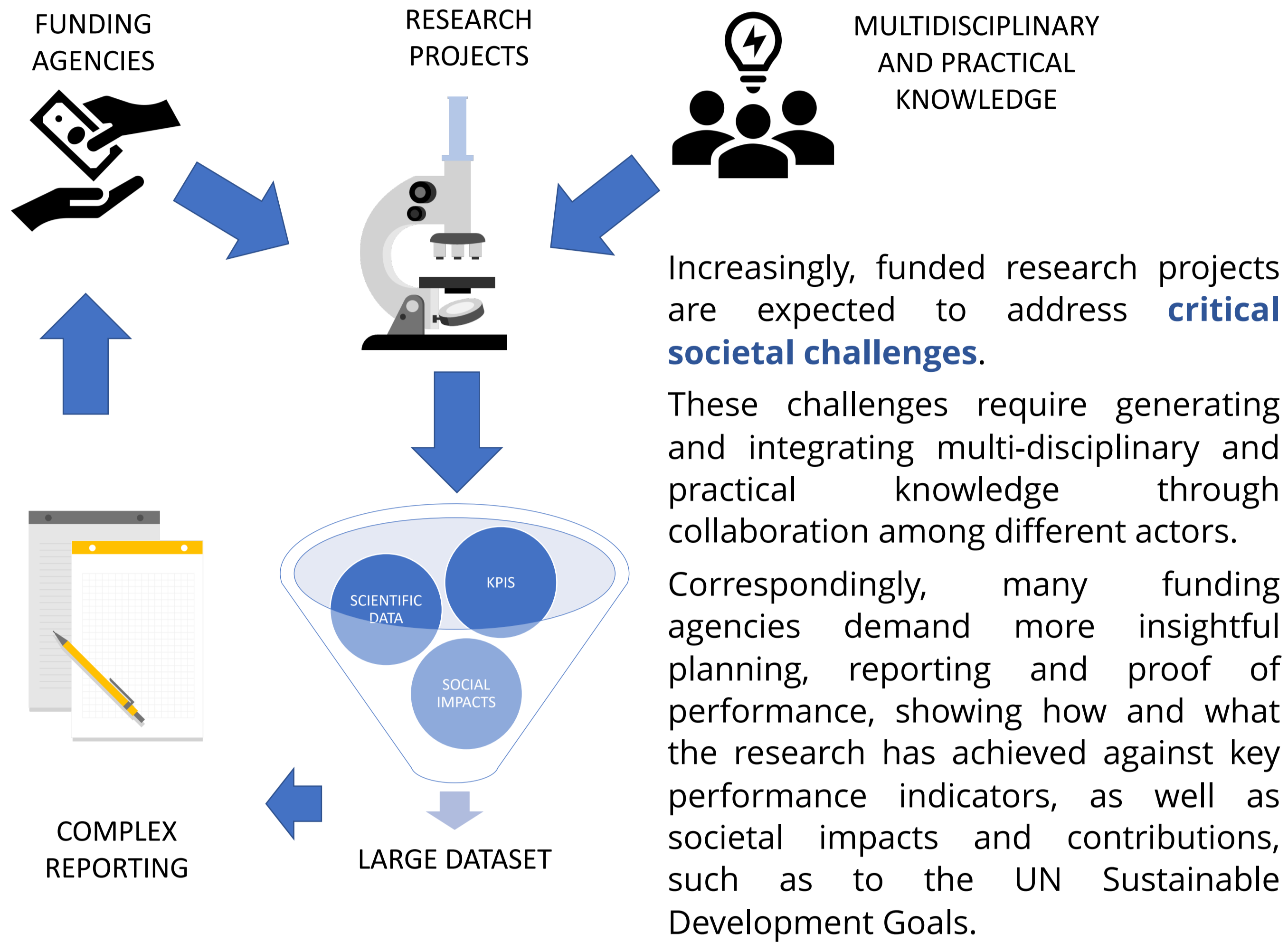


An Interactive Visualisation Tool To Manage Metadata In Engaged Research Projects, Track Progress, Map Stakeholders, And Evaluate Output, Outcomes And Impacts

Roberta Bellini¹ (bellinir@tcd.ie), Paul Coughlan¹, Aisha Bello- Dambatta², Alex Rigby², Panagiotis D. Ritsos³, Aonghus Mc Nabola⁴

THE CHALLENGE



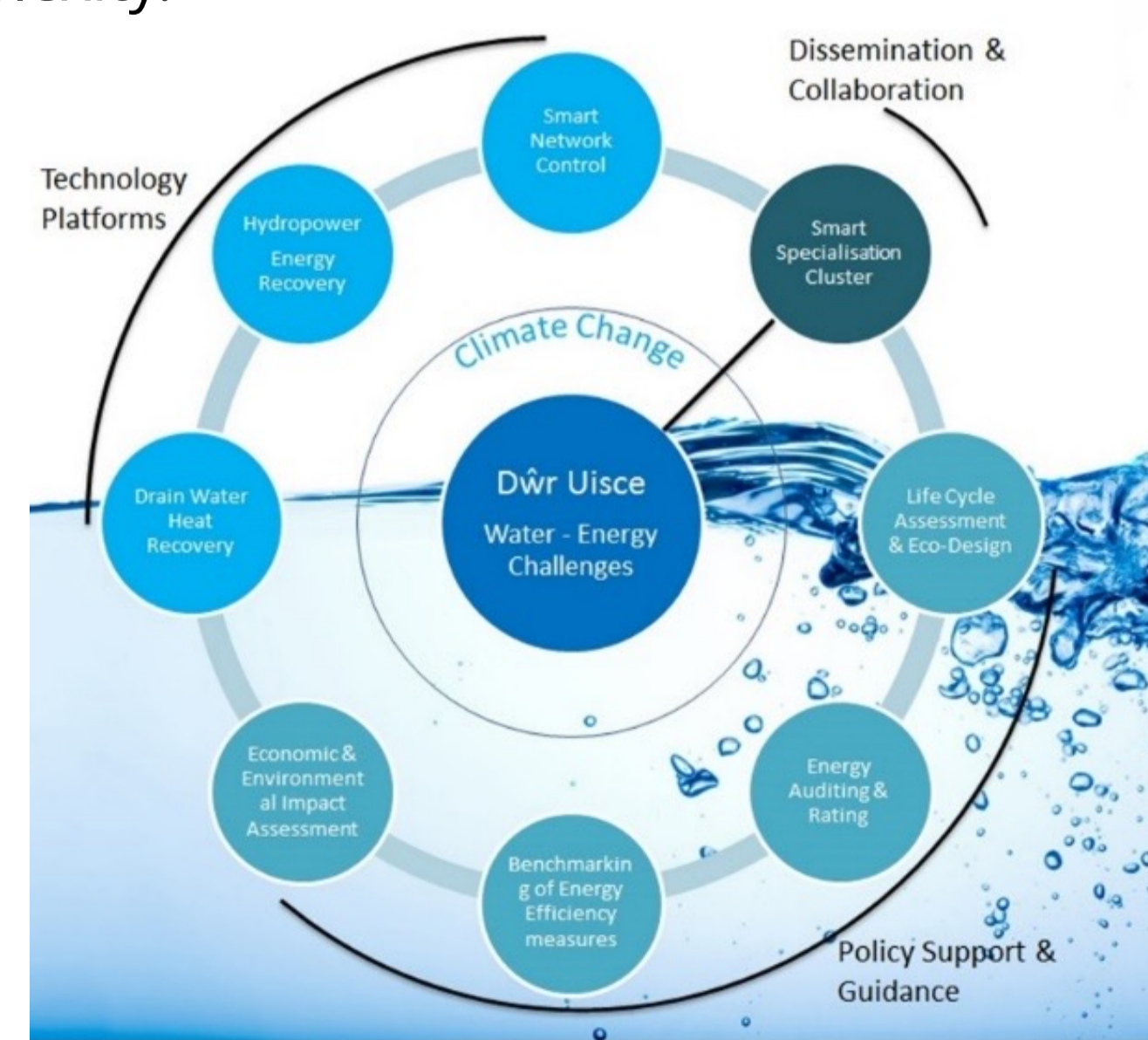
Complex reporting requires accessible data management where researchers and coordinators can manipulate large amounts of data, gathered over time from different sources, and in a broad range of formats.

A practical expectation is to inform meaningful and repeated progress reports which list and link deliverables, publications, indicators of performance and social impacts.

CASE STUDY: THE DWR UISCE PROJECT

As a team from **FIVE DISCIPLINES** working on the Dwr Uisce project, a 6.5 year-long EU-funded project on the water-energy nexus, we present our research management approach to the project complexity.

- 8 WORK PACKAGES
- 4 DEMONSTRATIONS SITES
- < 250 ORGANISATIONS INVOLVED, 122 ORGANISATION RECEIVING NON-FINANCIAL SUPPORT
- 31 EVENTS ATTENDED BY < 1100 PEOPLE (INCLUDING YOUTH)
- 34 PEER-REVIEWED JOURNAL ARTICLES
- 51 INTERNATIONAL CONFERENCE PRESENTATIONS
- 37 PRESS RELEASES AND NEWS ARTICLES



The project delivered social environmental and economic impacts, addressing these UN **SUSTAINABLE DEVELOPMENT GOALS**

OUR SOLUTION: FROM TABULAR DATA TO VISUALISATION

We designed an Excel-based matrix to facilitate managing project metadata. **OBJECTIVE:** to demonstrate progress and achievement against key performance indicators, the level of engagement among stakeholders, and the links of tasks to the SDGs.

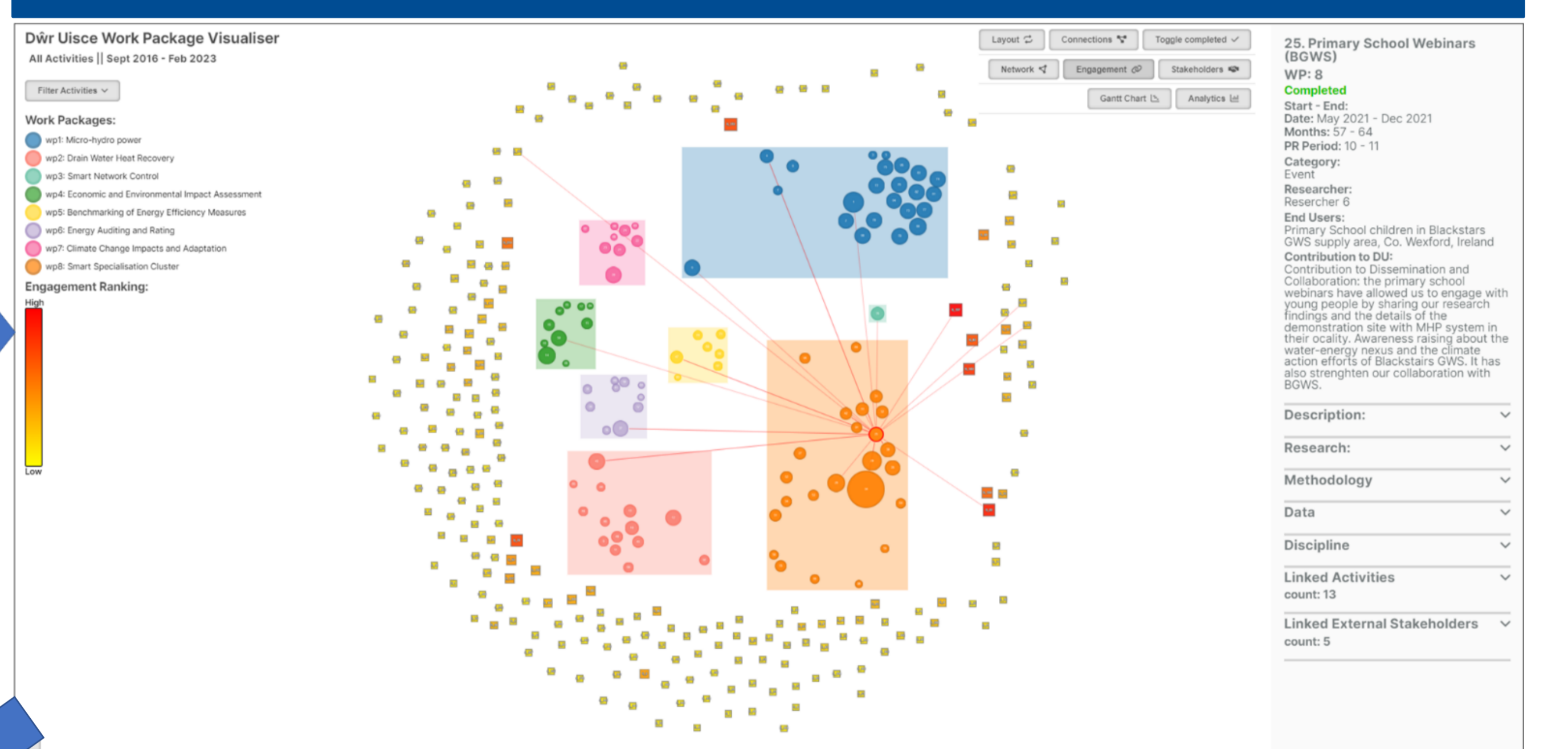
The ideation and design of the original matrix emerged from discussions among task-leaders. Implementation required contributions from all team members. Given the nature of the project, the matrix was extensive and, so, needed to be interrogated using filters.

Recognising the limitations of data tabulation, we linked the matrix to a powerful visualisation web-based software to create user-friendly visuals, inviting interactive analyses of workflows and stakeholder engagement.

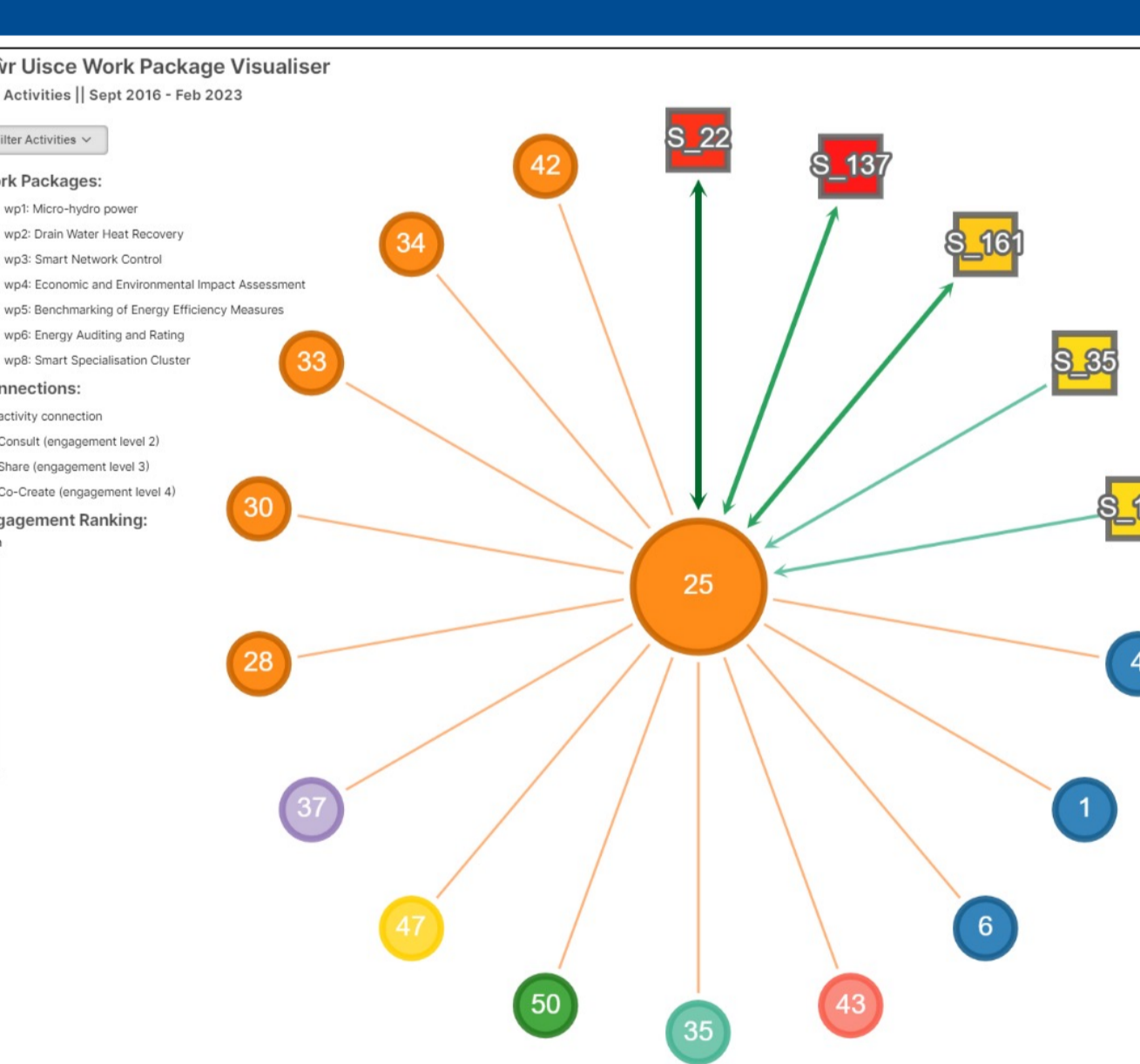
DUVis is an interactive data exploration and visualisation tool built to explore how internal and external collaboration contributed to activity outcomes. With it, data can be explored and filtered, project progress mapped, stakeholder **engagement levels** and interactions visualised in network view.

You can explore the tool here: <https://dwruiisce.github.io/DUVis/>

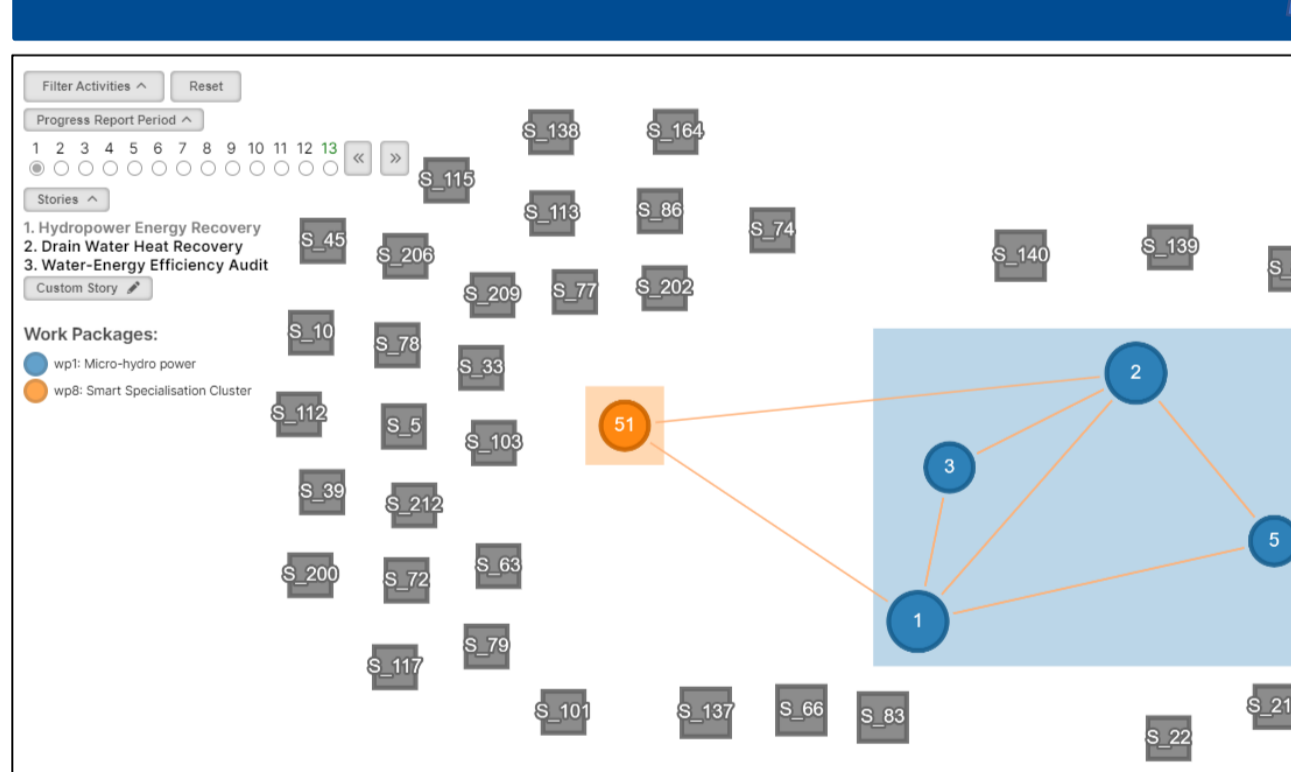
NODE LINK DIAGRAM & METADATA PANEL



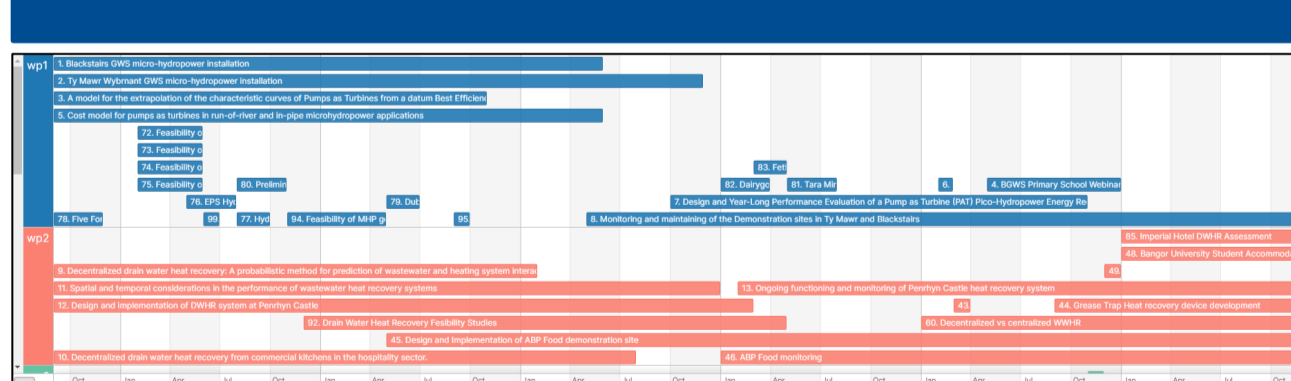
NETWORK VIEW



DATA FILTERS



GANTT CHART



- Work packages & activities are colour coded
- External stakeholders are mapped in the main diagram
- The dataset can be explored by selecting activities, work packages or external stakeholders
- In the metadata panel, links to SDGs are presented at activity level
- The Network view allows to explore the contributions of external stakeholders to specific project activities as well as their level of engagement.
- Data can be filtered for example by work package, publication, event or by reporting period, to obtain snapshot in time
- The Gantt chart displays activities lifespan

You can **track project progress** over time and better understand how work packages evolve, as activities are added and more external stakeholders engage with the project.

Interactive exploration of the data which allow to discover hidden **collaborations** and highlight **impacts**.

CONCLUSIONS AND IMPLICATIONS

This approach enabled visualisation of planned and emergent interactions within the project, underpinned by interconnections among key activities, researchers and external stakeholders. The approach is usable by:

- Research managers:**
 - at funding application/proposal;
 - at project reporting.
- Researchers:**
 - manage workload;
 - share reporting responsibilities;
 - discuss actual/potential collaborations;
 - capture achievements for CVs
- Funding agencies/scientific coordinators:**
 - interrogate and visualise project metadata;
 - evaluate them vs project aims, objectives and milestones

1 Trinity Business School, Trinity College Dublin, Ireland
2 School of Natural Sciences, Bangor University, UK
3 School of Computer Science and Electronic Engineering, Bangor University, UK
4 Department of Civil, Structural & Environmental Engineering, Trinity College Dublin, Ireland

The Dwr Uisce project is aimed at improving the long-term sustainability of water supply, treatment and end-use in Ireland and Wales. The present research has been supported by the ERDF Interreg Ireland-Wales Programme 2014-2020.