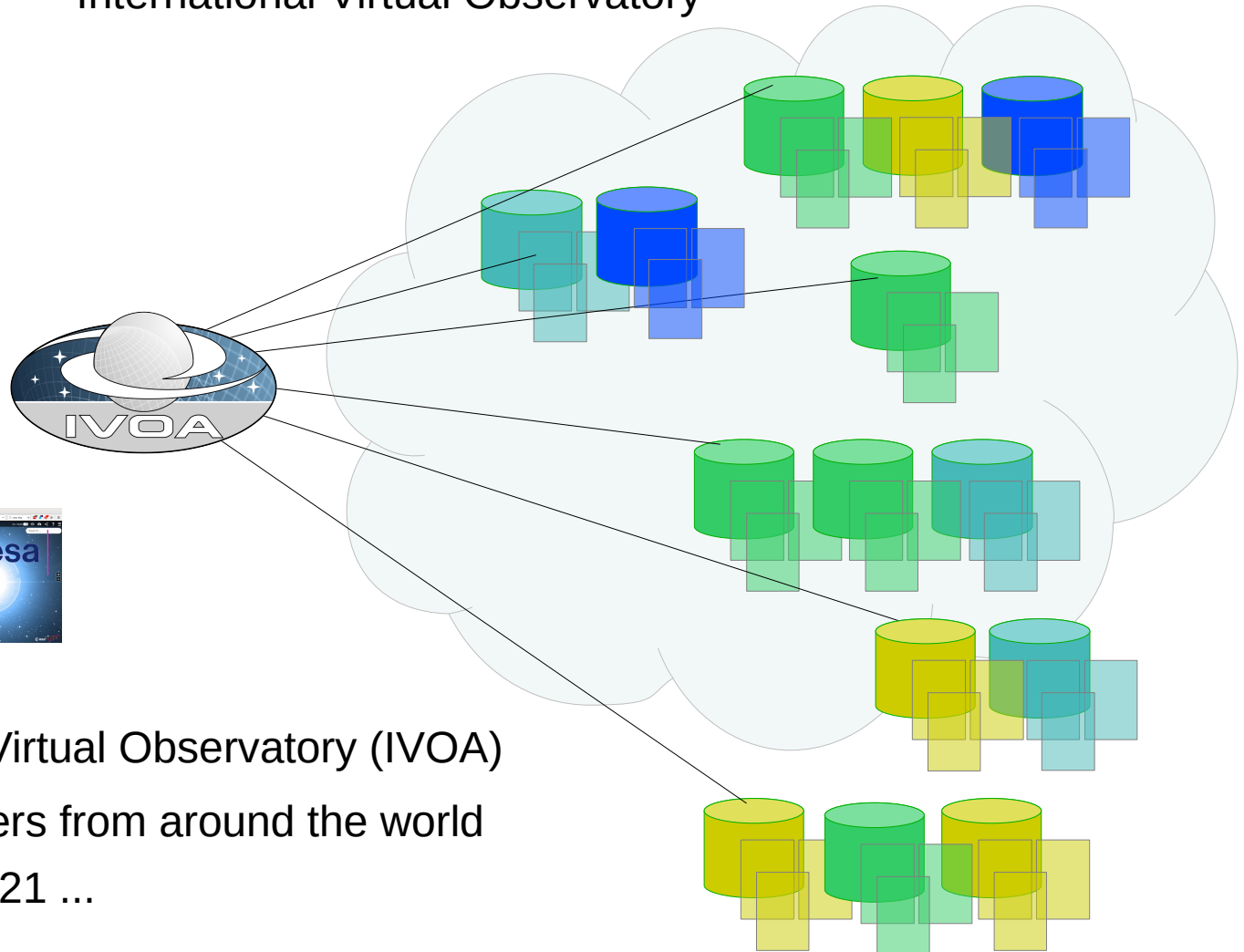




International Virtual Observatory

Data from around the world
available on your desktop



International Virtual Observatory (IVOA)

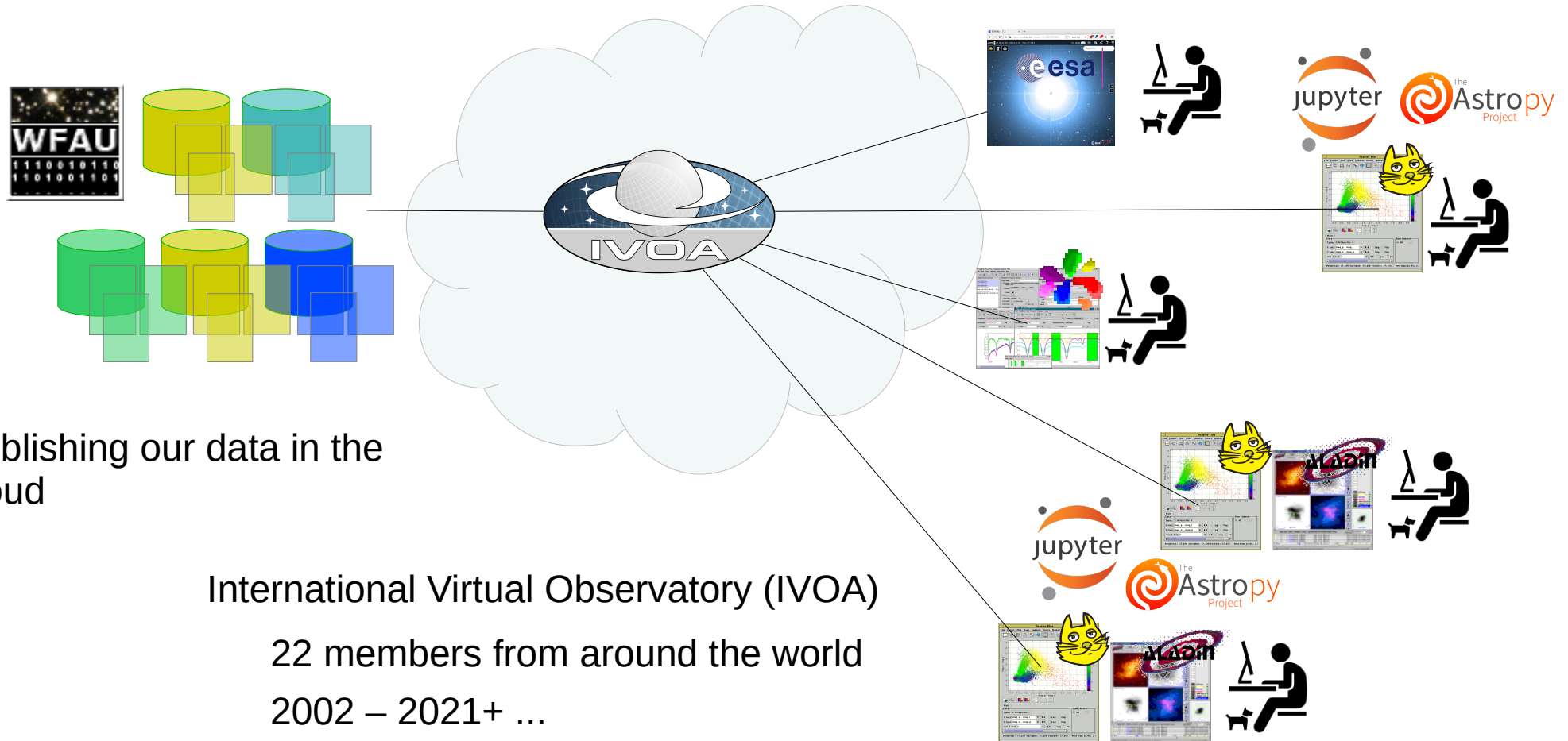
22 members from around the world

2002 – 2021 ...

<https://www.ivoa.net/>



International Virtual Observatory



<https://www.ivoa.net/>



Technology stack



Compose orchestration
Docker containers



Virtualization
platform



Virtual machines

RedHat & Debian Linux



debian



Table Access Protocol (TAP)

<https://ivoa.net/documents/TAP/>

Astronomical Data
Query Language
(ADQL)

<https://ivoa.net/documents/ADQL/>



Jboss Hibernate ORM



Apache Tomcat

Tomcat
webserver



Java programming



Dave Morris
Research Software Engineer

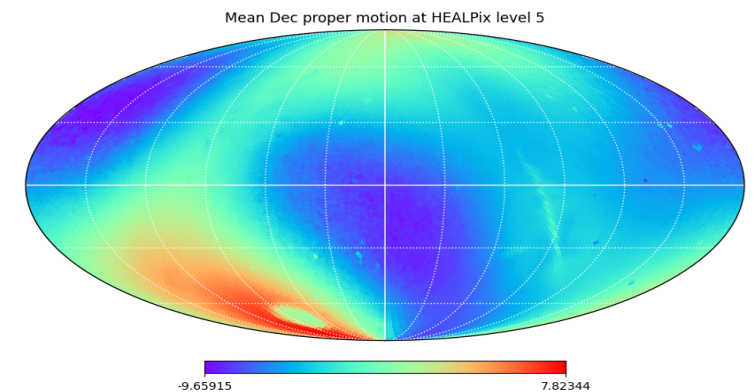
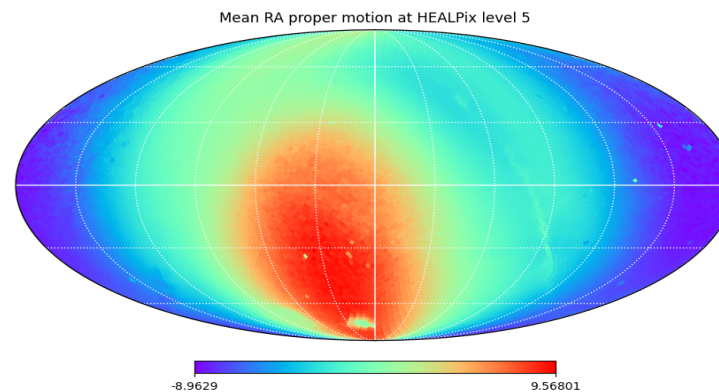
Gaia science platform



Spark 'BigData' analysis platform



```
SELECT  
  floor(source_id / 562949953421312) AS hpx5,  
  COUNT(*) AS n, AVG(pmra), AVG(pmdec)  
FROM  
  gaia_source  
GROUP BY  
  hpx5
```



Mean proper motions over the sky – 1min 28sec to calculate and plot

D.Morris
Institute for Astronomy,
Edinburgh University



Wide Field Astronomy Unit
Show & tell
July 2021



Dave Morris
Research Software Engineer

Gaia science platform



Spark '*BigData*' analysis platform

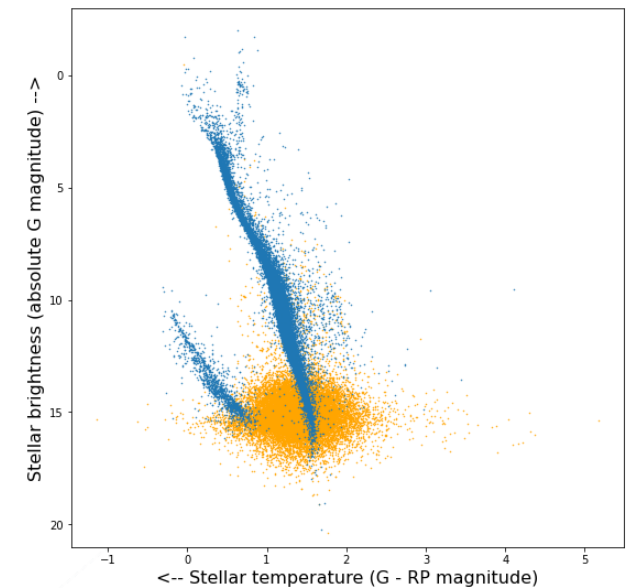
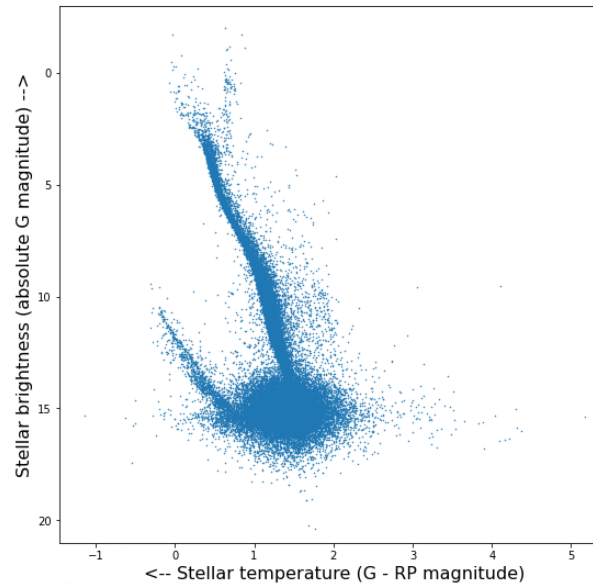


Machine learning application

Random Forrest classifier to filter astrometric solutions.

4 min to train the classifier

25 sec to classify 1,724,028
sources



D.Morris
Institute for Astronomy,
Edinburgh University



Wide Field Astronomy Unit
Show & tell
July 2021



Dave Morris
Research Software Engineer

Gaia science platform



Technology stack

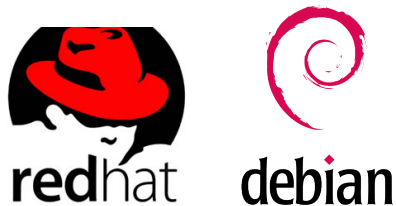
Ansible deployment



Openstack cloud platform



RedHat & Debian Linux



Helm deployment



Kubernetes orchestration



Docker containers



Podman engine





Dave Morris
Research Software Engineer

Gaia science platform



Technology stack

Ansible deployment



Helm deployment



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Kubernetes orchestration



RedHat & Debian Linux



Podman container engine



Docker containers



Analysis platform

Zeppelin notebooks



Spark distributed analysis



Hadoop distributed execution

