

# DARE

## The Diversity Approach for Research Evaluation

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# DARE

What is new about DARE?

# What is DARE?

- Evaluation aims to provide evidence of impact, usually by looking at outputs.
  - But outputs may take a long time to arise
- Research and innovation increasingly involves collaboration, in larger and more complex teams.
- Diversity is considered as desirable

DARE is a tool for understanding:

- Variety in team composition
- How collaborators work together
- Understand processes (that affect outcomes)

# What is DARE?

- Looking at Research
  - How knowledge is produced as a team
- Specific problem of translational research:

Translational research is aiming at making the best use of basic biomedical understanding in healthcare and society.

Previous research:

  - Identify stages of translation
  - The time it usually takes to 'translate' results into practice (17 years)

**This does not help policy makers to intervene.**

→ We believe that DARE is a useful tool to understand collaboration (and how it leads to desirable outcomes).

# DARE

Presentation of the tool.

# DARE: looking at Diversity

- In order to show the contribution of a research collaboration:
  - How diverse is the team behind the initiative? (i.e. the challenges to overcome)
    - Looking at the diversity Stirling (2007) and Ràfols (2014)
- Dimensions facilitating interactive learning (Boschma, 2005):
  - Cognitive proximity
  - Geographic proximity
  - Social proximity
  - Institutional proximity
  - Organisational proximity

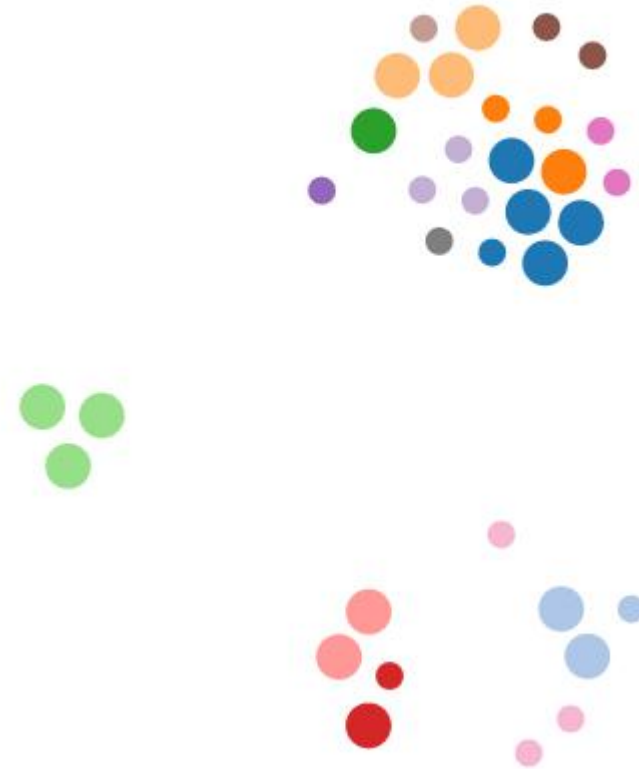
# Example: Geographic dimension

**Collaboration to understand the cause of a neglected disease.**

Circles: represent collaborators

Size: represents their level of involvement

Colour: represents the collaborators organisation



# Example: Geographic dimension

## What is the geographical breadth of the collaboration?

### Distance:

Same department (3 minutes) (0/5)

Same university, same campus (15 minutes' walk) (1/5)

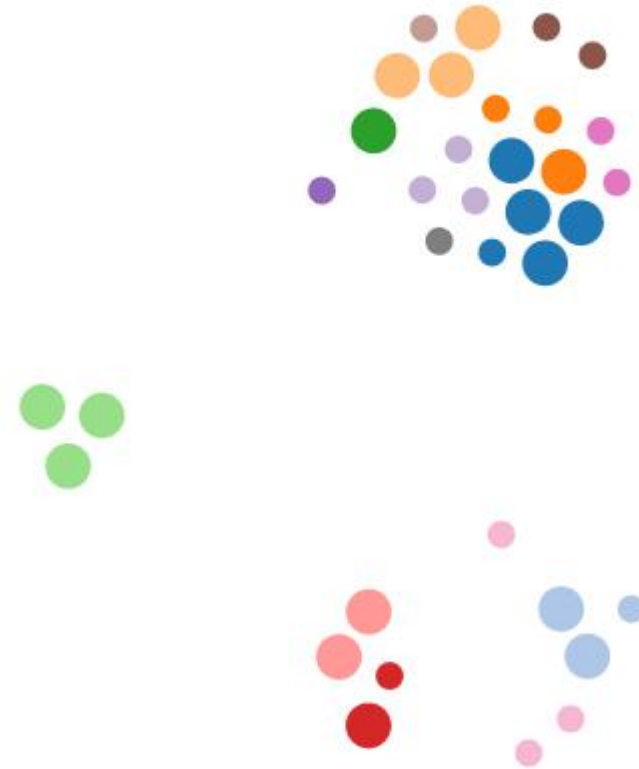
Same city/metropolis (up to 2 hours) (2/5)

Same region/country (up to 4-5 hours by train) (3/5)

Same continent (flight or long train needed) (4/5)

Other continent (5/5)

**Diversity: 0.74**





# Example: Geographic dimension

## What is the geographical breadth of the collaboration?

### Distance:

Same department (3 minutes) (0/5)

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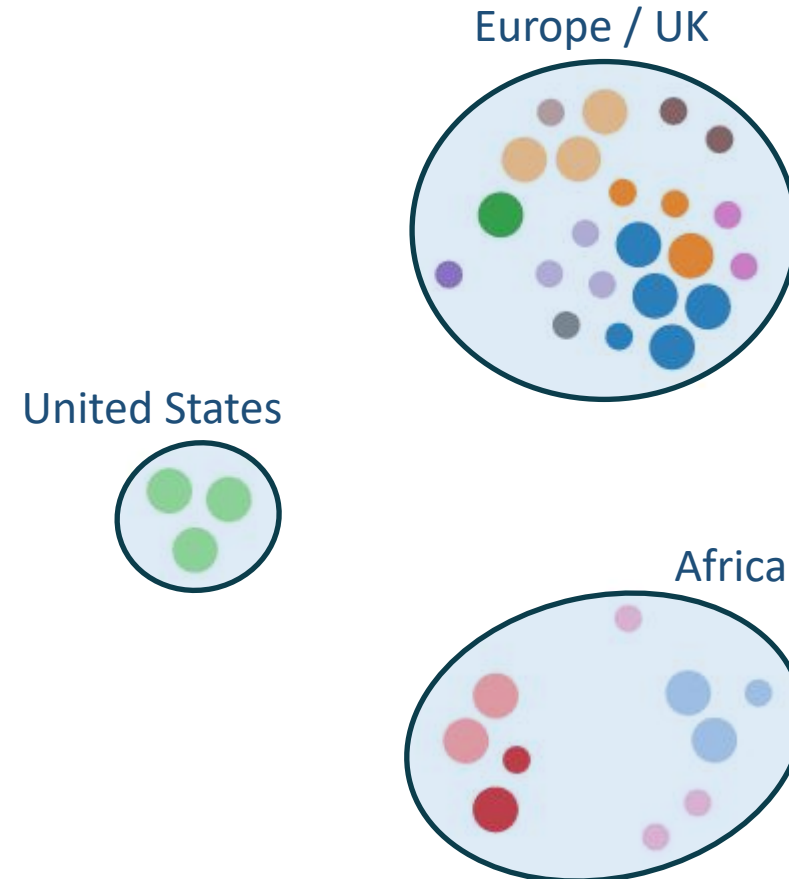
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Other continent (5/5)

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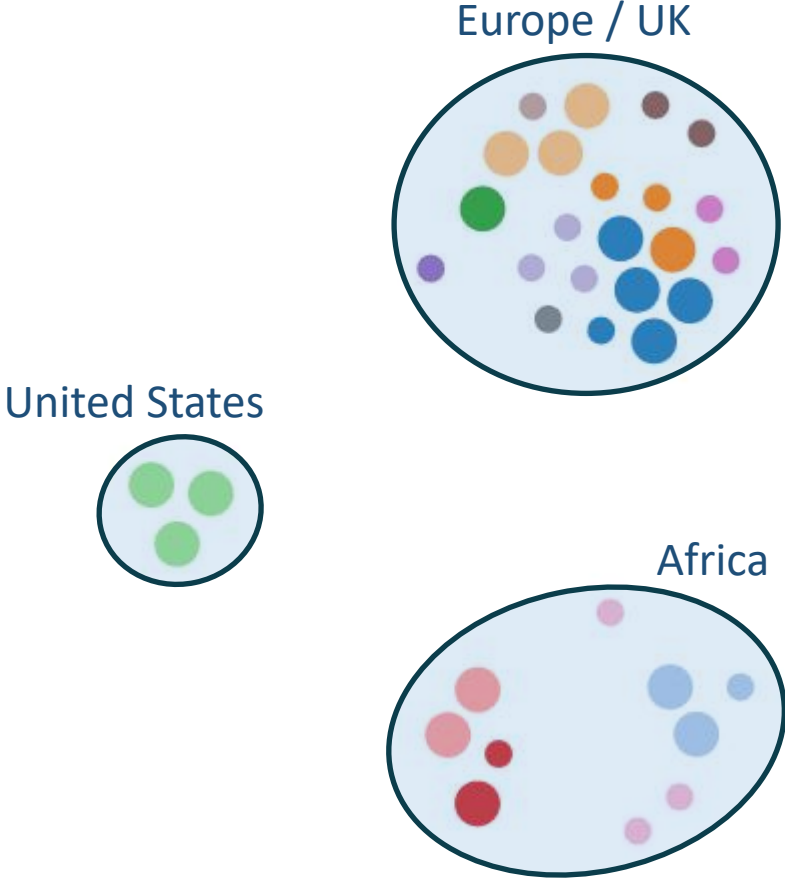
# DARE: looking at cohesiveness

- In order to show the contribution of an initiative we use the Diversity framework developed by Stirling (2007) and Ràfols (2014):
  - How diverse is the team behind the initiative – the challenge to overcome
    - Using the Diversity measure
  - How much the initiative has helped to bridge the identified diversity – how much interaction has been achieved
    - Using the Cohesiveness measure
    - Dynamic component (i.e. before and after the initiative)

# Example: Geographic dimension

What is the bridging effort existing before the collaboration?

Diversity: 0.74



# Example: Geographic dimension

**What is the bridging effort existing before the collaboration?**

**Intensity:**

no meeting (intensity = 0)

yearly meeting (intensity = 1/5)

every 6 month meeting (intensity = 2/5)

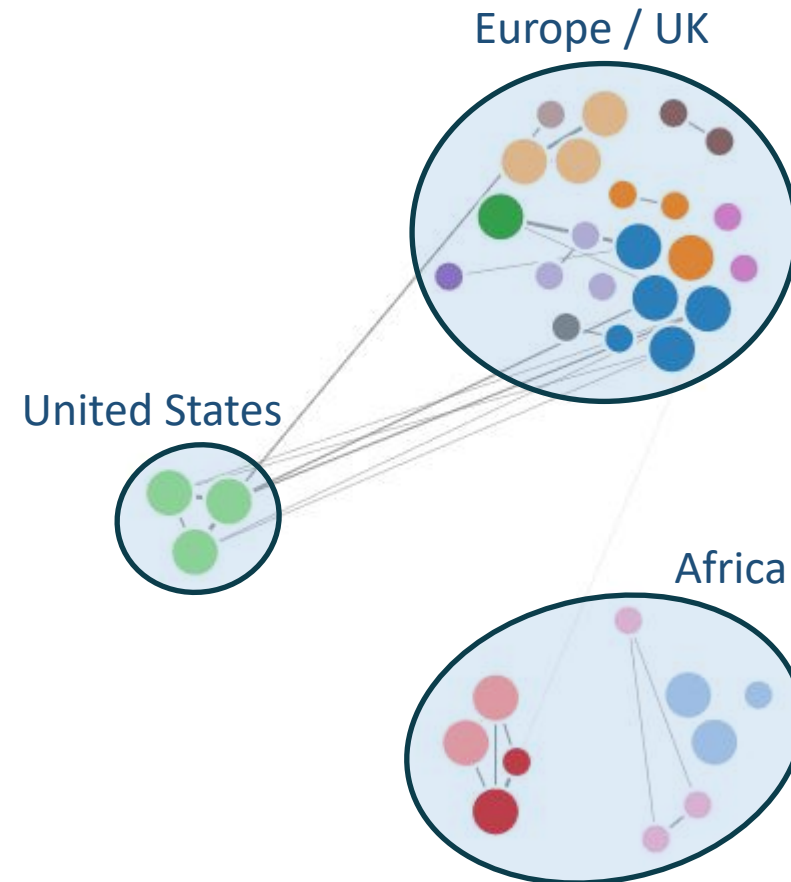
monthly meeting (intensity = 3/5)

weekly meeting (intensity = 4/5)

daily meeting (intensity = 5/5 = 1)

Diversity: 0.74

**Cohesiveness Before: 0.32**

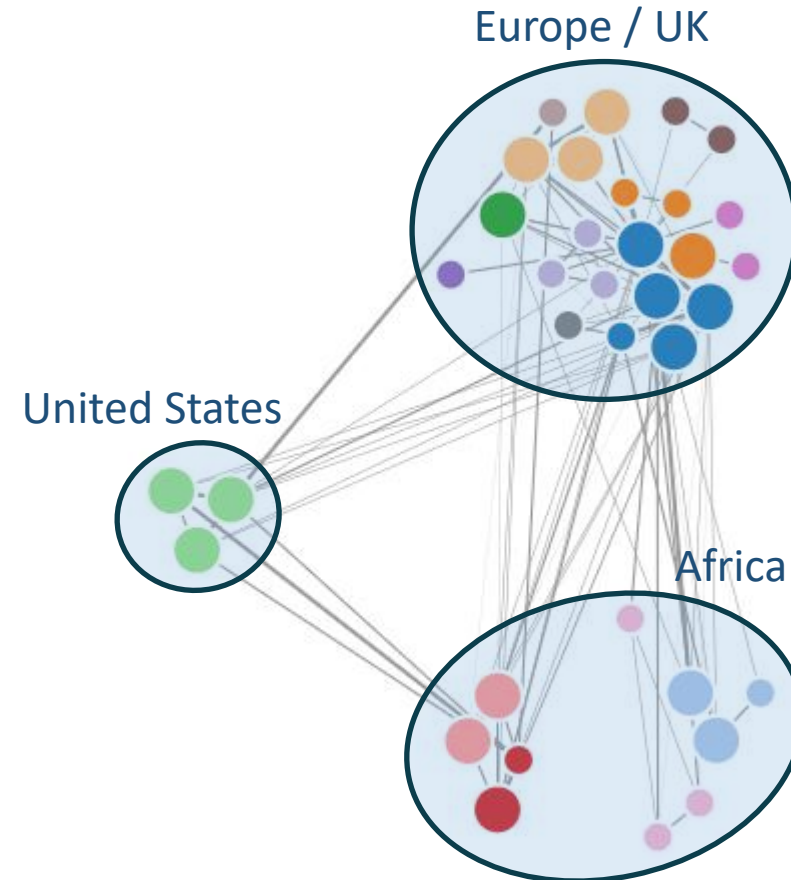


# Example: Geographic dimension

**What is the bridging effort realised after the collaboration?**

Links based on interactions during project

Diversity: 0.74  
Cohesiveness Before: 0.32  
**Cohesiveness After: 0.53**



# DARE: looking at processes

- In order to show the contribution of an initiative we use the Diversity framework developed by Stirling (2007) and Ràfols (2014):
  - How diverse is the team behind the initiative – the challenge to overcome
    - Using the Diversity measure
  - How much the initiative has helped to bridge the identified diversity – through how much interactions has been achieved
    - Using the Cohesiveness measure
    - Dynamic component (i.e. before and after the initiative)
- This captures a dynamic record of the collaboration, in which the diversity represents a landscaping exercise at the outset of the initiative and the cohesiveness represents changes achieved.

# Cognitive dimension

Bibliometric approach:

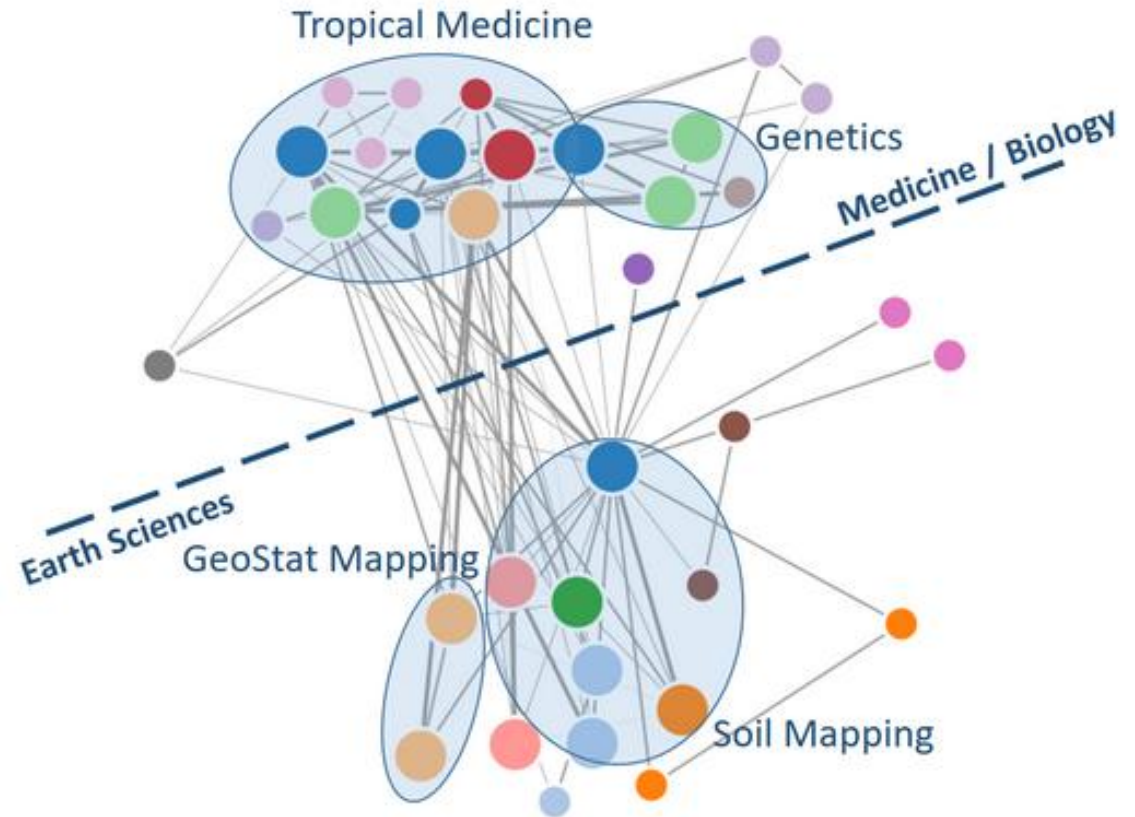
- Distance between individuals is based upon the journals they cite and whether they are similar.

(Zhou et al. 2012)

Diversity: 0.56

Cohesiveness Before: 0.34

Cohesiveness After: 0.41



# Institutional dimension

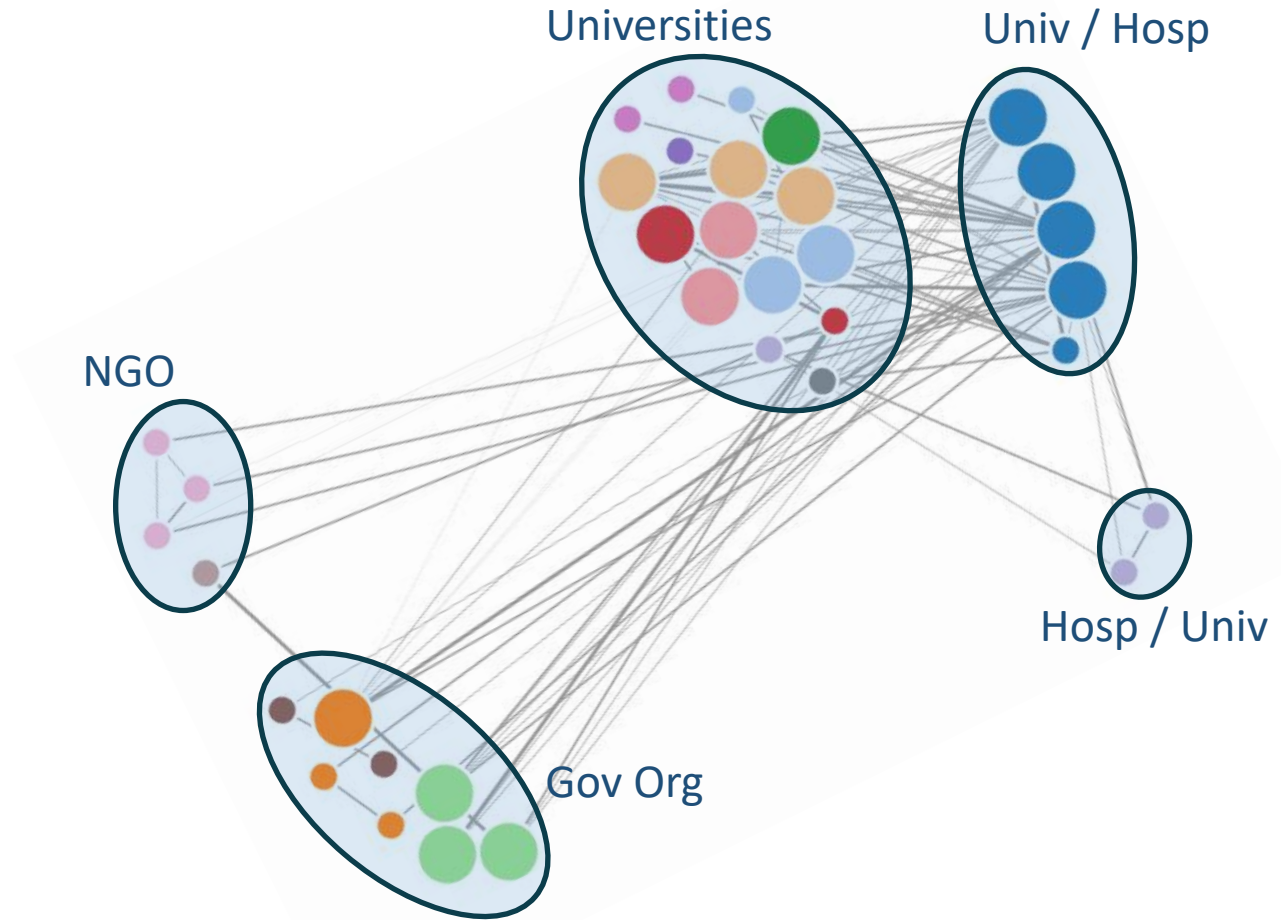
Considering aspects:

- Care
- Open science
- Commercialisation
- Teaching
- Policy

Diversity: 0.28

Cohesiveness Before: 0.15

Cohesiveness After: 0.23





# Organisational dimension

## Distance:

Same department or centre (0/2)

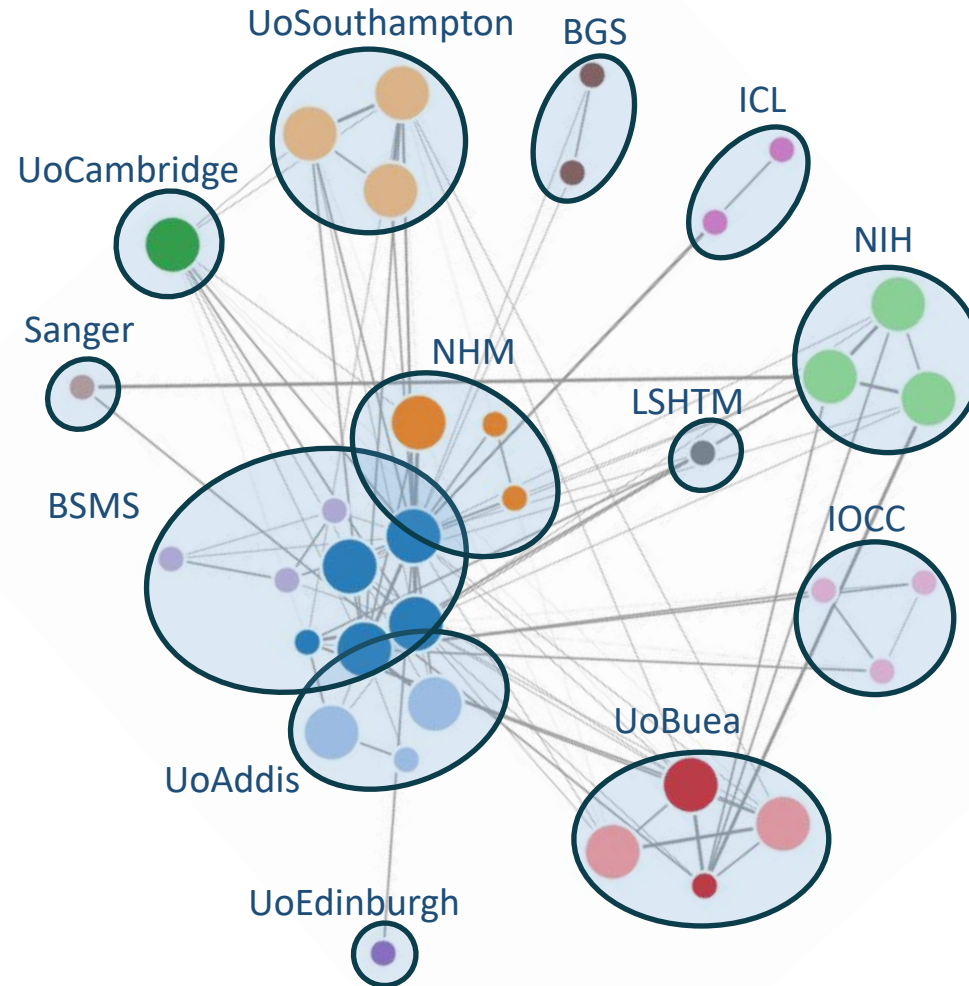
Same organisation (1/2)

Different organisation (2/2)

Diversity: 0.90

Cohesiveness Before: 0.41

Cohesiveness After: 0.64



# Social dimension

## Distance:

Having worked together before (0)

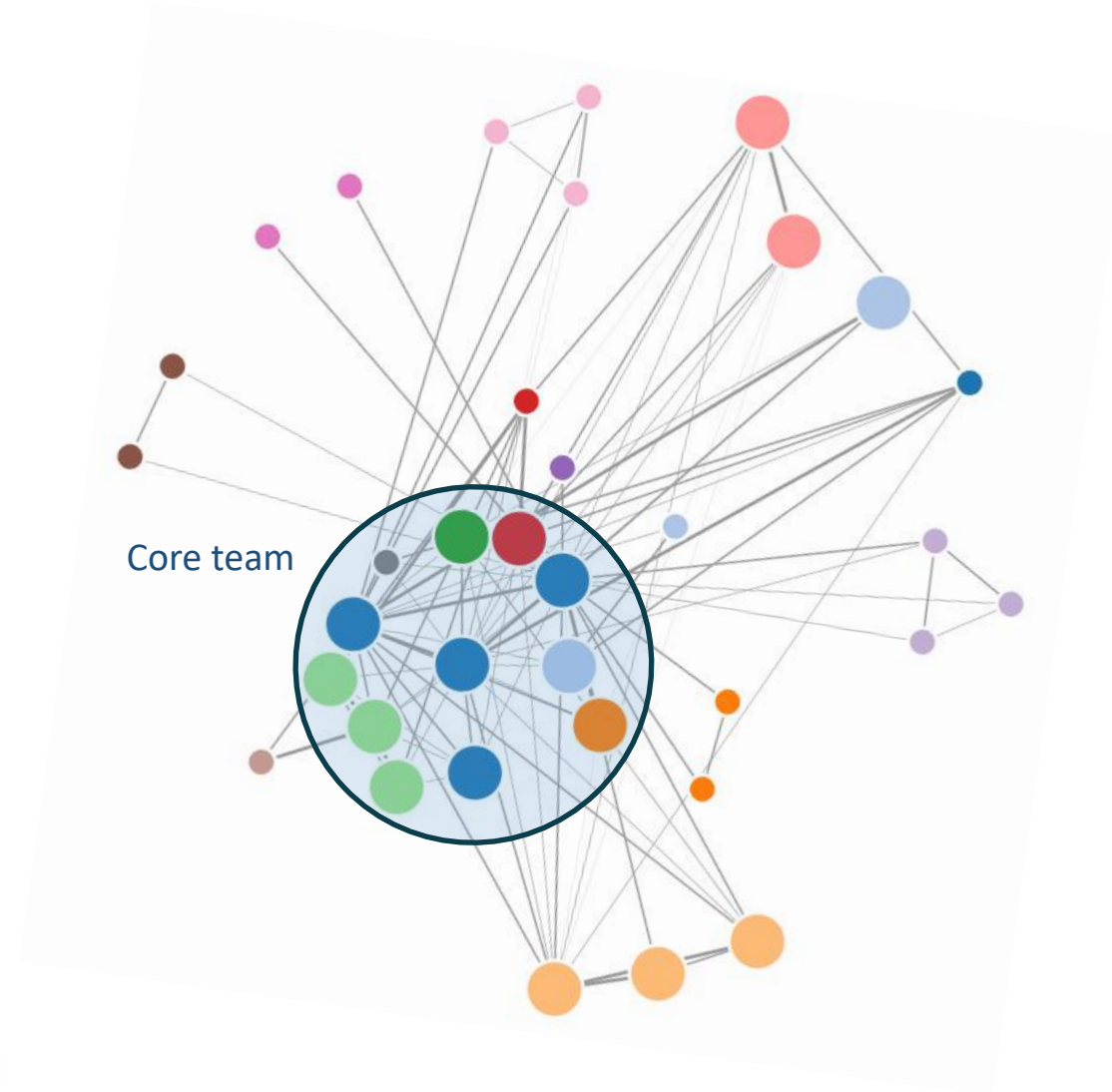
Knowing a bit (0.75)

Do not know (1)

Diversity: 0.92

Cohesiveness Before: 0.01

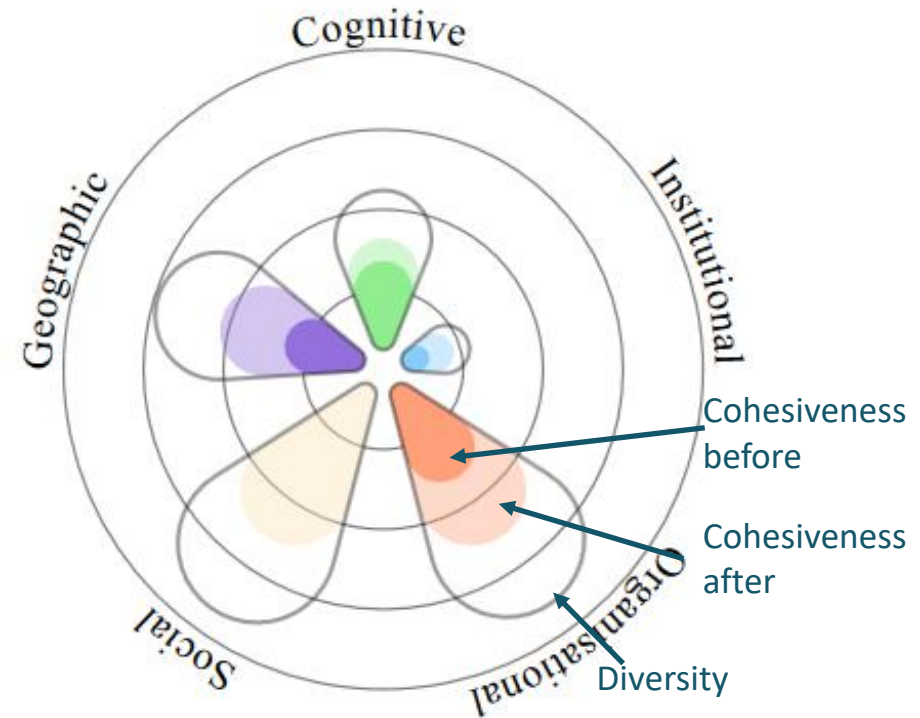
Cohesiveness After: 0.64



# Summary chart: the diversity profile

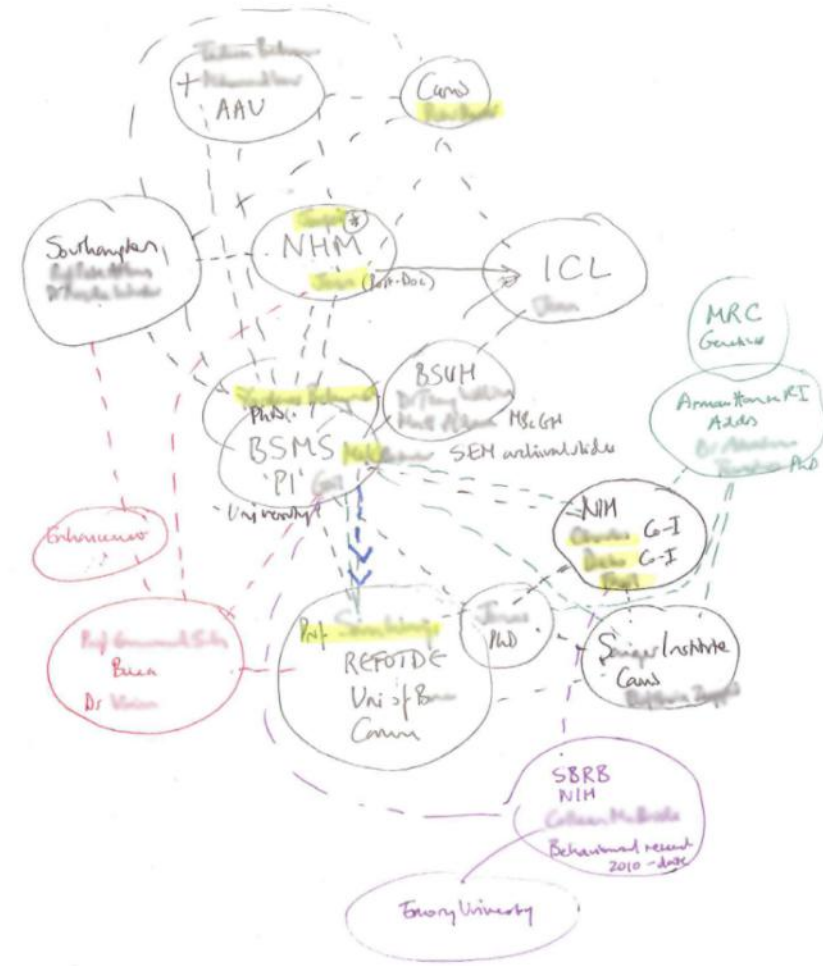
Including in a single chart:

- All five diversity dimensions
- The measure of diversity
- The measure of cohesiveness before the start of the project
- The measure of cohesiveness after the start of the project



# DARE as proof of concept

- The project aimed at developing a proof of concept of the approach
  - Trialed on 8 cases in biomedical research
  - Based on
    - Interview data
    - Bibliometric data
- The tool is used to:
  - Understand differences between collaborators and bridging activities using **maps** and **indicators**
  - Understand how these have been bridged and outcomes using **narratives**



# Conclusion

- DARE brings **early** insights on understanding underlying characteristics of teams.
- Why should policy-makers be interested in diversity?
  - Diversity may be desired by design (problems requiring more than one discipline)
  - Diversity may also be a barrier to overcome (too much diversity may make it difficult for participants to collaborate)
- The combination of DARE with output related measures, can help us to learn whether encouraging certain types of diversity improve desirable outcomes.

# Future steps

- Development of the tool:
  - Adding other diversity dimensions
  - Adapting the tool for use with secondary data
  - Making the tool for general purpose:
    - For researchers
    - For other stakeholders (policy maker and funders)
- What use in the future:
  - Funders / policy-makers:
    - Understand the **potential** of funded teams
    - Understand and intervene when **potential difficulties** arise in collaborations
  - For researchers to build a better understanding :
    - **how much** diversity is helpful for specific outcomes
    - **complementarity and synergies** between dimension types

**Create an understanding about both the potential and difficulties of a collaboration to enable a well informed intervention.**

# THANK YOU.

Contact: [f.bone@sussex.ac.uk](mailto:f.bone@sussex.ac.uk)

Visit our website:

<http://www.sussex.ac.uk/spru/research/dare/Cases.html>



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