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Federated data analysis infrastructure for **ProPASS**

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Horizontally partitioned data

Data provider	ID	Y	X1	X2
A	1			
	2			

Data provider	ID	Y	X1	X2
B	3			
	4			

Data provider	ID	Y	X1	X2
C	5			
	6			

Potential Challenges

- Insufficient statistical power in individual studies
- Data sharing not always possible
- Study Level Meta-Analysis (SLMA) insufficient, e.g. for explorative analysis

DataSHIELD infrastructure

- Individual Level Meta Analysis (ILMA)
- Secure Multi party computation
 - Learning without disclosing
 - Extensive protocols
- Data warehouse: Opal
- Client Portal: Mica

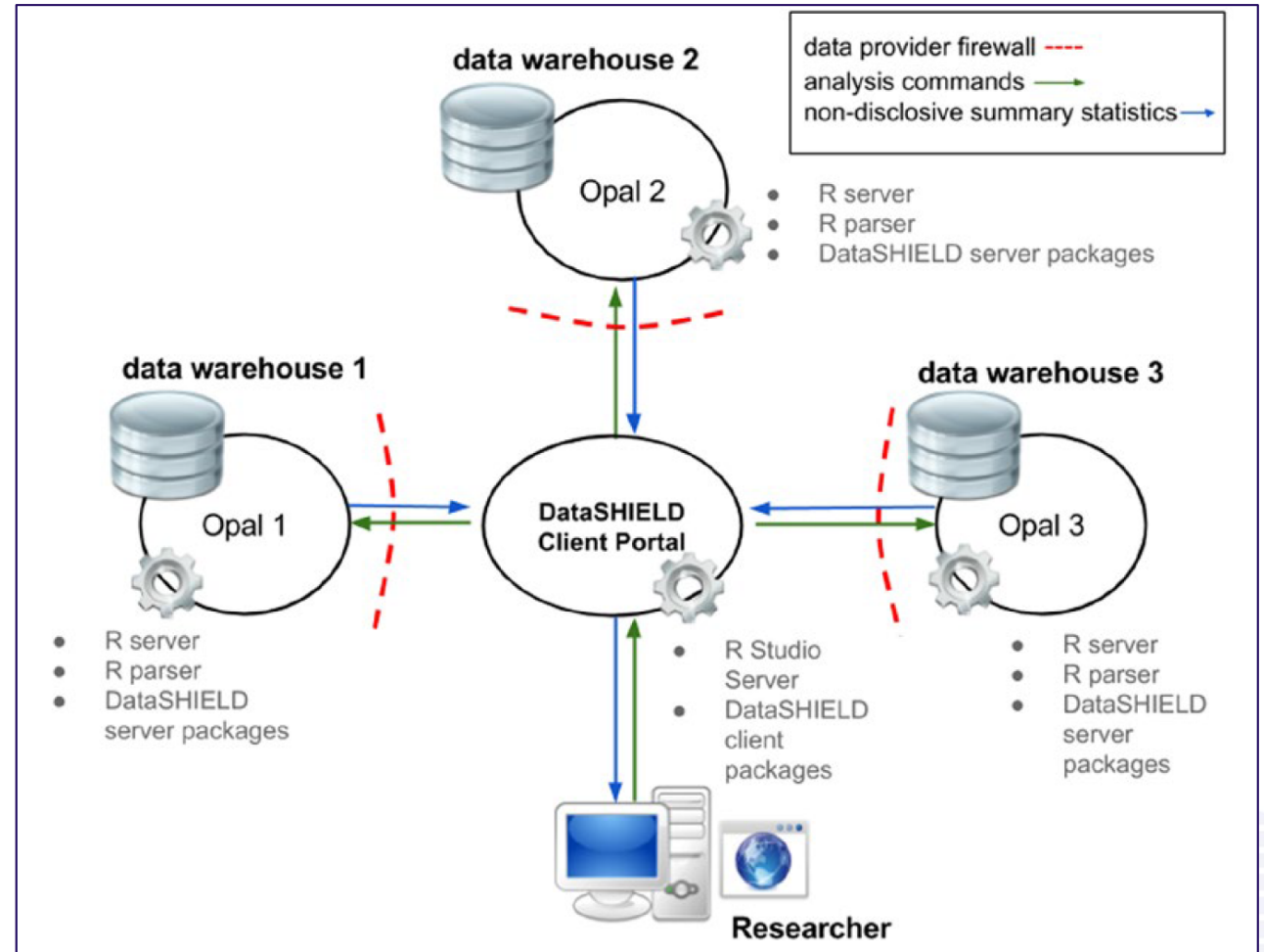


Image from: Wilson, R C et al 2017 DataSHIELD – New Directions and Dimensions. DOI: <https://doi.org/10.5334/dsj-2017-021>

Projects

- Technical implementation
- Exploration of statistical possibilities
- Data Harmonisation

Technical implementation

- Tasks:
 - Organise local (test) server at your institute
 - Write tutorial for ProPASS community
- Reward:
 - Learn about technical side of Federated data analysis
 - Early access to system
 - Involvement in first paper

Explore statistical possibilities

- Tasks:
 - Identify key (statistical) analysis needs of the ProPASS community
 - Explore what is possible with DataSHIELD
 - Write tutorial for ProPASS community
- Reward:
 - Learn about statistical side of Federated data analysis
 - Early access to system
 - Involvement in first paper

Data Harmonisation

- Develop protocols for:
 - introducing new variables (versions)
 - sharing software to generate those variables
 - sharing software/scripts used in statistical analysis
 - retracting variables or individuals.
- Reward:
 - Help lead the harmonisation effort
 - Involvement in paper

Thank you!



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