Virtual observatory and Science platforms

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The role of the IVOA

http://www.ivoa.net/

"The Virtual Observatory (VO) is the vision that astronomical datasets and other resources should work as a seamless whole."

"The International Virtual Observatory Alliance (IVOA) is an organisation that debates and agrees the technical standards that are needed to make the VO possible."

W3C defines the HTTP, HTML, XML and CSS standards

Microsoft, Apple, Google, Mozilla and Opera create web browsers.

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So who does write the software ?

We do – each of us creates the tools we need
(and hopefully share them with others)

.. and lots more

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Publishing our data into the VO

Slides from a department meeting in Edinburgh 2014

Access to other people's data from the VO

[our data] + [their data] => [interesting stuff]

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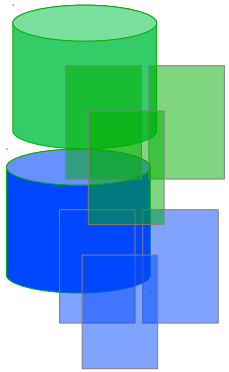
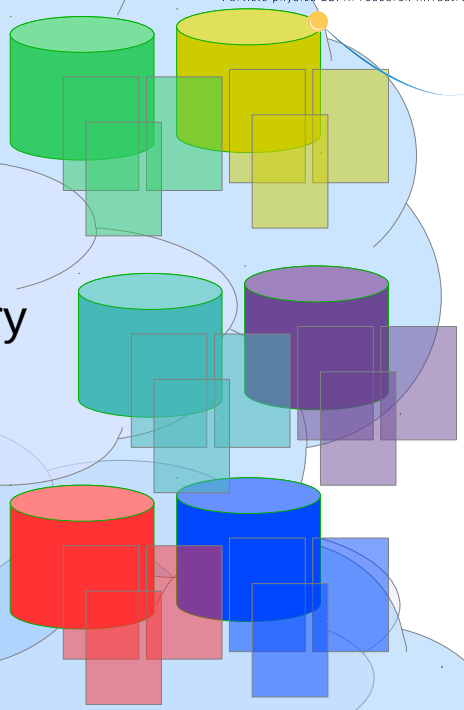
Analyzing our data in the VO



"the cloud"

International Virtual Observatory

http://www.ivoa.net/



Large Synoptic Survey Telescope

IVOA science platform goals in 2019

Access to everyone's data **in** the VO

[our data] + [their data] => [interesting stuff]

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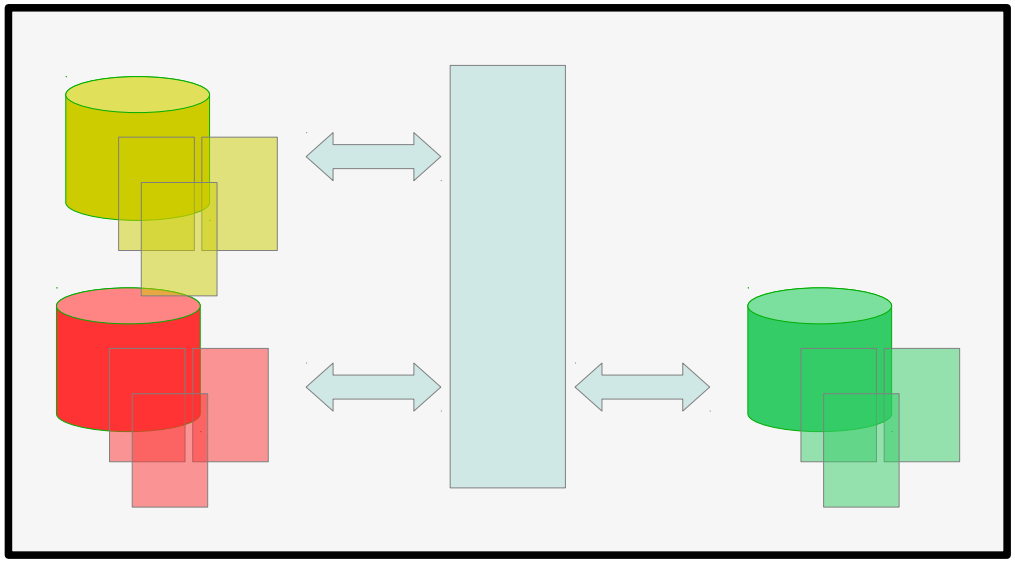
This is where we all start from

Single monolithic platform

- Easy to get started
- Easy to control access at the border



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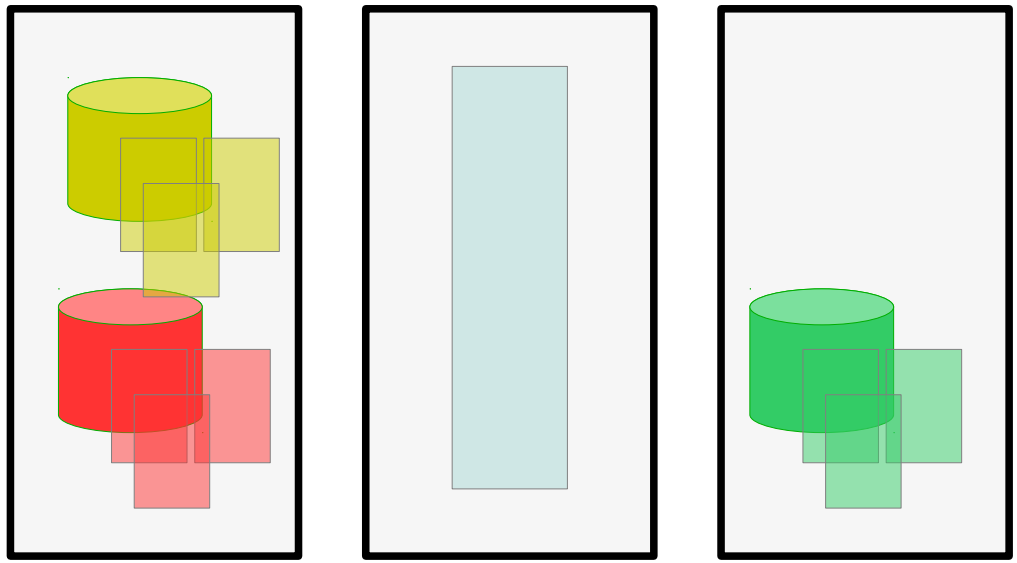
This is the problem we all find in the end

Multiple monolithc platforms

- Multiple different protocols
- Hard to federate the access control



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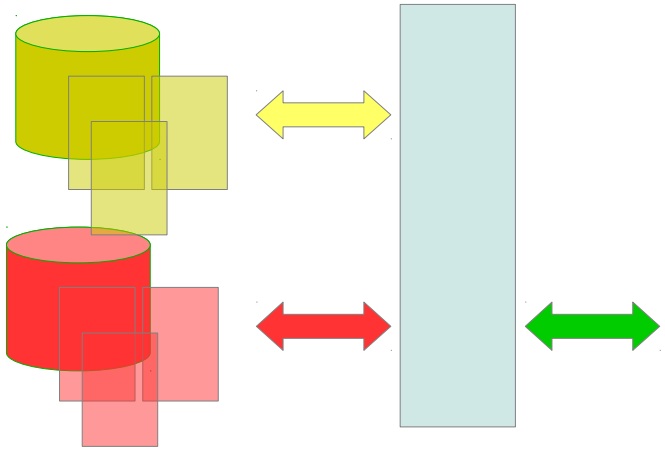
Lessons learned from CADC

Canadian Astronomy
Data Centre

VO protocols for data access – TAP/ADQL

VO protocols for data transfer – VOSpace



Virtual machine images stored on national cloud infrastructure

VO protocols for authentication – SSO/GMS

VO protocols for access control – tbd

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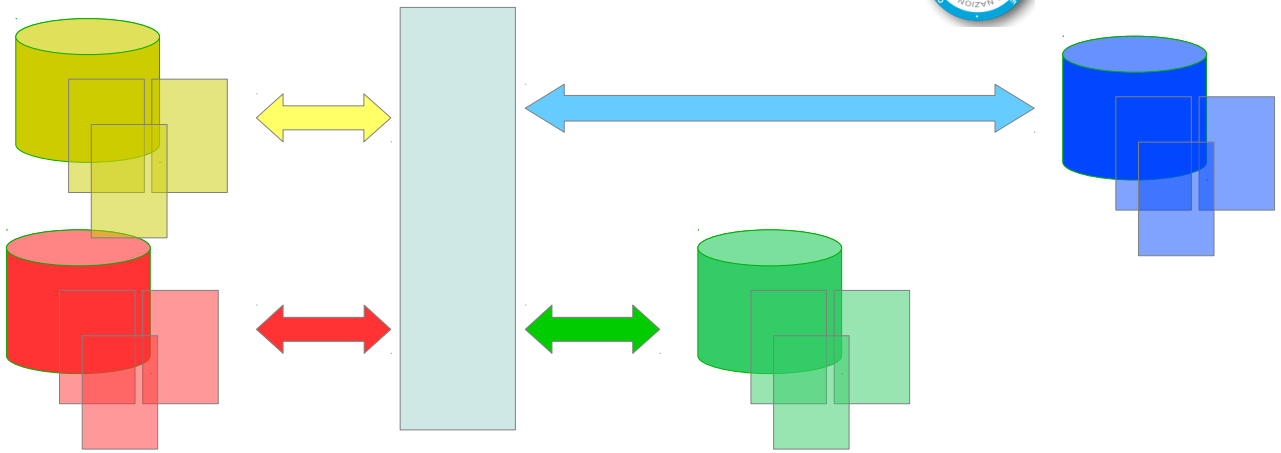
Lessons learned from CADC

Multiple micro-service components

- Access control at the services
- Easier to federate the access control

VOSpace shared data with INAF in Trieste



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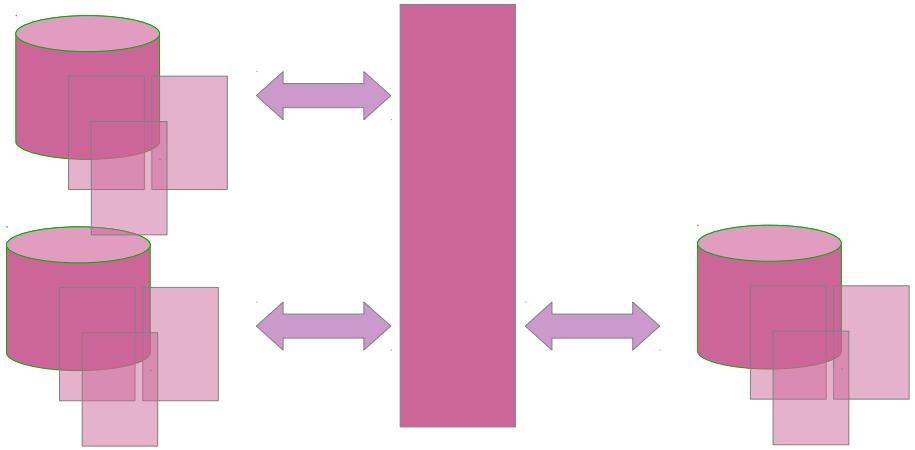
Everyone uses the same software

- Hard to get agreement
- Hard to migrate to new technologies



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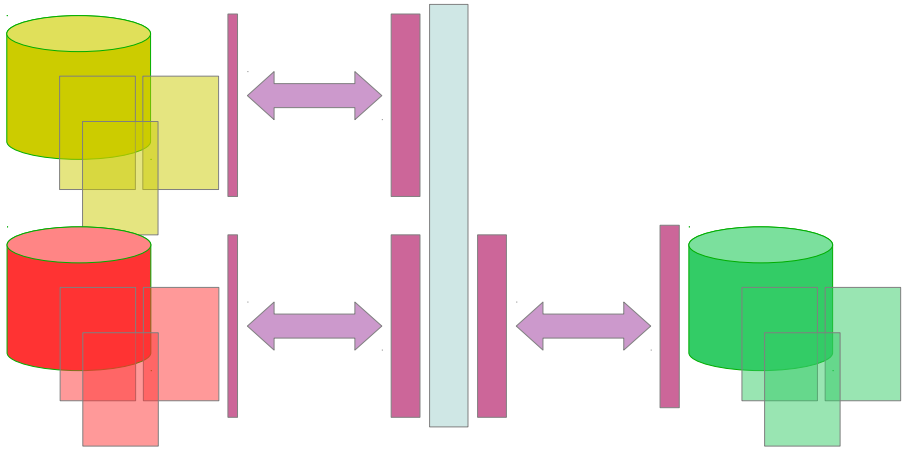
Different software, common interfaces

- Easier to get agreement
- Easier to integrate new components



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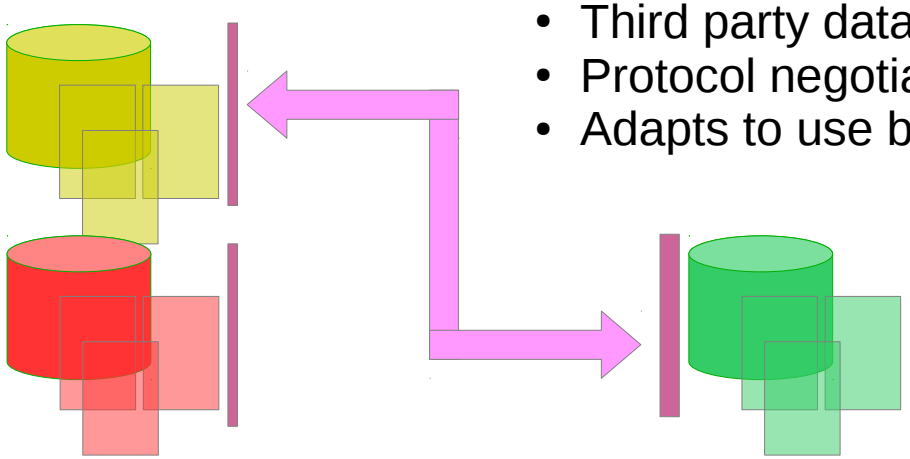
Different software, common interfaces

- Example VOSpace – thin abstraction layer overlaid on top of existing transport infrastructure



- Third party data transfer
- Protocol negotiated by the services
- Adapts to use best protocols available

- End user doesn't need to know any of the details

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IVOA has some solutions, but
we don't have all the solutions

We need your solutions as well

Propose your solutions as IVOA standards
and others will help to develop them

If you want to go fast, go alone.
If you want to go far, go together.

- Wikiquote Quote of the day 2007/10/14

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