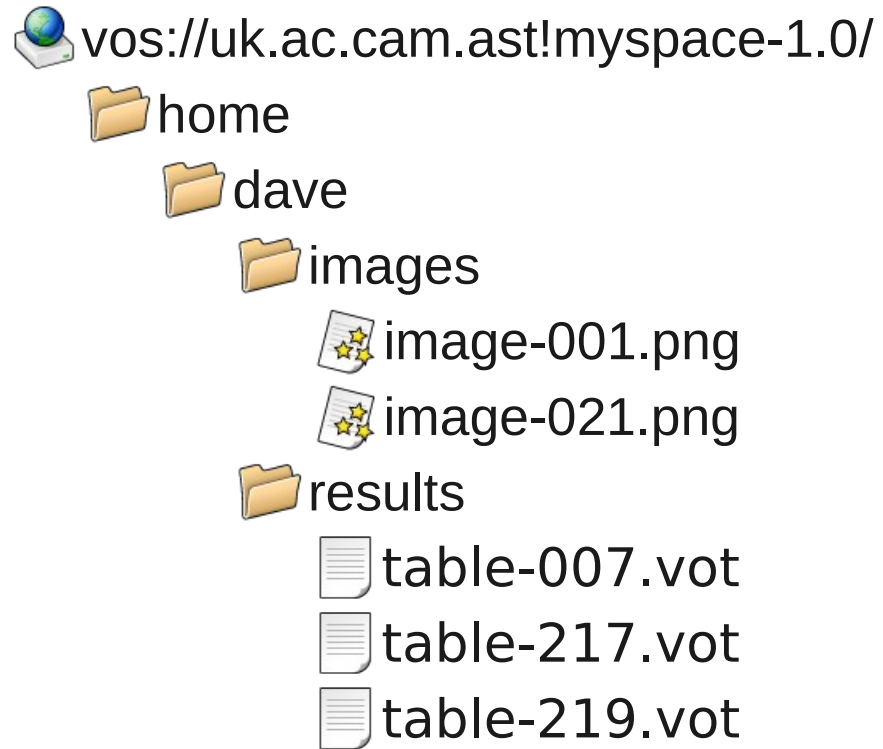


# Implementing VOspace 1.x

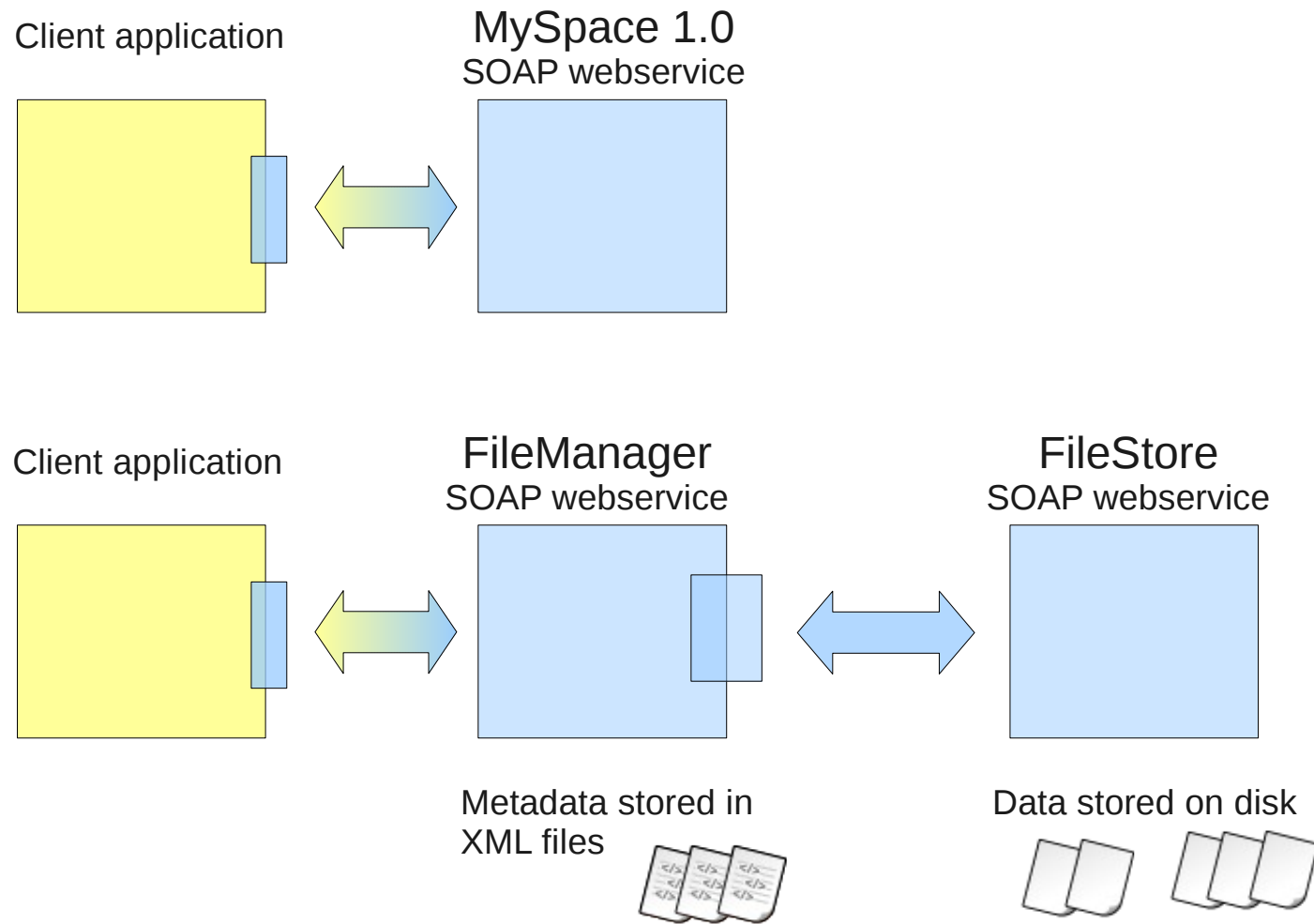
Dave Morris  
AstroGrid,  
IoA Cambridge

# AstroGrid MySpace 1.0



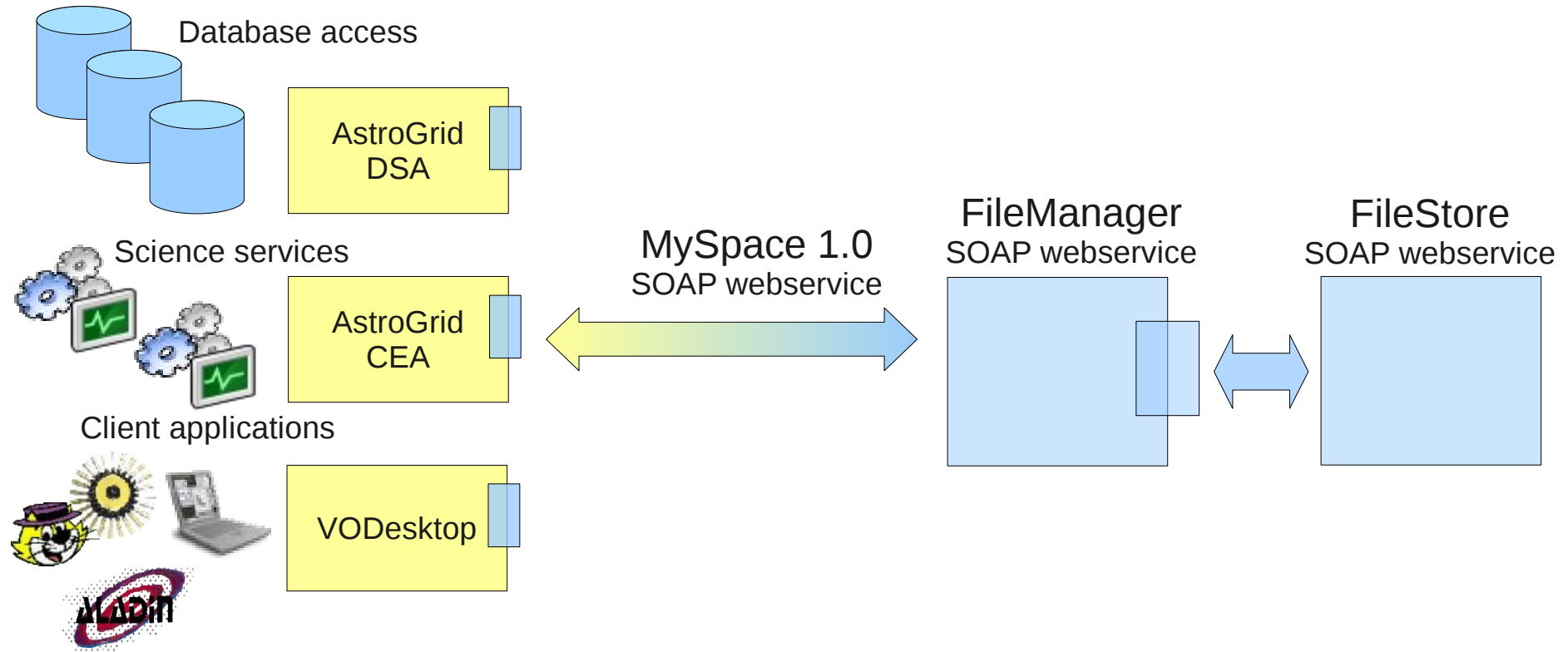
- Containers
- Hierarchical space within each service

# AstroGrid MySpace 1.0



- Implemented as two separate web services

# AstroGrid MySpace 2005



- Live services in operation since 2005

# IVOA VOSpace 1.0

 <vos://uk.ac.cam.ast!vospace-1.0/>

 image-001.png

 image-021.png

 table-007.vot

 table-217.vot

 table-219.vot

- ★ Support for more than one protocol
- Support for more than one view
- Asynchronous 3<sup>rd</sup> party transfers
  
- IVOA standard in 2007



*International  
Virtual  
Observatory  
Alliance*

**VOSpace service specification**

**Version 1.02**  
**IVOA Proposed Recommendation 2007**  
**September 07**

**This version:**  
<http://www.ivoa.net/Documents/PR/GWS/VOSpace-20070907.pdf>

**Latest version:**  
<http://www.ivoa.net/Documents/latest/VOSpace.html>

**Previous version(s):**

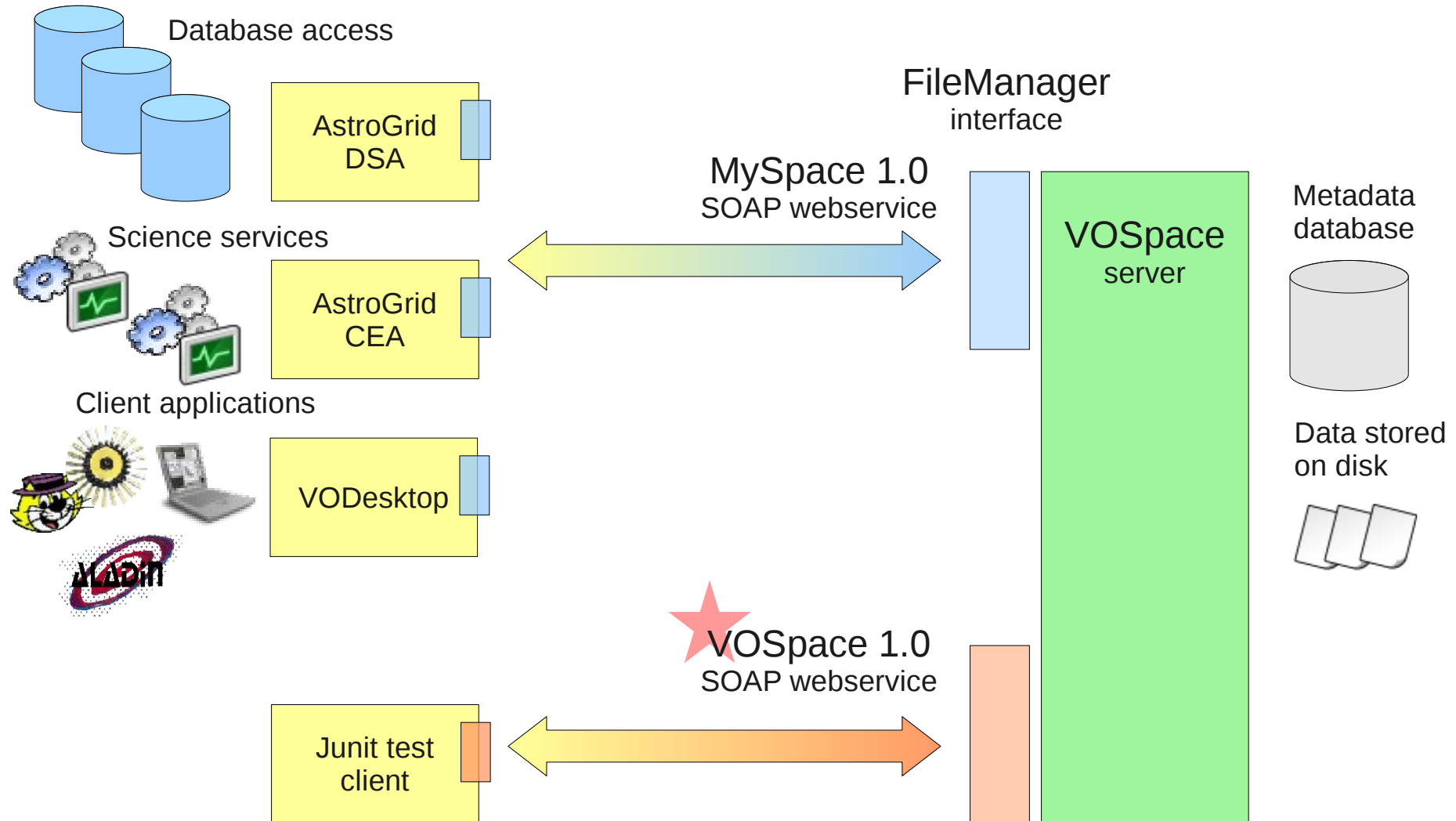
PR 1.01	<a href="http://www.ivoa.net/Documents/PR/GWS/VOSpace-20070723.pdf">http://www.ivoa.net/Documents/PR/GWS/VOSpace-20070723.pdf</a>
PR 1.0	<a href="http://www.ivoa.net/Documents/PR/GWS/VOSpace-20070626.pdf">http://www.ivoa.net/Documents/PR/GWS/VOSpace-20070626.pdf</a>
WD 1.0	<a href="http://www.ivoa.net/Documents/WD/GWS/VOSpace-20070304.pdf">http://www.ivoa.net/Documents/WD/GWS/VOSpace-20070304.pdf</a>
0.21	<a href="http://www.ivoa.net/intermal/IVOA/IvoaGridAndWebServices/vospace-0.21.doc">http://www.ivoa.net/intermal/IVOA/IvoaGridAndWebServices/vospace-0.21.doc</a>
0.20	<a href="http://www.ivoa.net/intermal/IVOA/IvoaGridAndWebServices/vospace-0.20.doc">http://www.ivoa.net/intermal/IVOA/IvoaGridAndWebServices/vospace-0.20.doc</a>
0.19	<a href="http://www.ivoa.net/intermal/IVOA/IvoaGridAndWebServices/vospace-0.19.doc">http://www.ivoa.net/intermal/IVOA/IvoaGridAndWebServices/vospace-0.19.doc</a>
0.18	<a href="http://www.ivoa.net/intermal/IVOA/IvoaGridAndWebServices/VOSStore0_18.pdf">http://www.ivoa.net/intermal/IVOA/IvoaGridAndWebServices/VOSStore0_18.pdf</a>
0.17	<a href="http://www.ivoa.net/intermal/IVOA/IvoaGridAndWebServices/VOSStore0_17.pdf">http://www.ivoa.net/intermal/IVOA/IvoaGridAndWebServices/VOSStore0_17.pdf</a>
0.15	<a href="http://www.ivoa.net/intermal/IVOA/IvoaGridAndWebServices/VOSStore0_14.pdf">http://www.ivoa.net/intermal/IVOA/IvoaGridAndWebServices/VOSStore0_14.pdf</a>
0.13	<a href="http://www.ivoa.net/intermal/IVOA/IvoaGridAndWebServices/VOSStore0_13.pdf">http://www.ivoa.net/intermal/IVOA/IvoaGridAndWebServices/VOSStore0_13.pdf</a>

**Author(s):**  
Matthew Graham (editor for this version)  
Paul Harrison  
Dave Morris  
Guy Rixon

**Abstract**

VOSpace is a SOAP interface for access to data stores.  
This version applies the VOSpace concept to flat, unconnected data spaces.  
Future versions of the specification will add extensions to support a hierarchical structure and links between the individual space services.

# AstroGrid VOSpace 2007



- In development 2007
  - VOSpace 1.0 service

# IVOA VOSpace 1.1

 vos://uk.ac.cam.ast!vospace-1.1/

 home

 dave

 images


 image-001.png

 image-021.png

 image-021.png

vos://uk.ac.roe!vospace-1.1/images/ima

- ★ Containers
- Hierarchical space within each service
- Links to objects in other services
- Working draft in May 2008



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## VOSpace service specification

### Version 1.10

IVOA Working Draft 2008 March 11

**This version:**  
<http://www.ivoa.net/Documents/WD/GWS/VOSpace-20080311.doc>

**Latest version:**  
<http://www.ivoa.net/Documents/latest/VOSpace.html>

**Previous version(s):**  
REC 1.02 <http://www.ivoa.net/Documents/REC/GWS/VOSpace-20080124.pdf>

**Author(s):**  
Matthew Graham  
Dave Morris  
Guy Rixon

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### Abstract

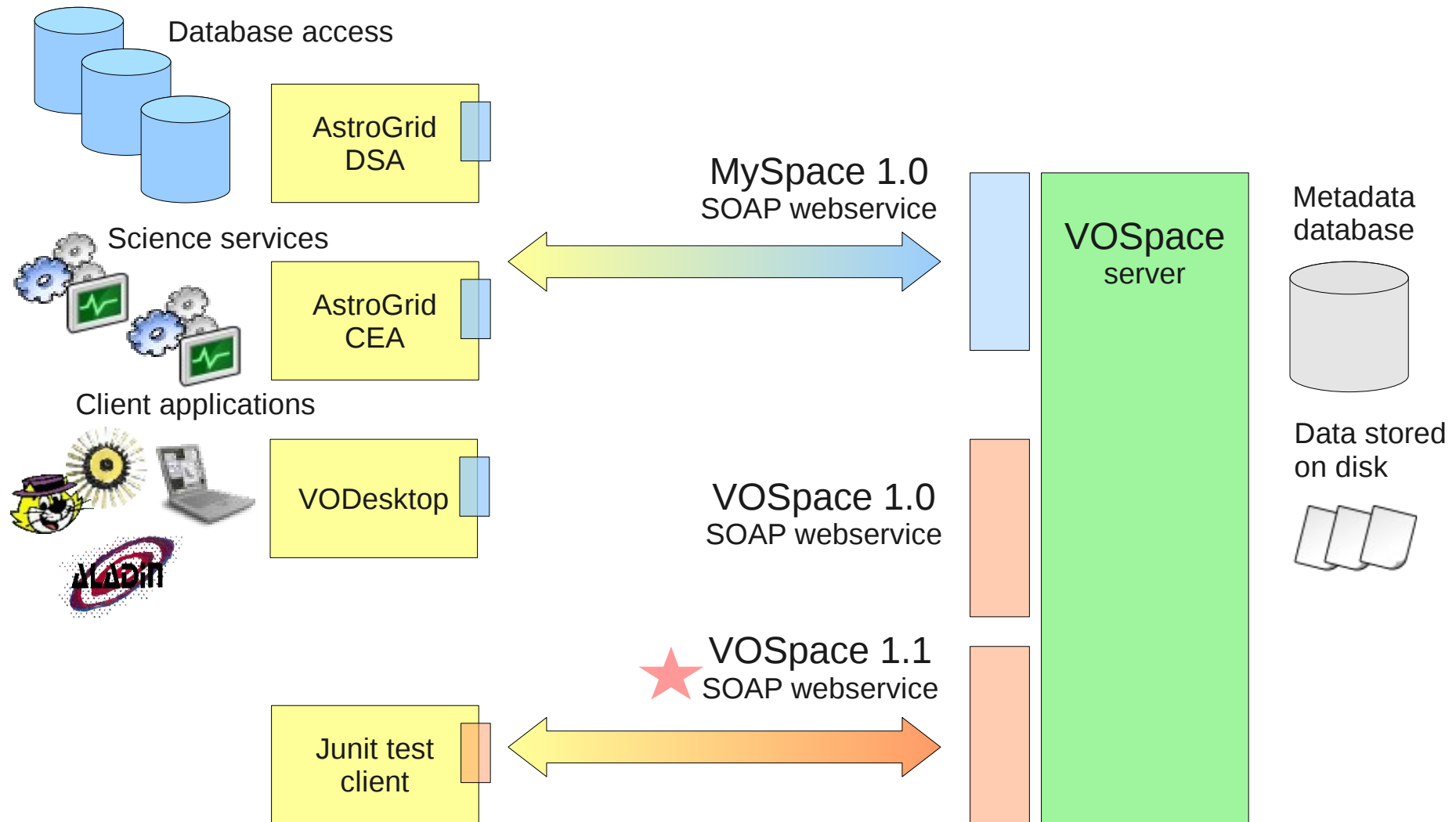
VOSpace is the IVOA interface to distributed storage. This version extends the existing VOSpace 1.0 specification to support containers, links between individual VOSpace instances, third party APIs, and a find mechanism.

### Status of This Document

This is an IVOA Working Draft. The first release of this document was 2008 March 11.

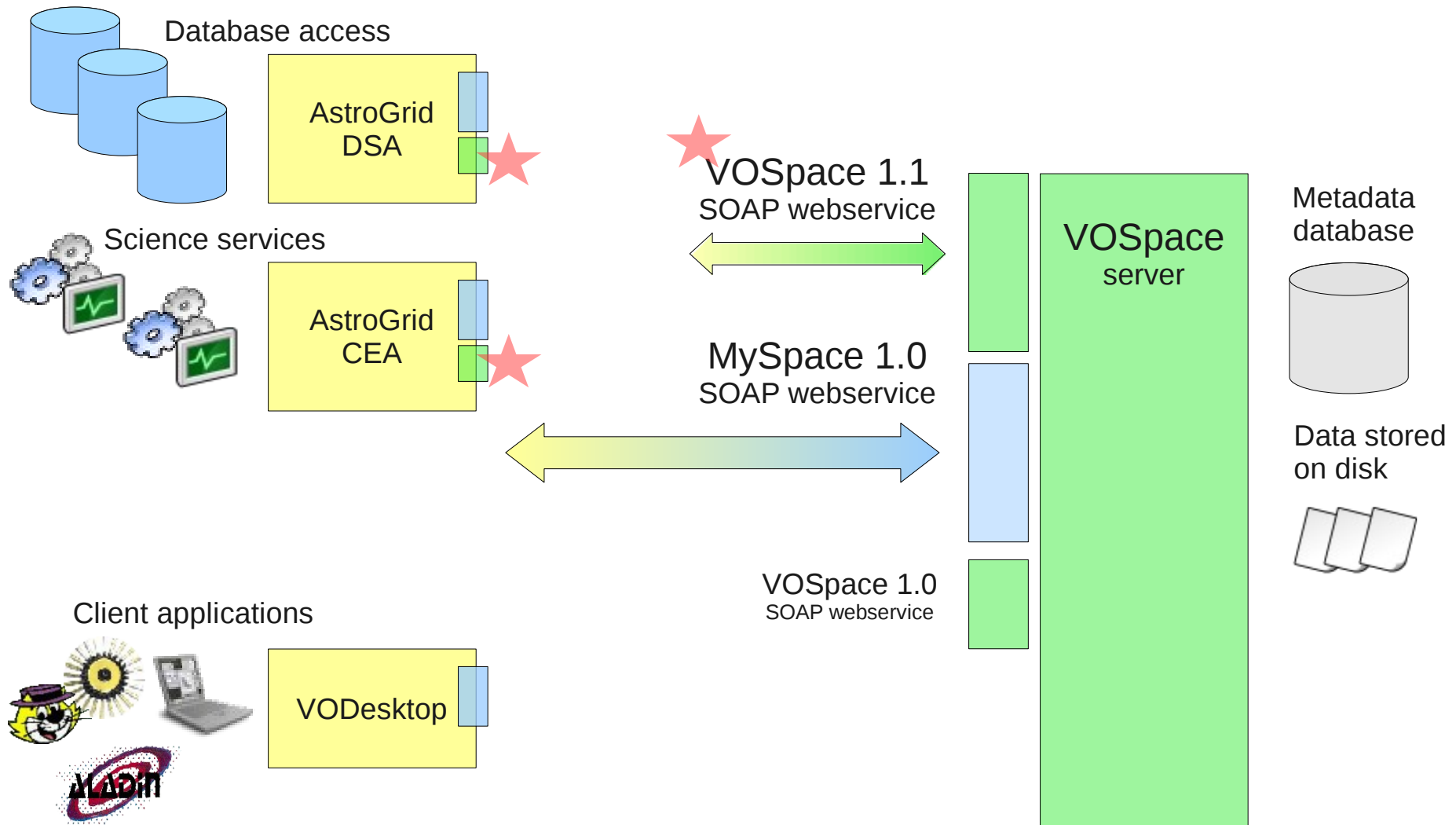
*This is an IVOA Working Draft for review by IVOA members and other interested parties. It is a draft document and may be updated, replaced, or obsoleted by*

# AstroGrid VOSpace 2008



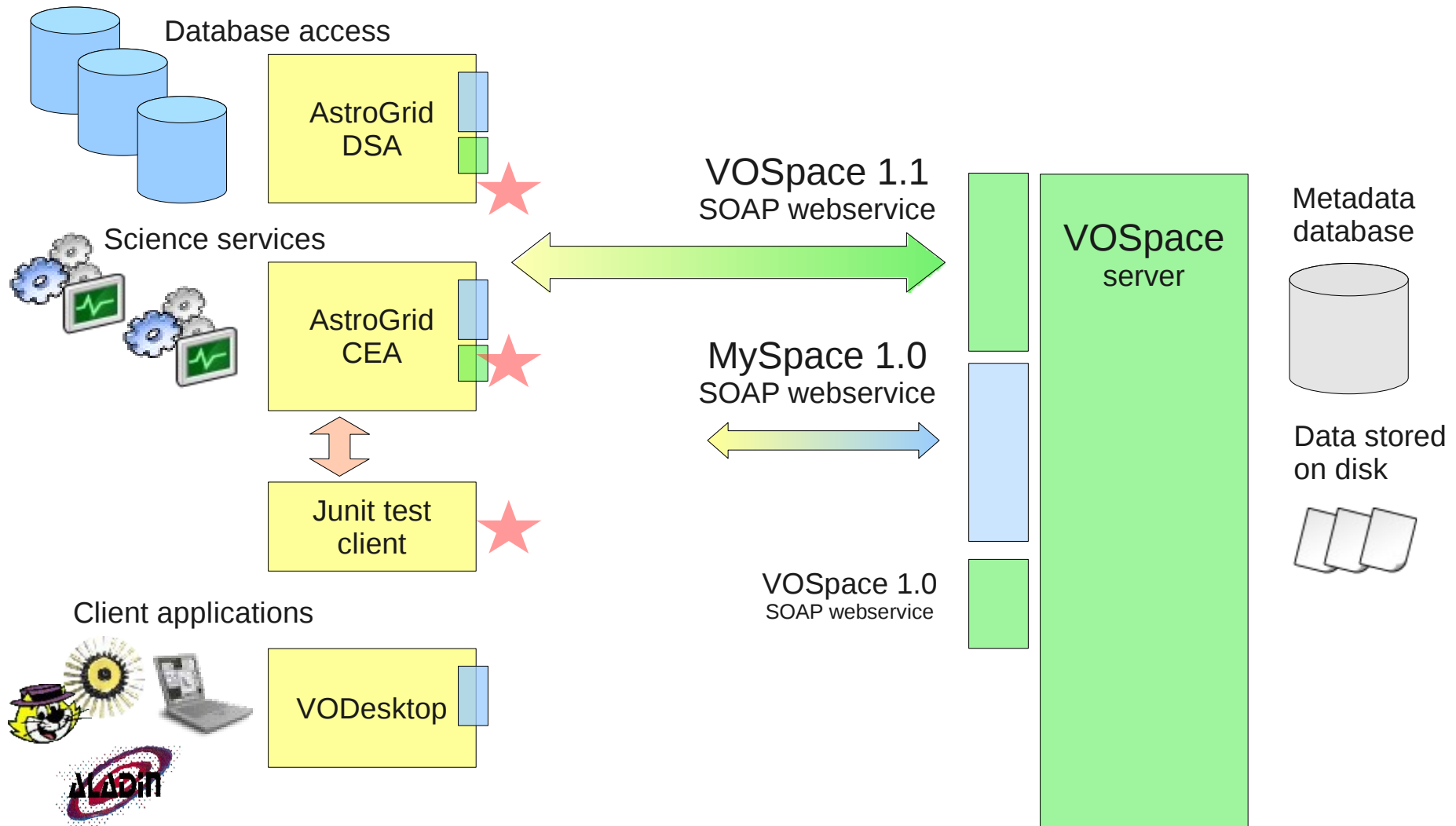
- In operation early 2008
  - VOSpace 1.1 service

# AstroGrid VOSpace 2008



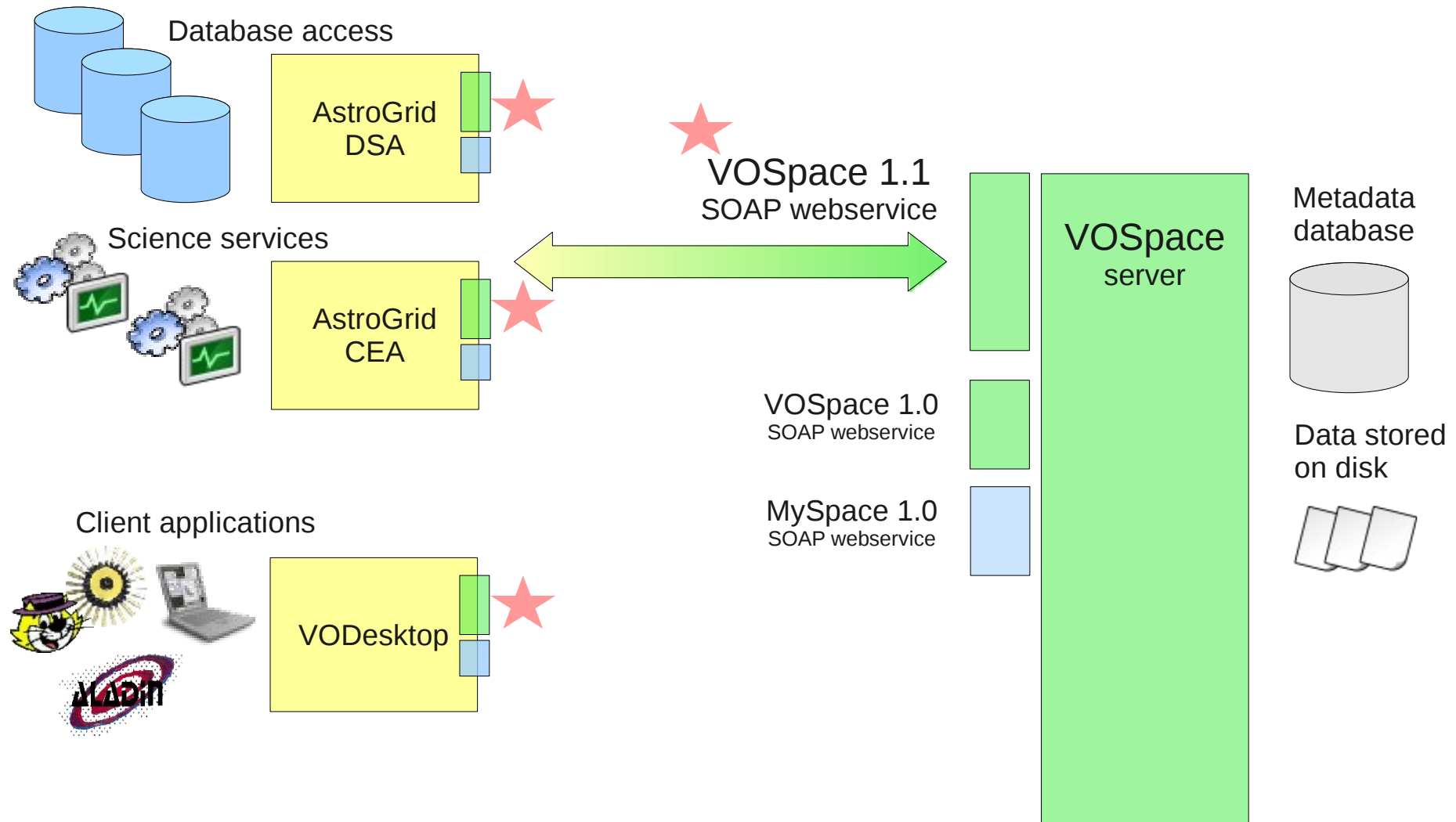
- Current state, September 2008
  - Primary protocol is still MySpace 1.0

# AstroGrid VOSpace 2008



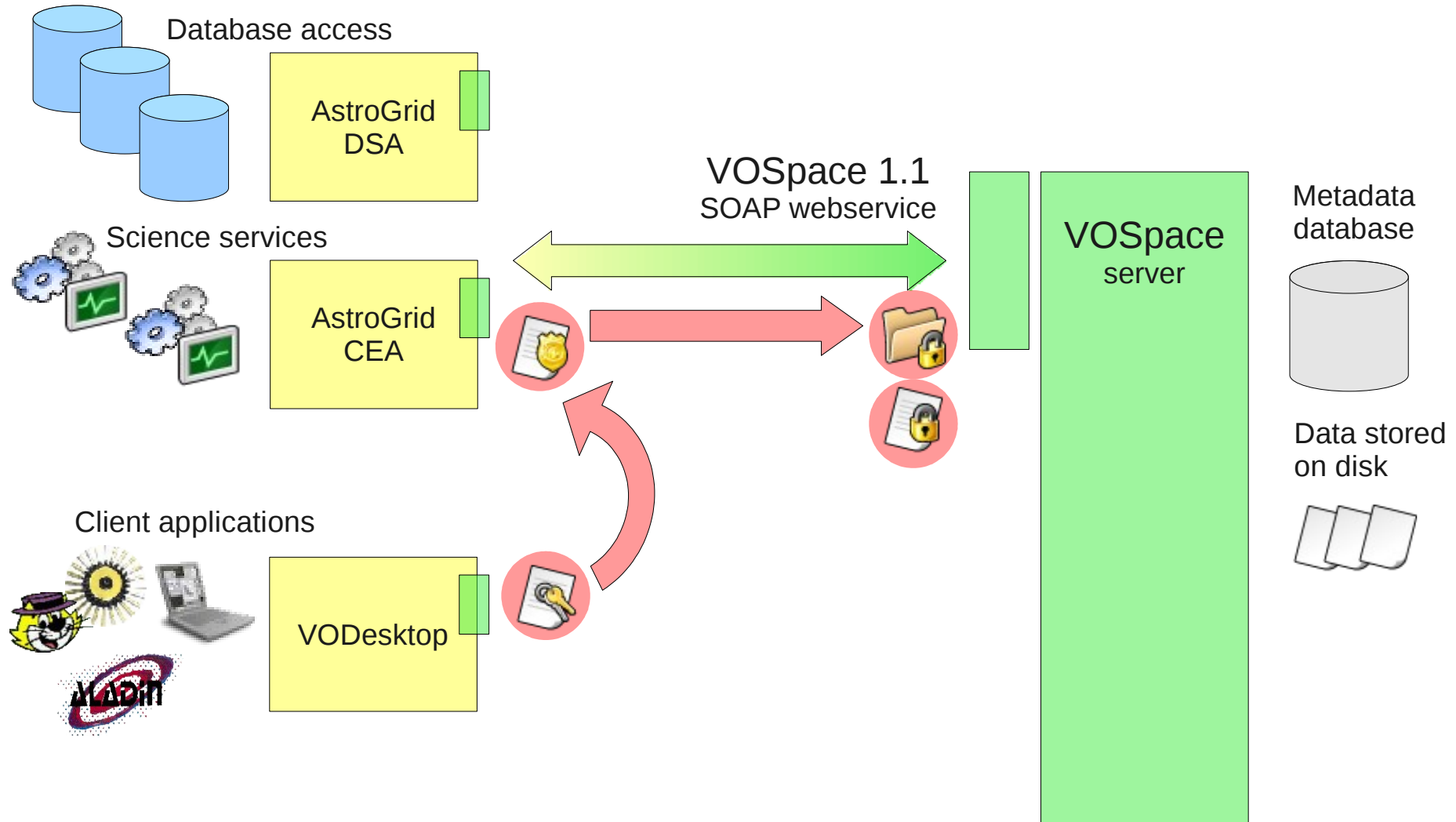
- In testing, September 2008
  - CEA and DSA capable of reading and writing to VOSpace 1.1

# AstroGrid VOSpace 2009



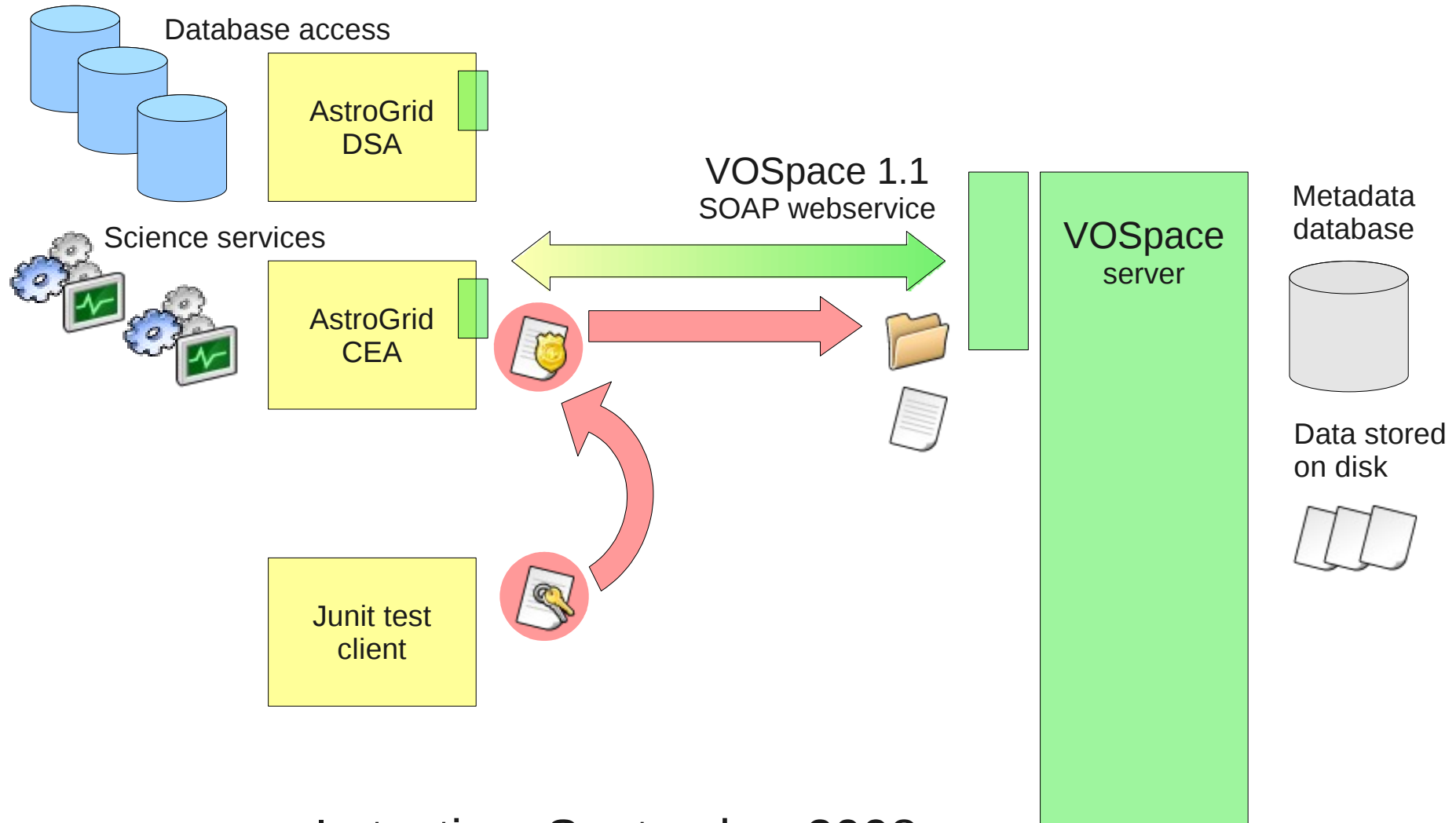
- Target for early 2009
  - All components capable of reading and writing to VOSpace 1.1

# IVOA SSO delegation



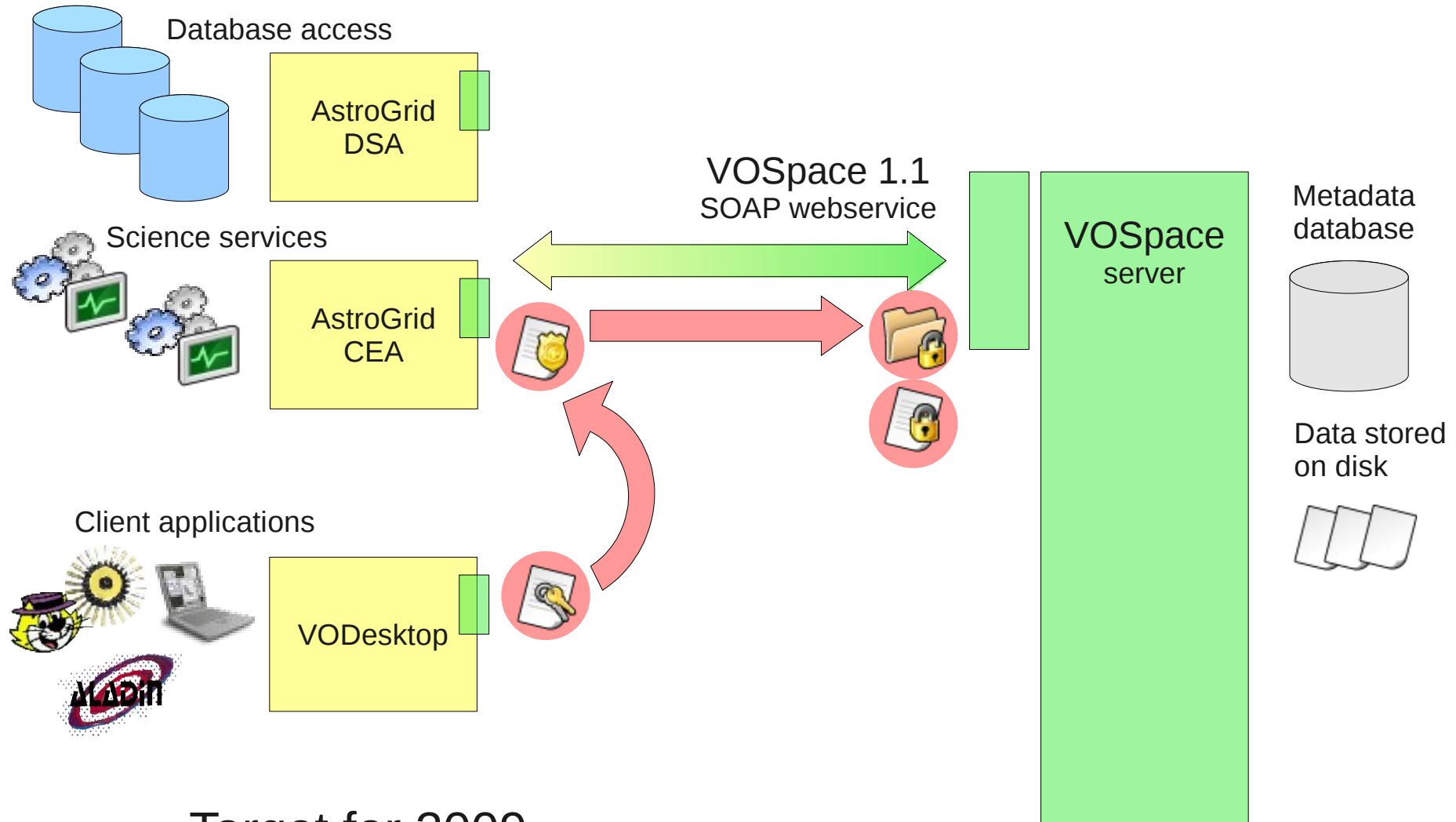
- IVOA delegation protocol
  - Secure access to VOSpace

# IVOA SSO delegation



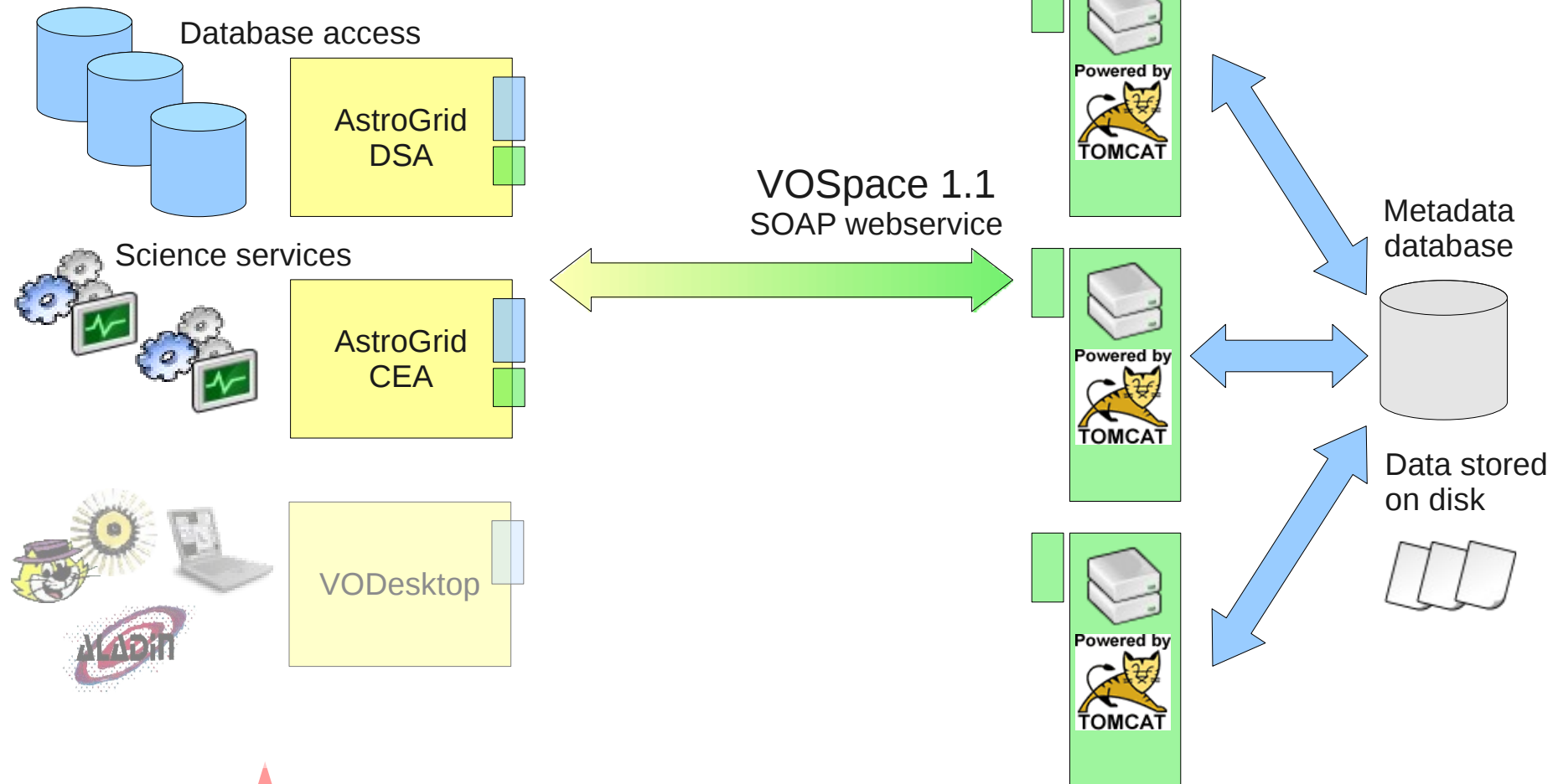
- In testing, September 2008
  - CEA and DSA capable of using delegated certificate

# AstroGrid VOSpace 2009



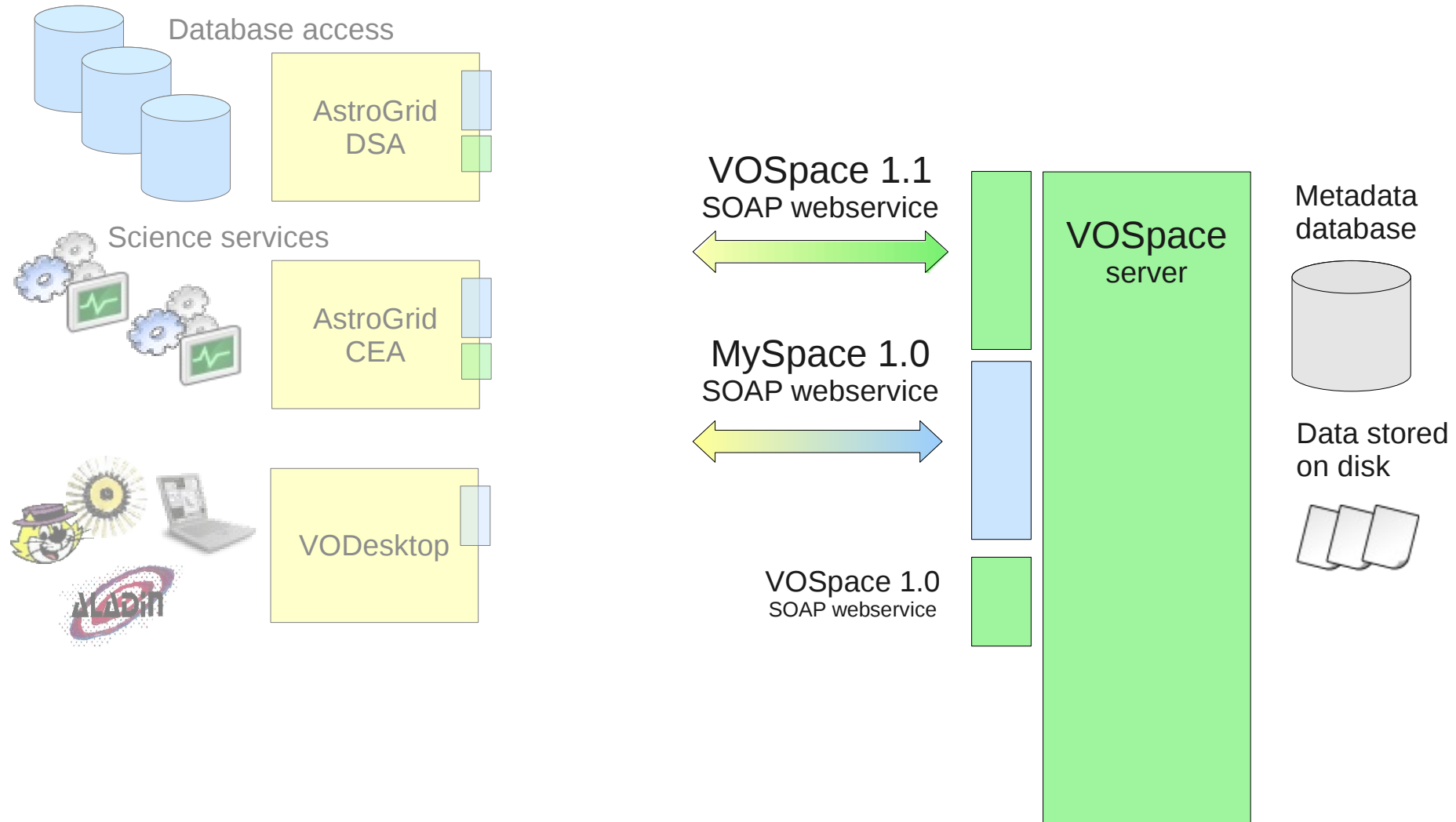
- Target for 2009
- Secure access to VOSpace 1.1

# AstroGrid VOSpace 2008



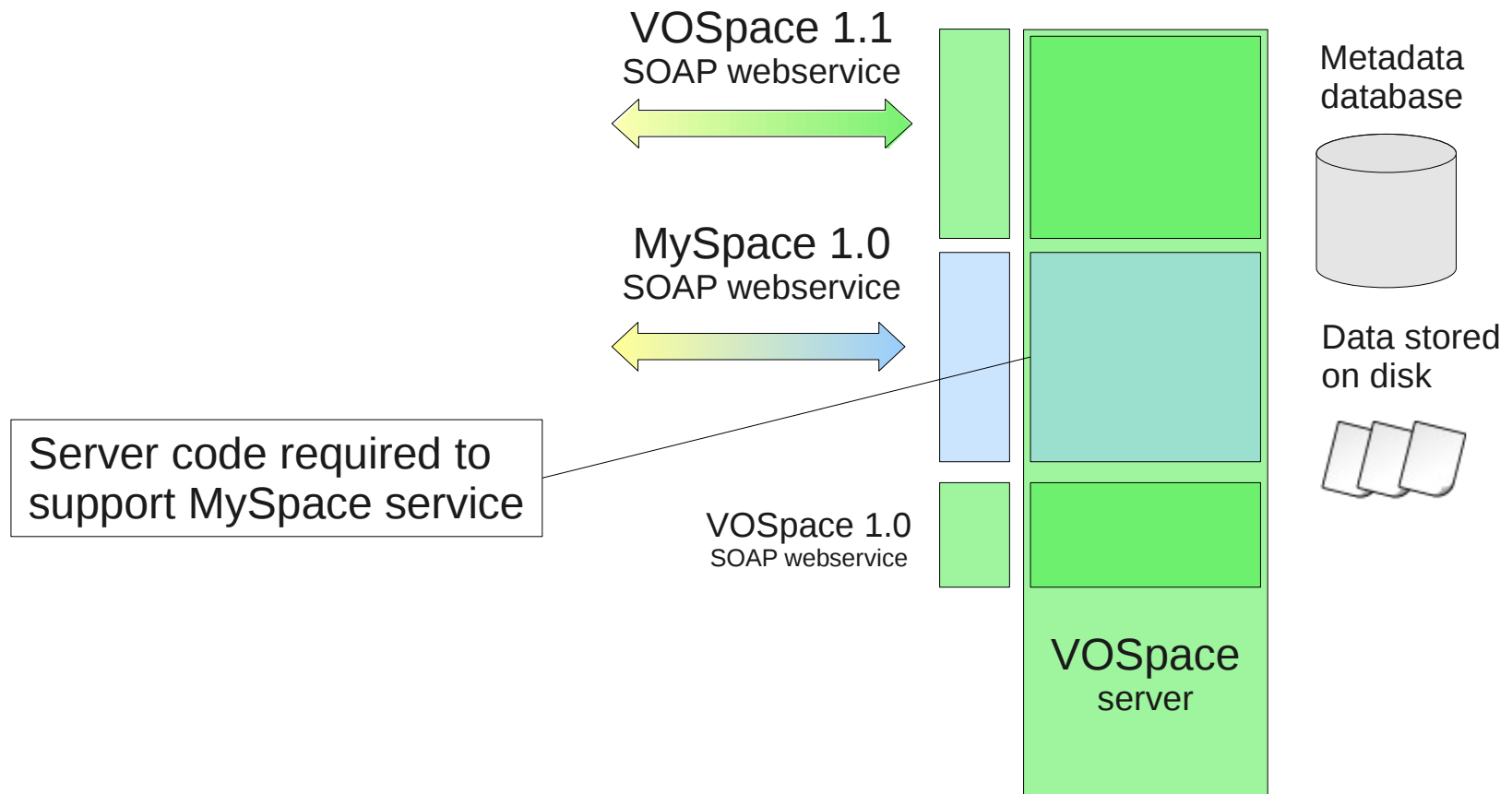
- In testing, September 2008
  - Multiple instances of the VOSpace webapp
  - Transparent fail-over if service is unavailable

# AstroGrid VOSpace 2008



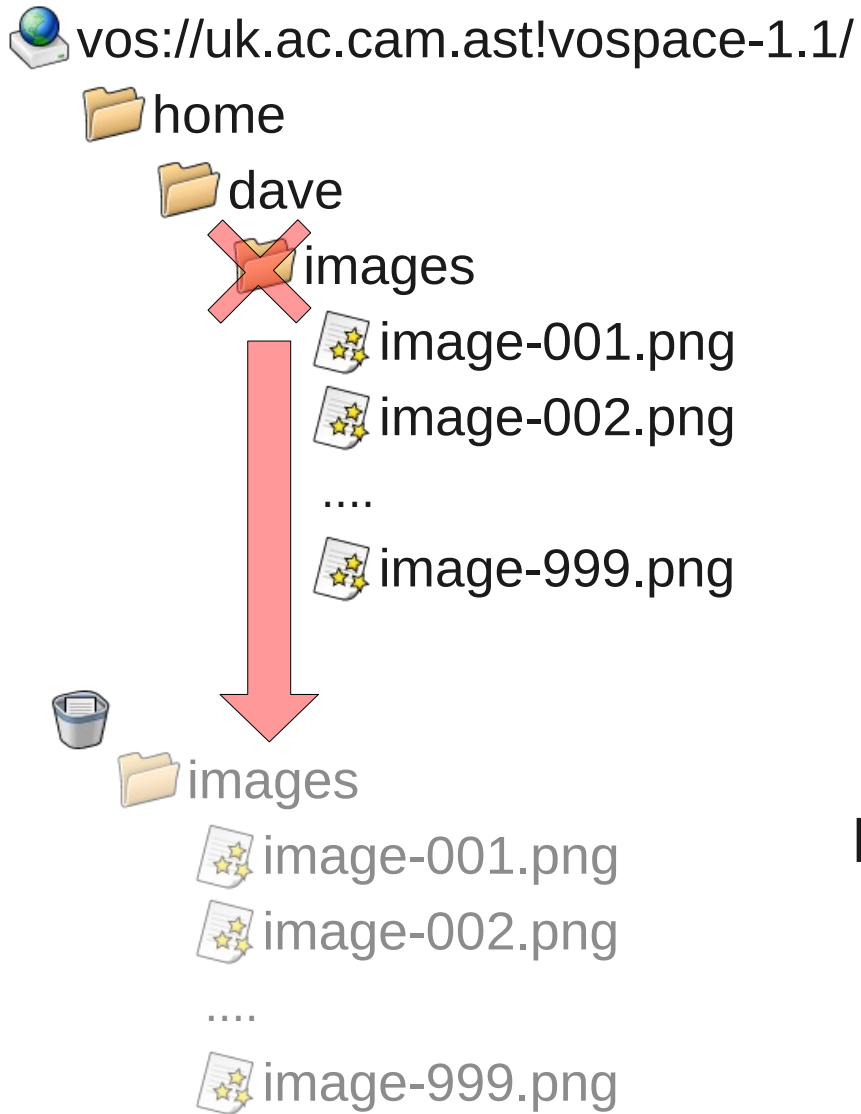
- Current state, September 2008
  - Server supports three access protocols

# AstroGrid VOSpace 2008



- Current state, September 2008
  - Server contains a lot of MySpace 1.0 specific code

# AstroGrid VOSpace 2008



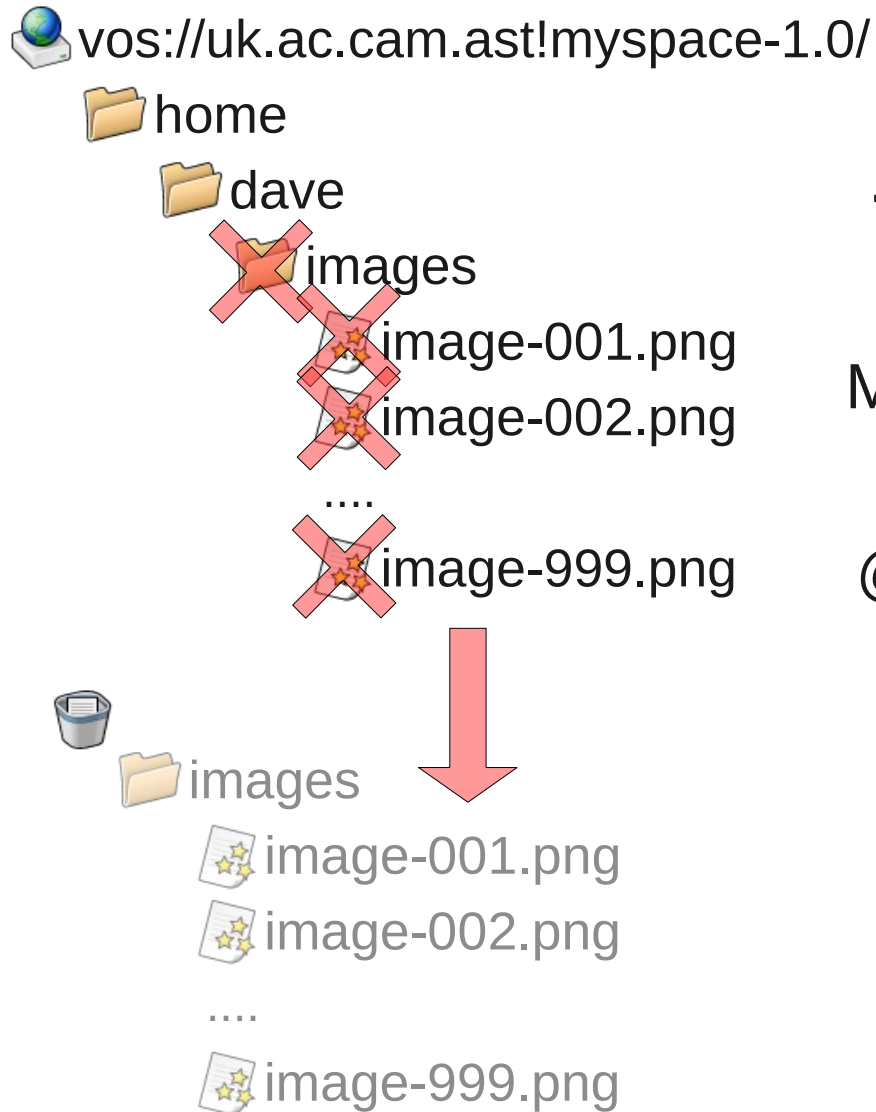
< 10ms to 'unlink' a folder  
in VOSpace



Data is not deleted until later



# AstroGrid VOSpace 2008



< 10ms to 'unlink' a folder  
in VOSpace

MySpace also requires recursive  
deletion of all child nodes

@ 10ms per child, 1,000 images  
may take 10s to delete

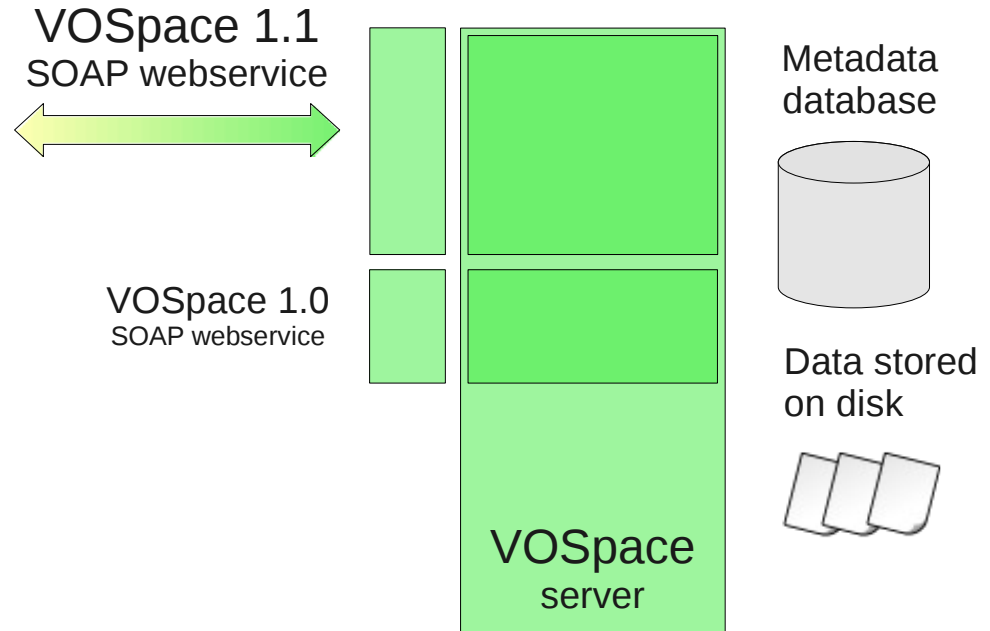
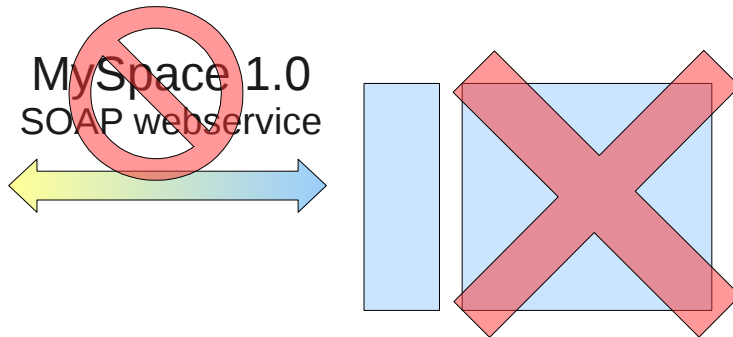


# AstroGrid VOSpace 2009

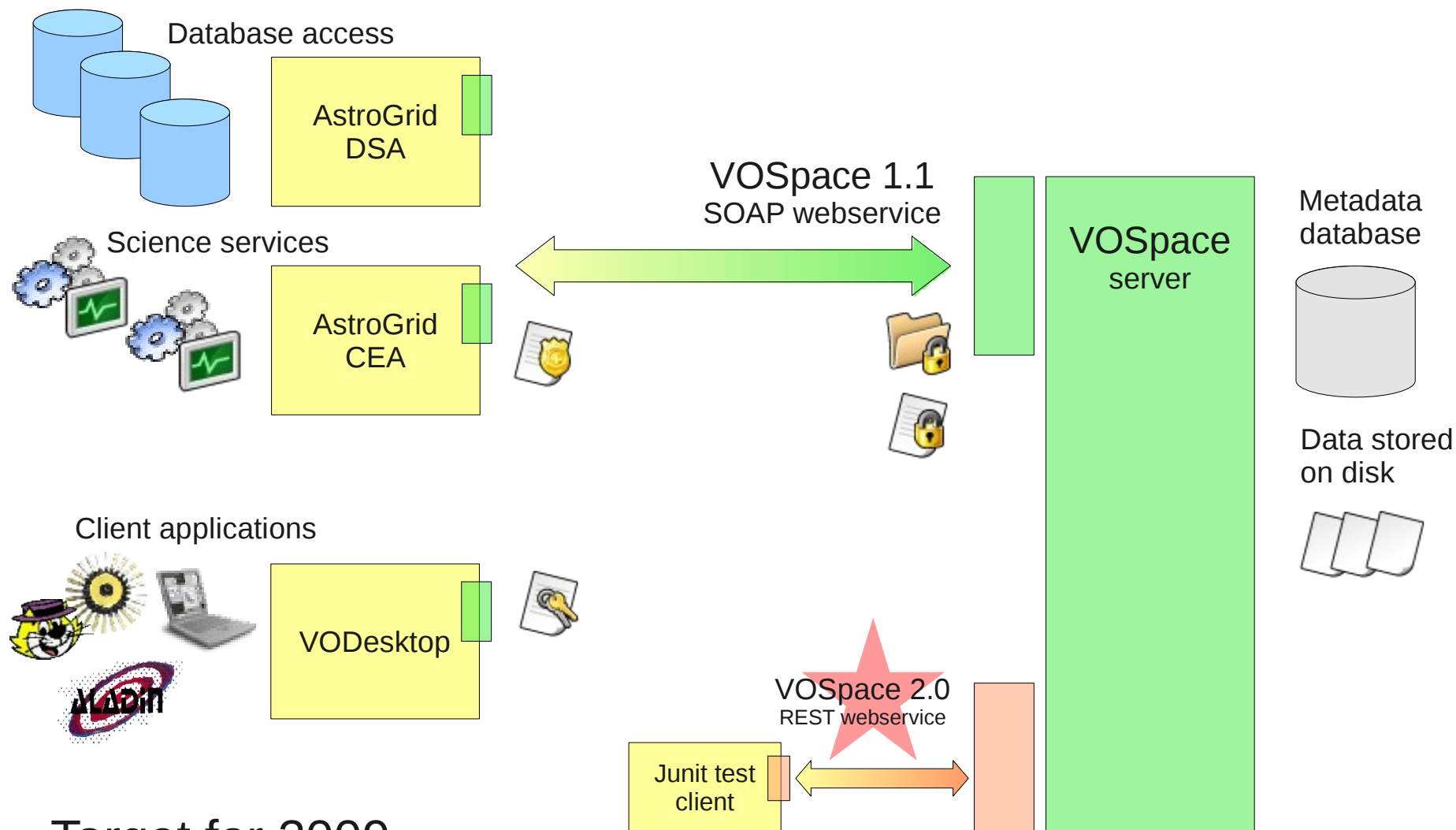
< 10ms to unlink a folder,  
irrespective of  
number of children



- Remove code required to support MySpace service



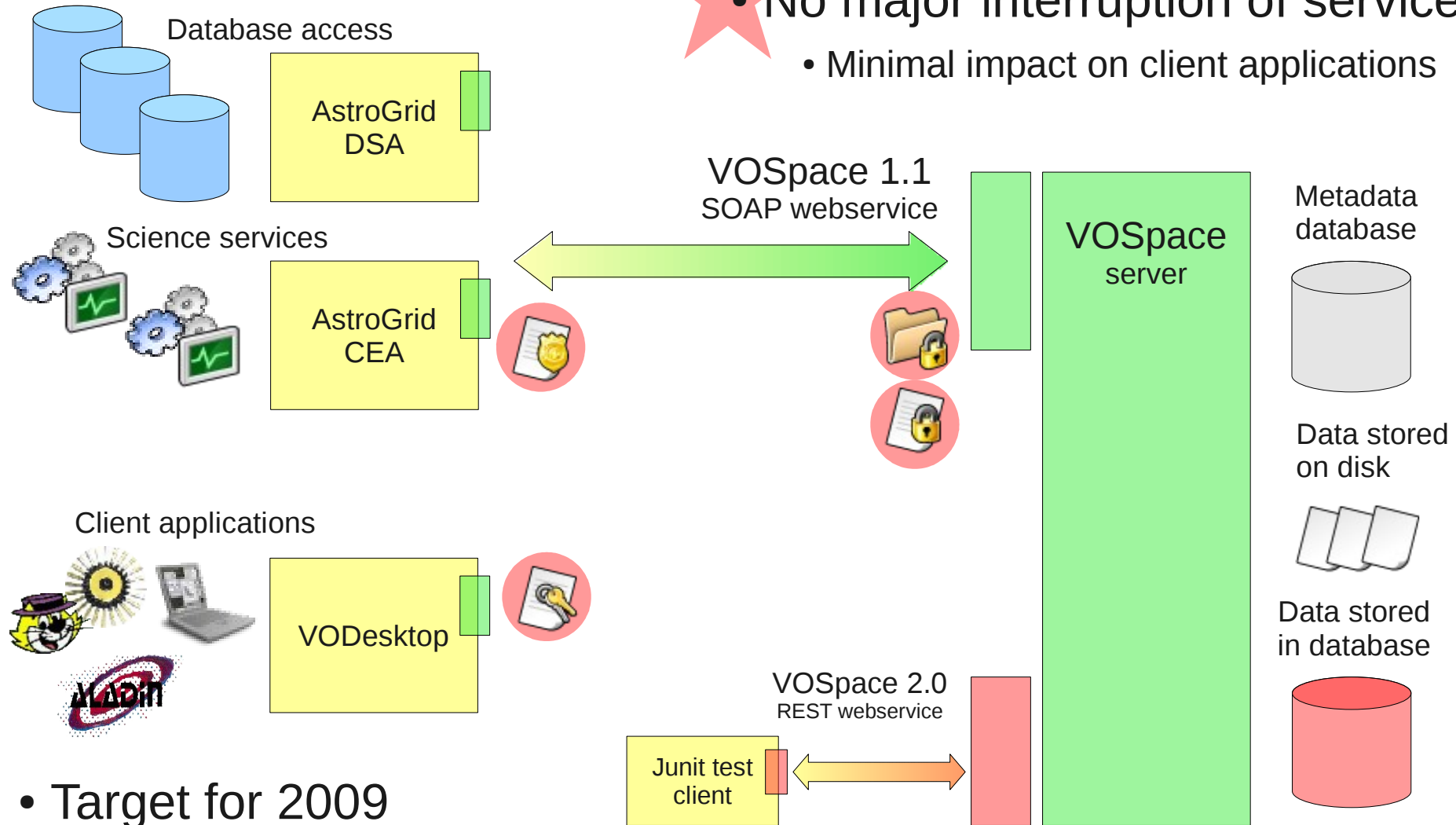
# IVOA VOSpace 2.0



- Target for 2009
  - VOSpace 2.x REST service prototype

# AstroGrid VOSpace 2009

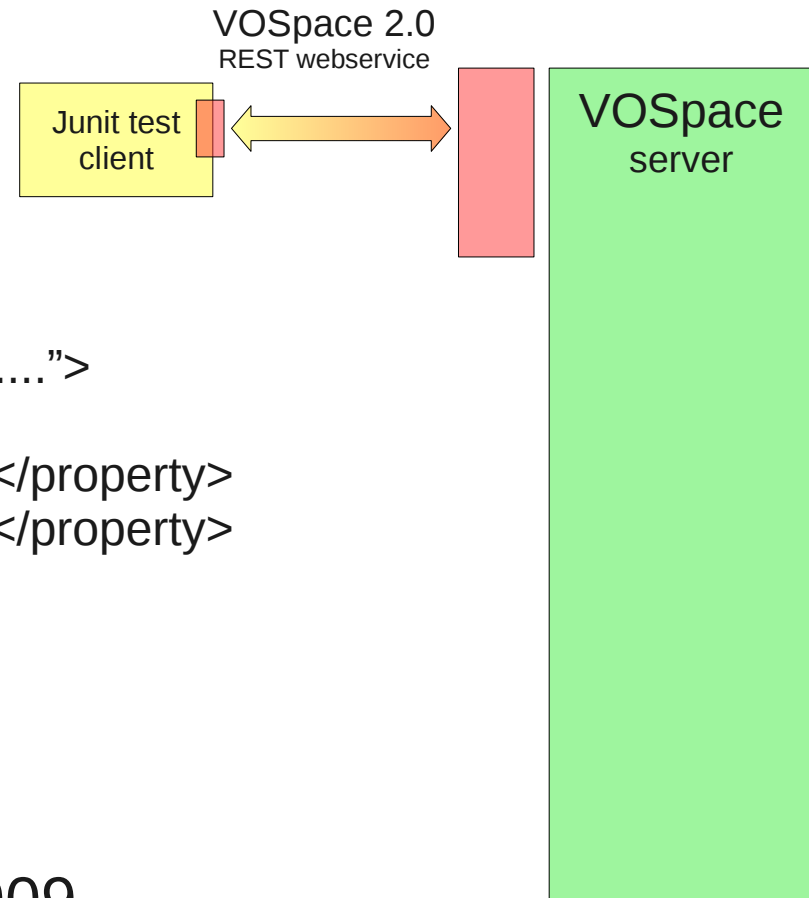
- No major interruption of services
- Minimal impact on client applications



- Target for 2009
  - Deployed services migrated to VOSpace 1.1
  - Secure access using IVOA SSO delegation

# IVOA VOSpace 2.0

- REST based webservice
  - Much simpler XML structure



```
<node ident="vos://...." type="http://....">  
  <properties>  
    <property type="http://....">.....</property>  
    <property type="http://....">.....</property>  
    ....  
  </properties>  
</node>
```

- Prototype development 2008/2009
  - Develop initial prototypes **\*before\*** we try to define the specification