

Federated Information for Data GRIDS

Alex GRAY

Department of Computer Science

CARDIFF University

email: w.a.gray@cs.cf.ac.uk

Acknowledgements

- Colleagues at Cardiff
- 10 Research assistants
- 20+ graduate students

Complete Cycle

- library science - metadata 1964
- database 1974
- distributed database 1984
- federated systems 1988
- knowledge bases 1993
- library science - metadata 1998

WHAT is metadata?

Descriptive

Semantic

Location

Representation

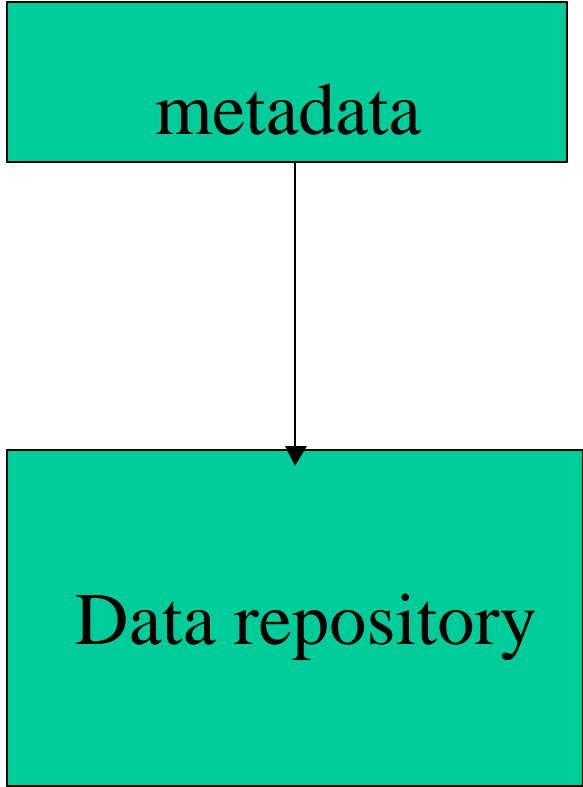
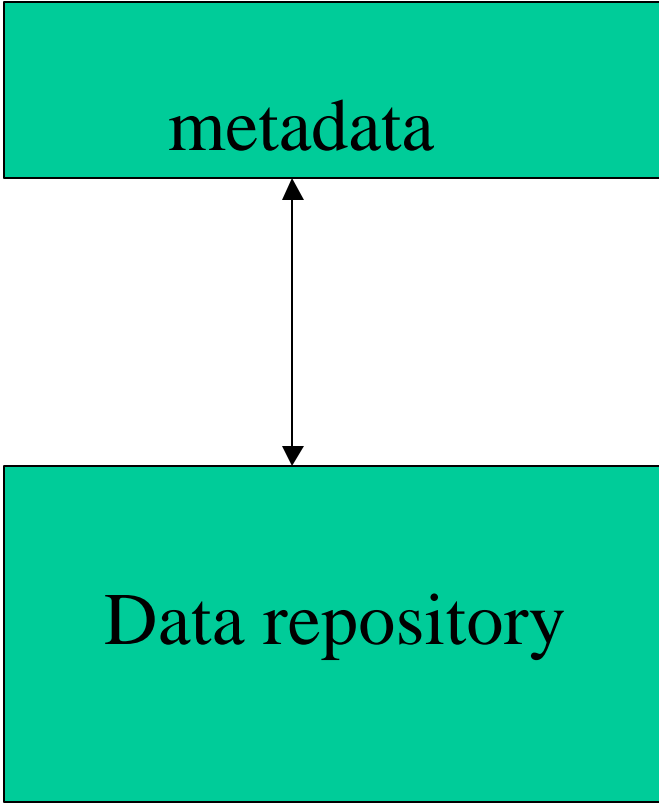
Provenance

Security

Cost

Types of research

- Blue sky - research council funded
 - meta-translation
 - canonical data models
 - agent environments
- Application oriented - company funded
 - library
 - social science
 - concurrent engineering
 - physical sciences
 - medical

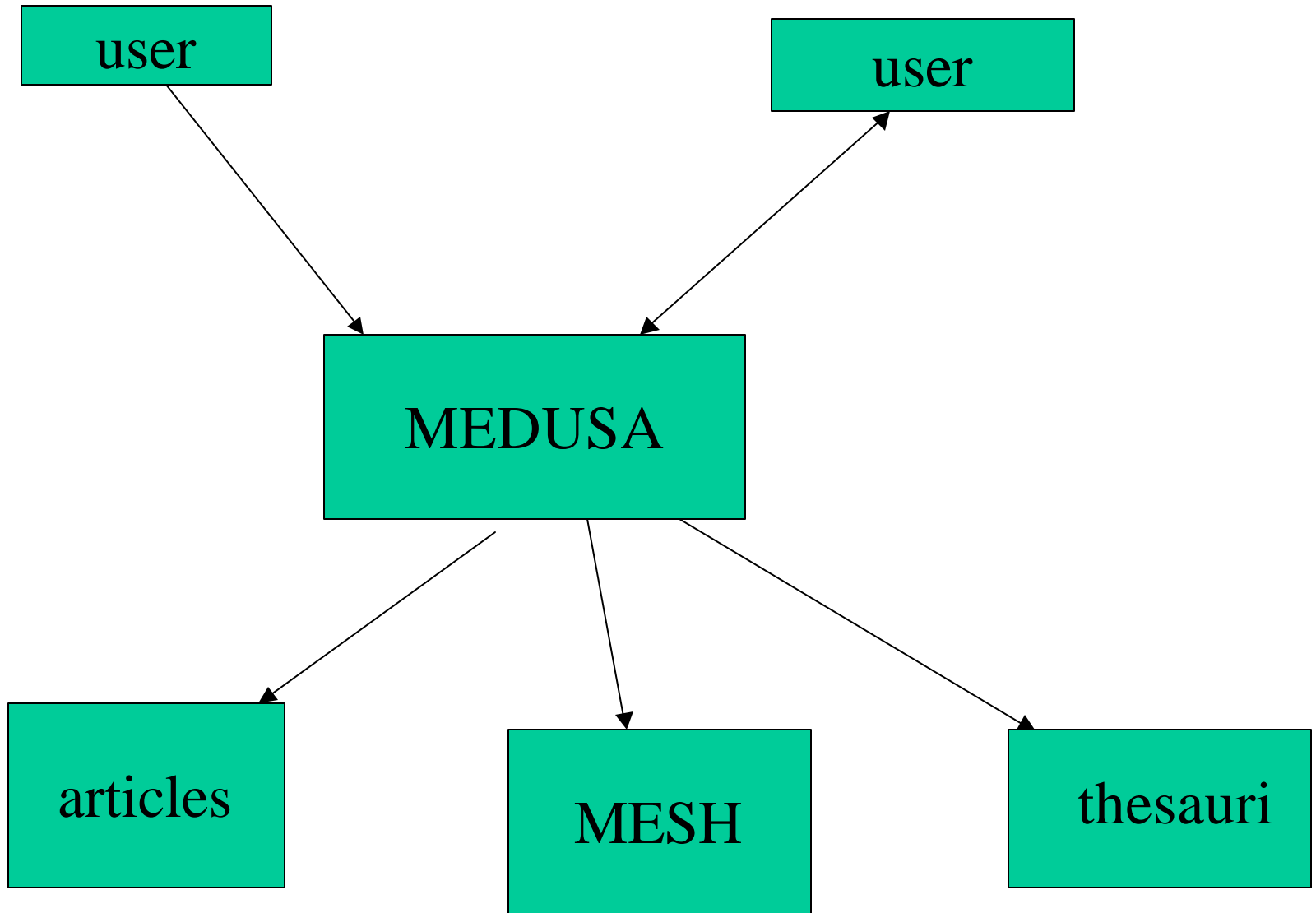


Research projects

- MEDUSA - British Library
- SENSE - Social Science Research Council
- PROTEUS - Science and Engineering Res Council
- ITSE - BT and EPSRC
- DESCRIBE - Ove Arup and EPSRC
- KRAFT - BT and EPSRC
- CONOISE - BT and EPSRC
- SPICE - BBSRC
- GRID - DTI, WDA and EPSRC; EU and PPARC

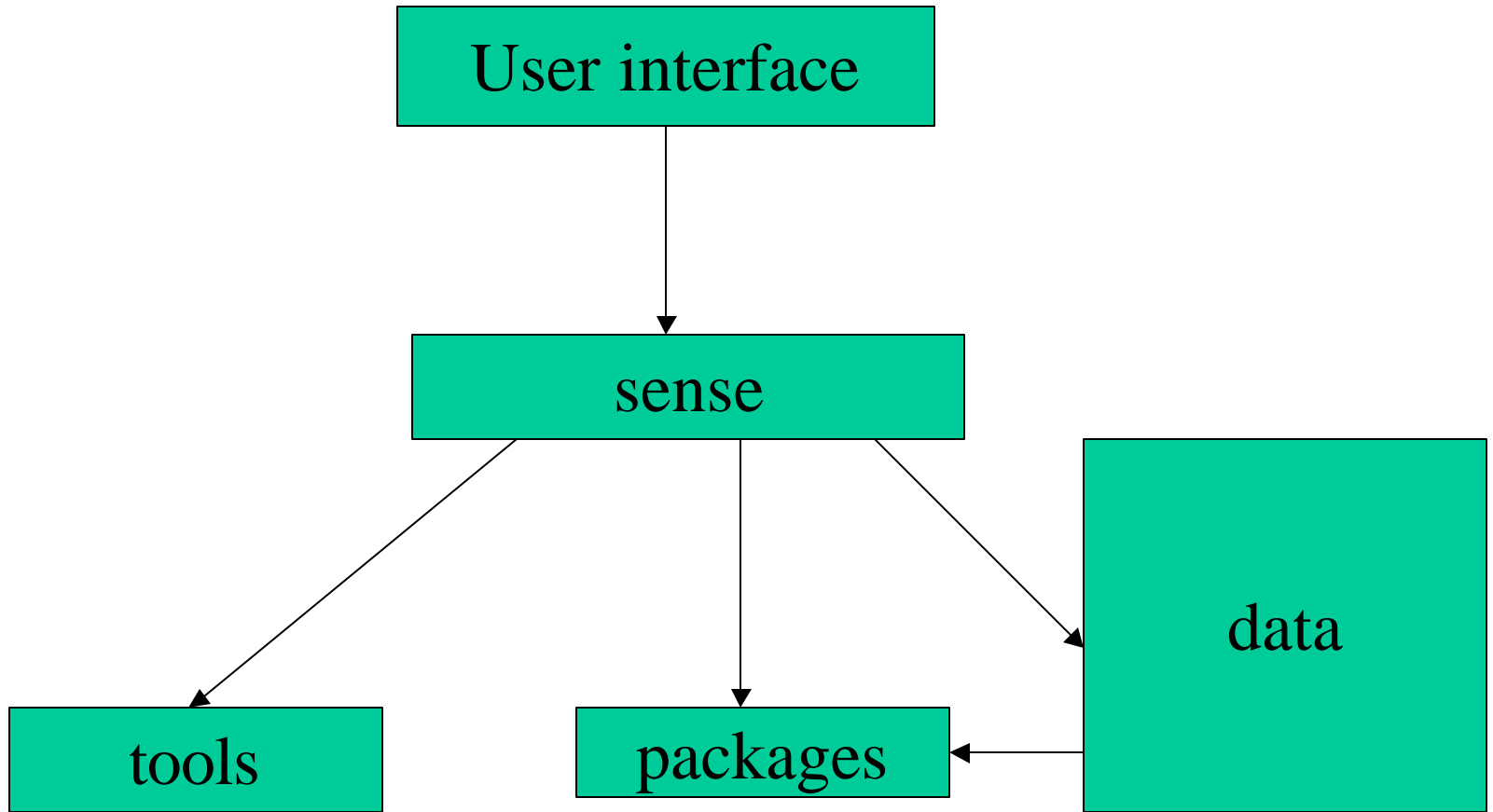
MEDUSA

- Metadata – semantic, structural, representational
- distributed systems
- on-line querying
- embryonic database
- user views –different perspectives



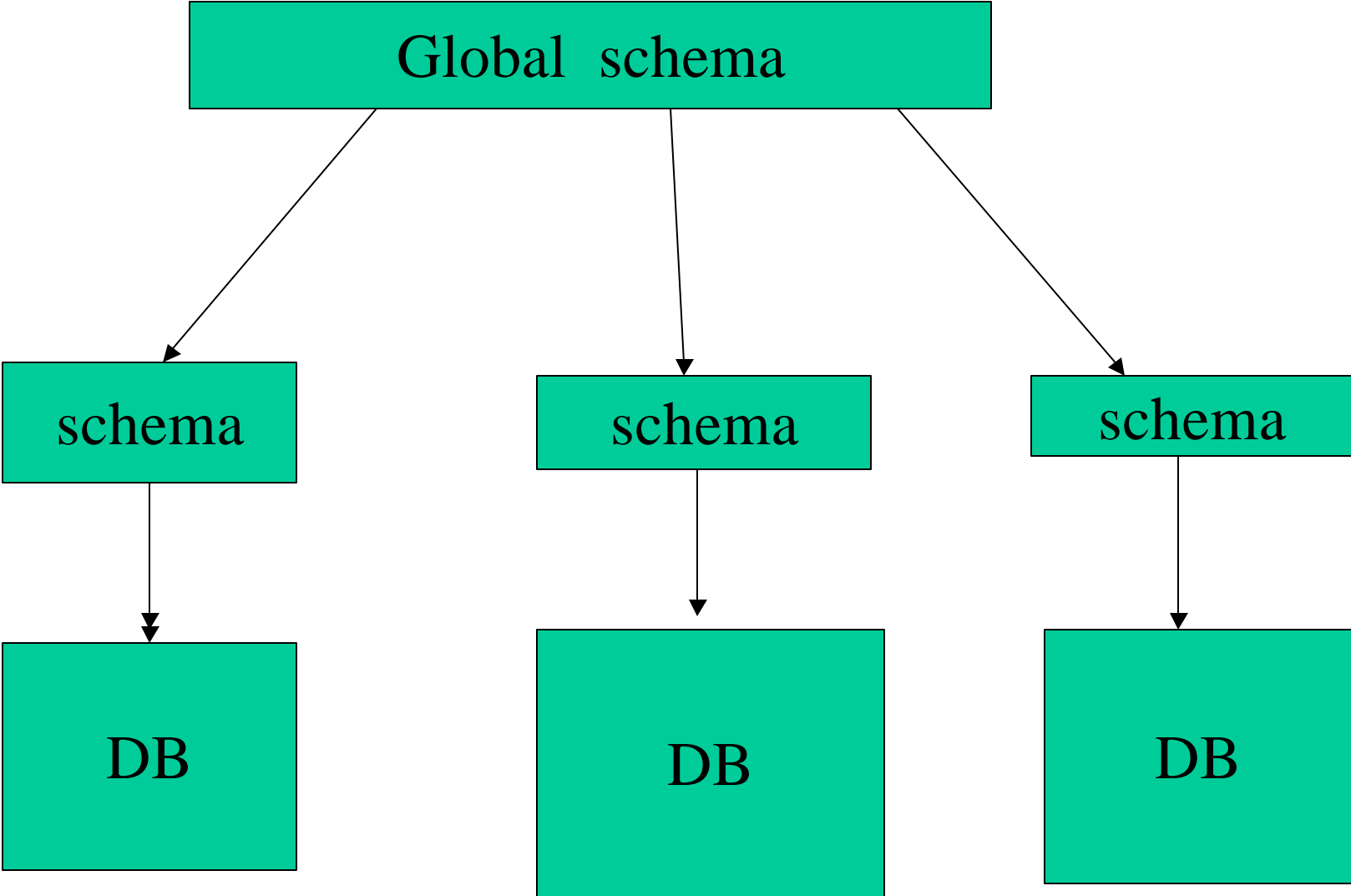
SENSE

- Role of database software
- Problem Solving Environments
- Function meta-data
- data curation
- Software tools
- Secondary analysis
- User views



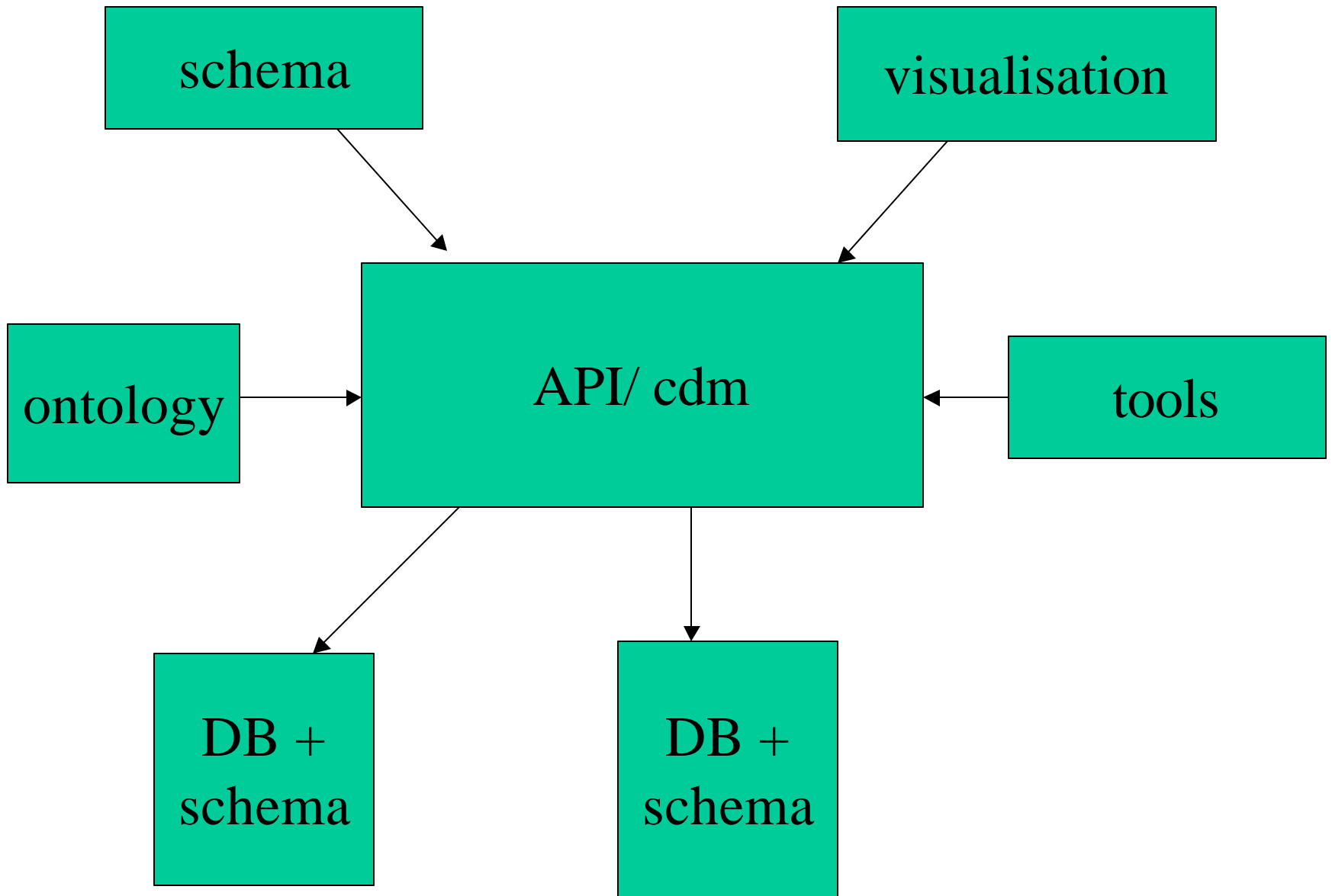
PROTEUS

- distributed databases
- query transformation
- data transformation
- meta-data in query optimisation
- integrating data – single/multiple views
- CDM
- metatranslation
- heterogeneity of representation



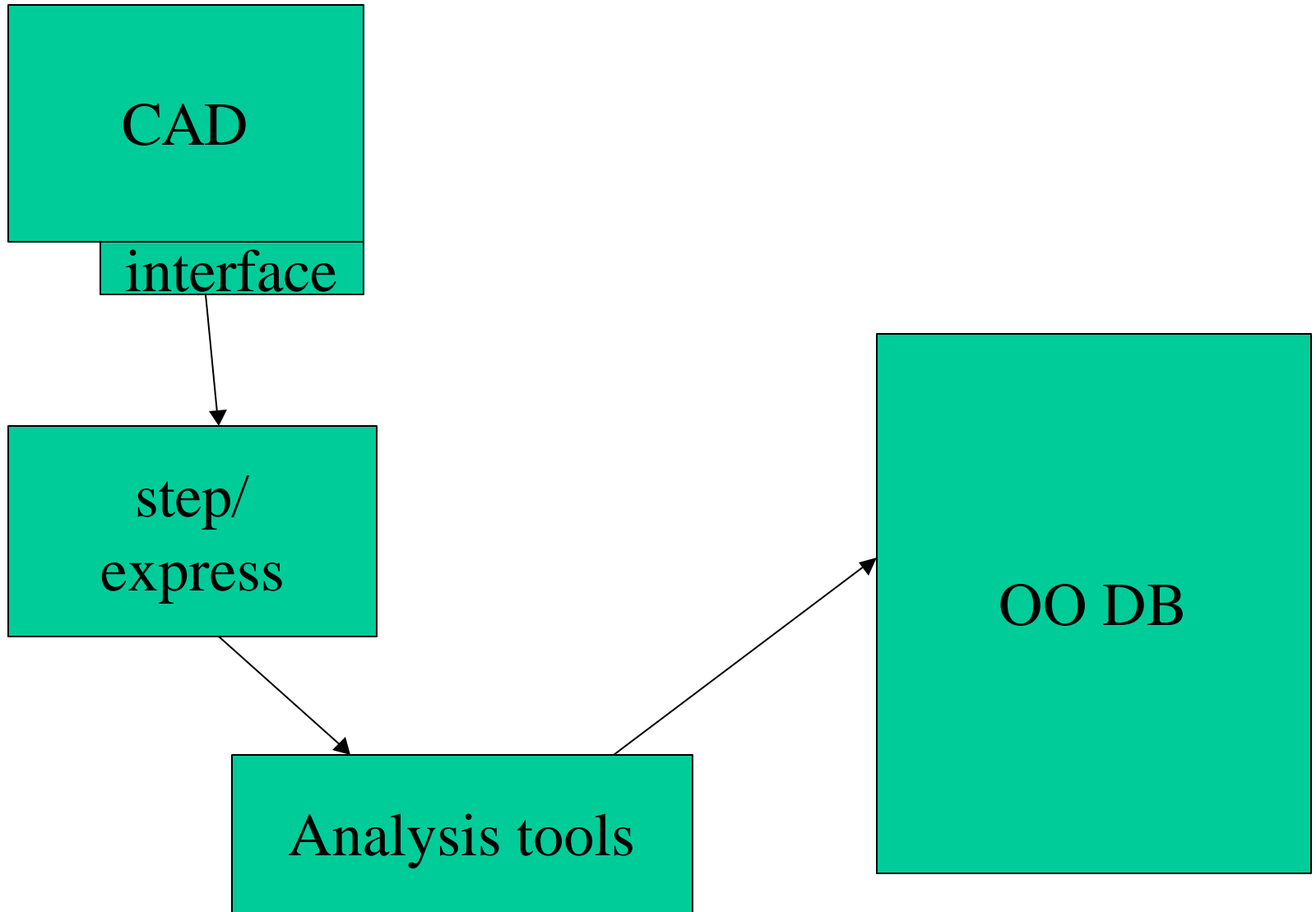
ITSE

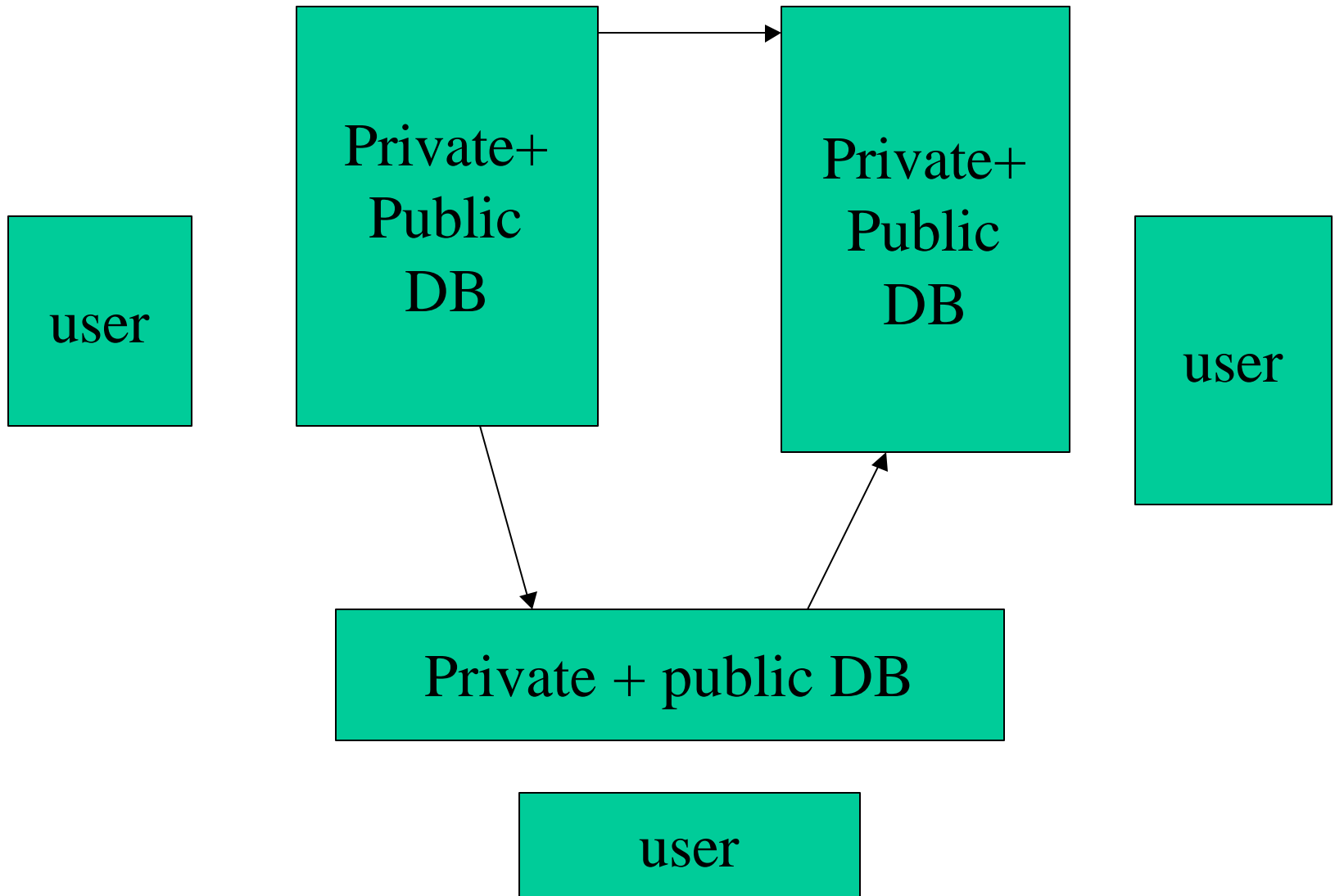
- legacy systems
- reverse engineering
- query development (conceptual model)
- data display
- view support
- local autonomy
- knowledge support
- visualisation



DESCRIBE

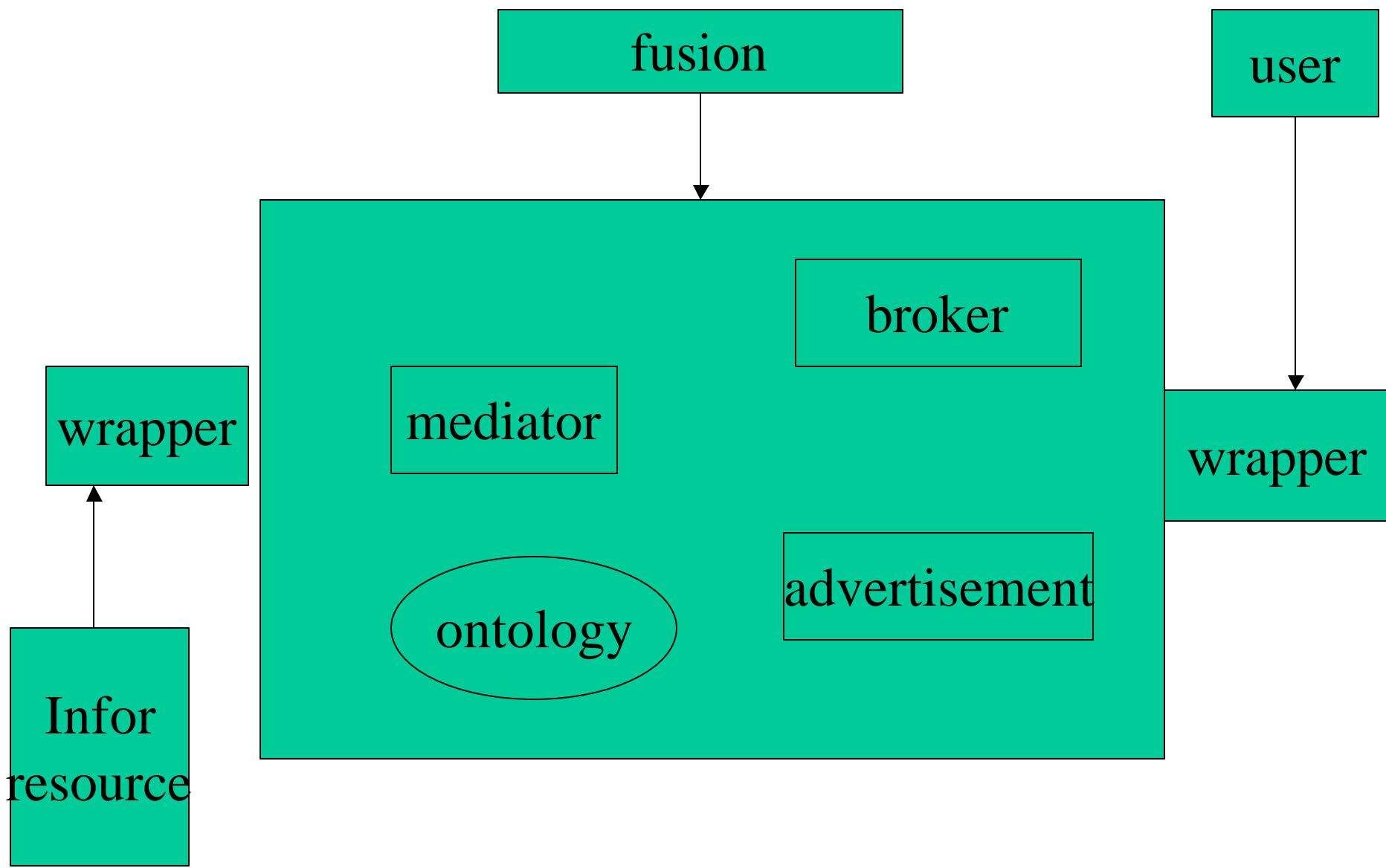
- concurrent engineering
- version support
- configuration management
- design reuse
- communication support
- software environment
- familiar interface
- Interpolation materialisation





KRAFT

- agent environment – brokers, mediators
- advertisement
- ontology versus knowledge base or metadata
- heterogeneity problems
- fusing information
- linking structured and unstructured
- wrappers – CDM +CQL (KIF, KQL, OO)
- external and internal environments

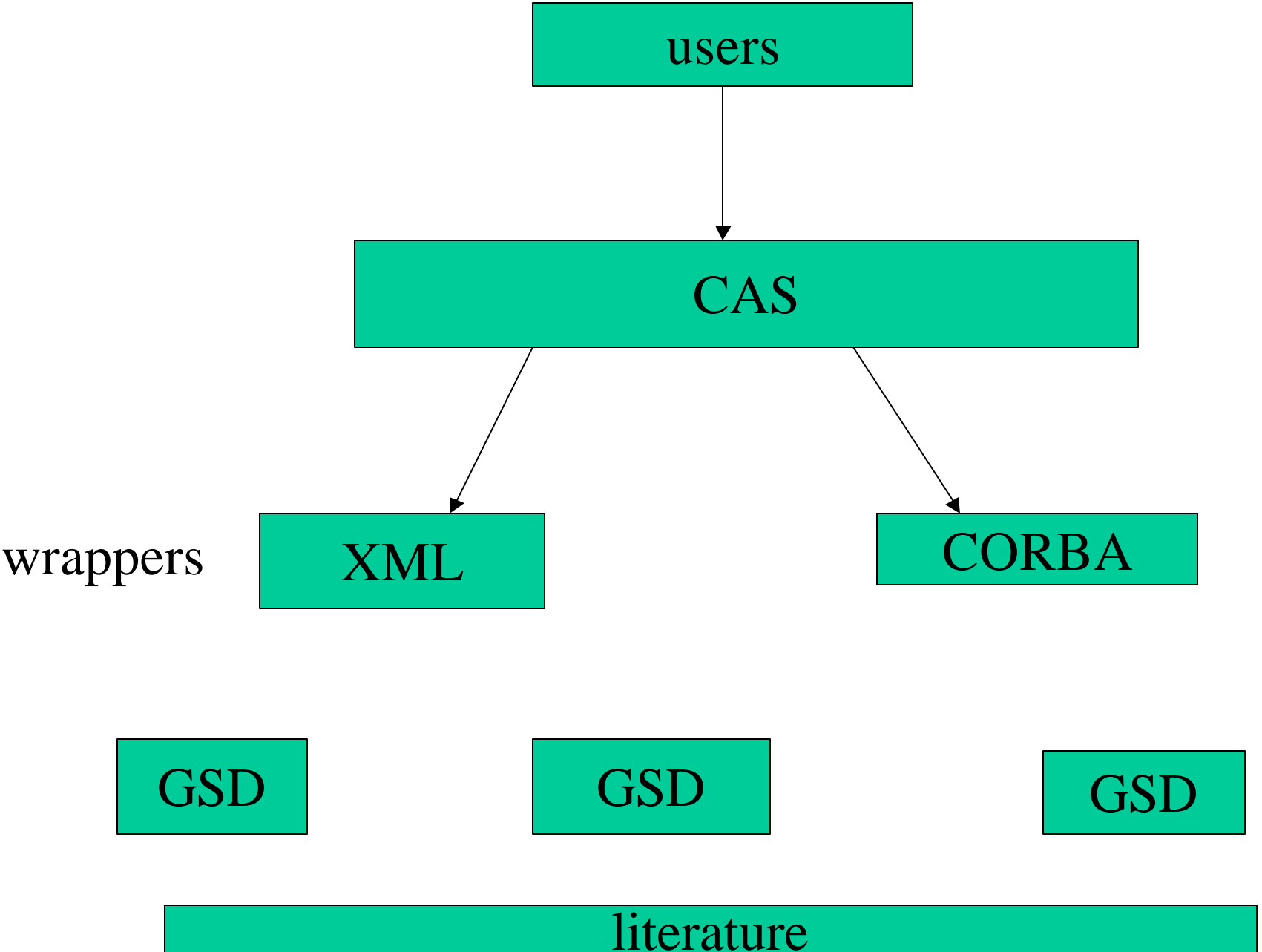


CONOISE

- negotiating agents + consortium
- flexible integration
- information quality
- transformation to common representation
- competing resources
- data curation + provenance
- secondary analysis

SPICE

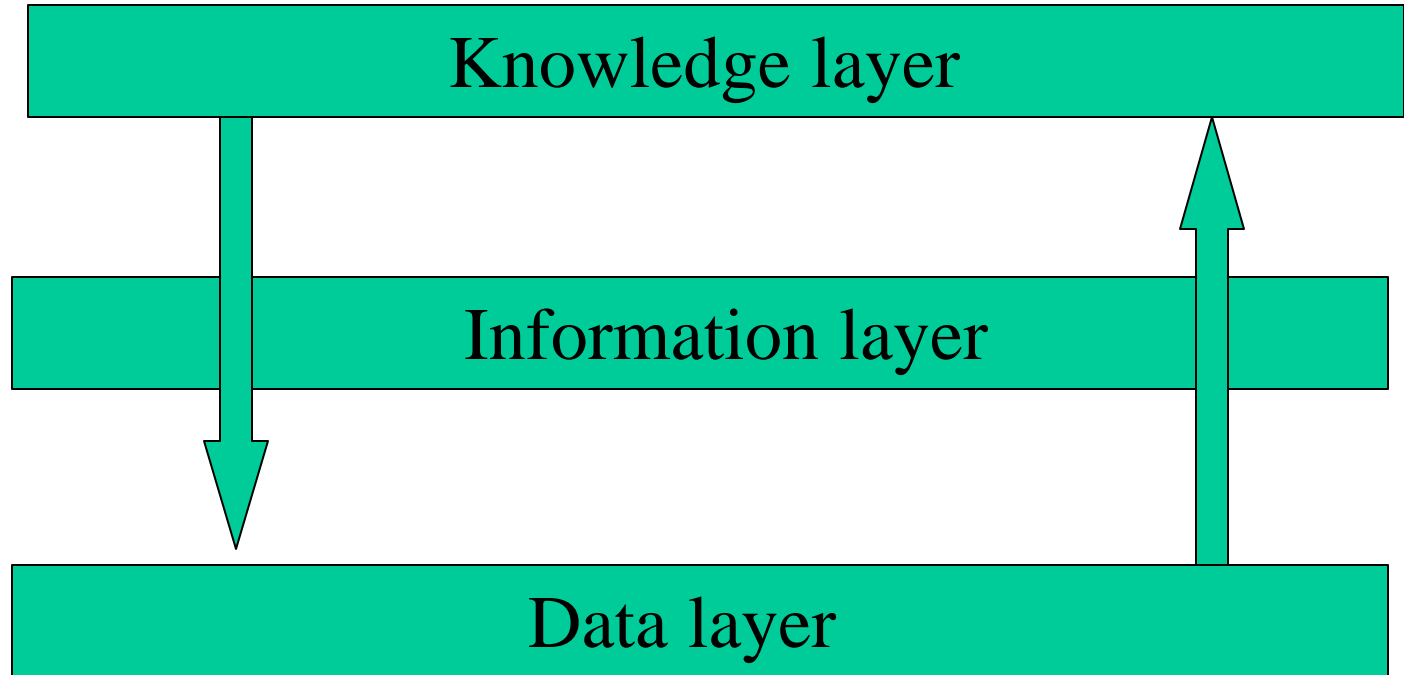
- distributed information sources
- standard middleware
- heterogeneity
- scalability
- local autonomy
- need for common meta-data model
- need for common functions
- resilience breakdown



GRID projects

- Cardiff regional centre
- physics
- environmental
- biodiversity+bioinformatics
- concurrent engineering
- developing GRID architecture
- data flow interfaces

GRID architecture



META-DATA TYPES

- locational
- representational
- quality
- temporal
- structural

THE END