

Science Priorities wrap-up

Bruno Merín

IVOA Committee on Science Priorities (CSP)

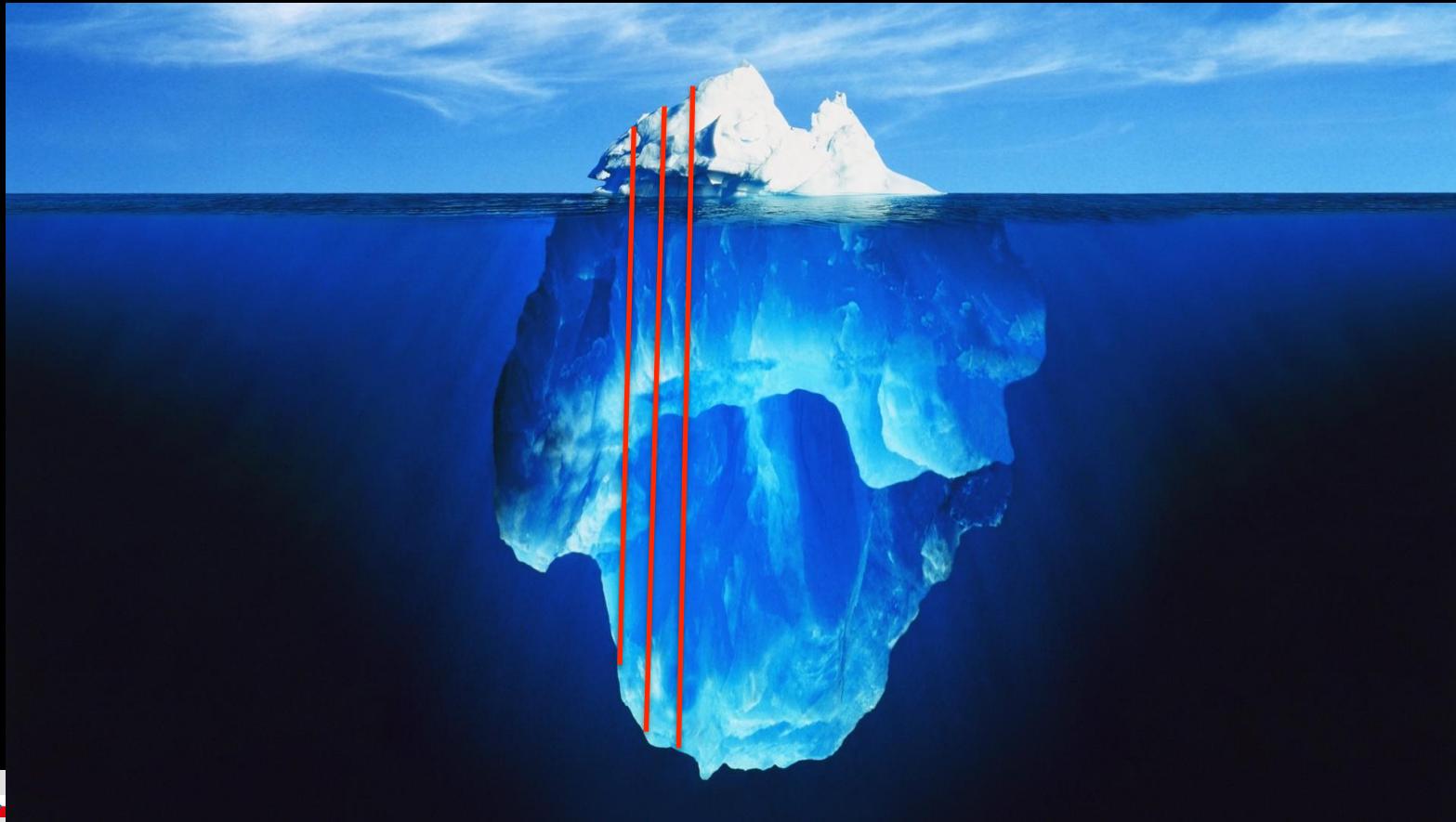
<https://goo.gl/2ALRxV>

European Space Agency

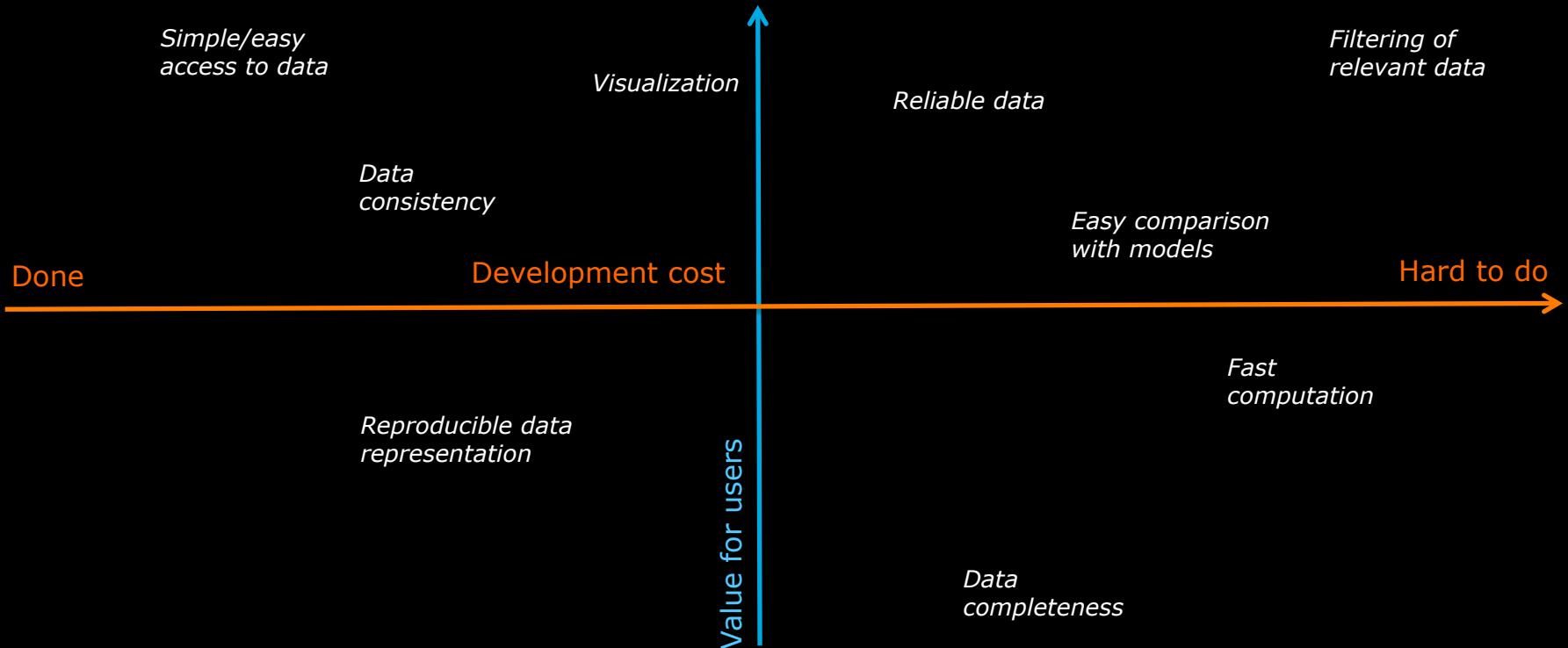
IVOA Interop, Santiago, 27/10/2017

1. *Visualization tools*
2. *Simple / easy access to reliable and relevant data*
3. *Fast computation on new data*
4. *Easy comparison tools between data and models/theory*
5. *Data completeness and consistency*
6. *Reproducible data representation*

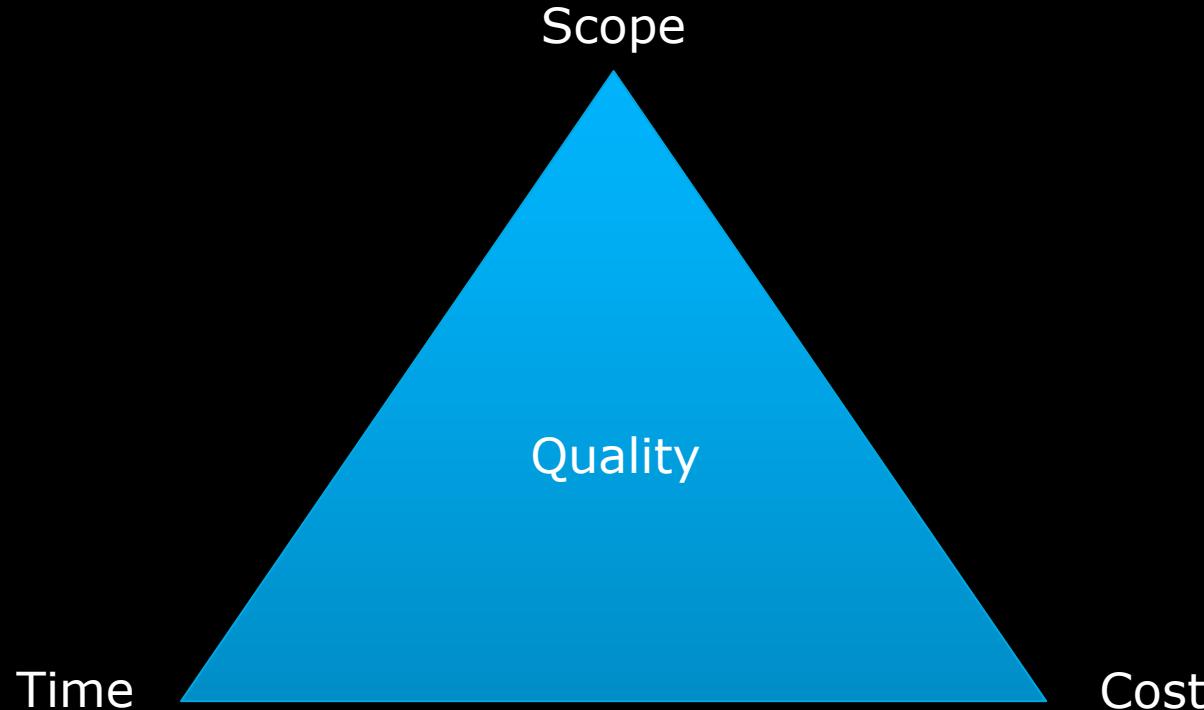
Very important things happening underneath



So what should we focus on?



We should focus on high-value developments



Current scientific priorities at IVOA



- Time-domain astronomy: light-curves -> VOEvent and Data Models
- Multi-dimensional data: spectral or time cubes (sky + wavelength/frequency or sky + time)
- New priorities ? (yet to be endorsed by Exec):
 - An IVOA portal : one single place where users will find **all** data
 - TOPCAT, Aladin and other tools already implement this idea !!

A possible prototype idea by ESO related to the Portal



TAP Service: its list of jobs:

ESO Internal TAP services
 http://aspint.hq.eso.org:8889/esotap (PHASE3 ARCHIVE)
 http://aspint.hq.eso.org:8891/esotap (PHASE3 CATALOGS)

Service type: ALMA TAP service
 http://ivo.nao.ac.jp/skynode/do/tap/alma

REQUEST: TAP services on your local machine (if any)
 Your own :8889 esotap (if you have one running on your machine)
 Your own :8891 esotap (if you have one running on your machine)

FORMAT: text/xml

LANG: non-ESO TAP services supporting ObsCore
 CADC TAP (www.cadc-cda.hia-pha.nrc-cnrc.gc.ca/tap) (ObsCore>5E6 records)
 MAST TAP (http://vao.stsci.edu/caomtap/tapservice.aspx) (ObsCore>15E6 records)
 3xmmdr6 (xcatdb.unistra.fr/3xmmdr6) (ObsCore>7E5 records)
 Chandra TAP (cda.harvard.edu/cxctap) (ObsCore>1E5 records)
 Heidelberg TAP (dc.zah.uni-heidelberg.de/tap) (ObsCore>3.4E5 records)

MAXREC: non-ESO TAP services not supporting ObsCore
 HEASARC TAP (heasarc.gsfc.nasa.gov/xamin/vo/tap) (No ObsCore)
 SIMBAD TAP (simbad.u-strasbg.fr/simbad/sim-tap) (No ObsCore)
 WFAU TAP (wfaudata.roe.ac.uk/sdssdr9-dsa/TAP) (No ObsCore, No TAP_SCHEMA)
 VIZIER TAP (taptvizier.u-strasbg.fr/TAPVizieR/tap) (No ObsCore)

QUERY :
SELECT TOP 1000
FROM ivoa.Obscore
WHERE dataproduct_type='image'
AND INTERSECTS(CIRCLE('ICRS',266.42,-29.05),s_region) = 1 -- intersecting (aka overlapping) a 5 deg cone around the Galactic Centre
AND ((em_min < 1.25E-6 AND em_max > 1.25E-6) -- Contains lambda(J) or
OR (em_min < 1.65E-6 AND em_max > 1.65E-6) -- Contains lambda(H) or
OR (em_min < 2.2E-6 AND em_max > 2.2E-6)) -- Contains lambda(Ks)
AND em_res_power < 20 -- Low spectral resolving power, includes both images and source tables
ORDER BY 4 -- 4 is the position of the s_resolution within fields in the SELECT

[http://aspint.hq.eso.org:8889/esotap/sync?REQUEST=doQuery&LANG=ADQL&MAXREC=200&FORMAT=text&QUERY=SELECT%20TOP%20100%20instrument_name,%20em_min,%20em_max,%20s_resolution,%20distance_e\(point\(%27%27.s_ra,s_dec\).point\(%27%27.266.42,-29.05\)\)](http://aspint.hq.eso.org:8889/esotap/sync?REQUEST=doQuery&LANG=ADQL&MAXREC=200&FORMAT=text&QUERY=SELECT%20TOP%20100%20instrument_name,%20em_min,%20em_max,%20s_resolution,%20distance_e(point(%27%27.s_ra,s_dec).point(%27%27.266.42,-29.05)))

A. Micol





Dataset Landing Page

Access to specific info for this ID: <ivo://eso.org/ID?ADP.2014-10-01T10:19:21.580> (datatype: spectrum)

Retrieve its [DataLink](#) [ObsCore](#) [SSAP](#) [datatype](#) [preview](#) [preview_spec](#) [header](#) [hips](#) [details](#) [landingpage](#)

Possible tests (click on them to set the ID):

- ADP.2011-06-24T14:56:30.093 (VVV filter=Ks tile image)
- ADP.2011-06-24T14:55:29.867 (VVV filter=Ks tile image)
- ADP.2011-06-24T14:55:29.100 (VVV filter=Z tile image)
- ADP.2014-10-01T10:19:21.580 (HARPS spectrum)
- ADP.2013-09-24T20:31:57.113 (UVES spectrum SN1987A)
- ADP.2013-09-24T20:31:57.160 (UVES spectrum SN1987A)



ObsCore Full Record

abmaglim	
access_estsize	5261760
access_format	"application/x-votable+xml;content-type=application/x-votable+xml"
access_url	"http://aspint:8892/datalink/links?ID=ADP.2014-10-01T10:19:21.580"
bib_reference	" "
calib_level	2
dataproduct_subtype	
dataproduct_type	"spectrum"
dp_id	"ADP.2014-10-01T10:19:21.580"
em_max	6.91279999999999E-7
em_min	3.78153E-7
em_res_power	115000.0

Header of ADP.2014-10-01T10:19:21.580

```

SIMPLE = T / file does conform to FITS standard
BITPIX = 8 / number of bits per pixel
NAXIS = 0 / number of data axes
EXTEND = T / FITS dataset may contain extended headers
COMMENT FITS (Flexible Image Transport System) format is defined in 'Astronomy and Astrophysics', volume 376, page 359; updated in 'Astronomy and Astrophysics', volume 419, page 969
DATE = '2010-07-28T01:03:52.911' / Date this header was written
INSTRUME= 'HARPS' / Instrument used
RA = 123.269560 / 08:13:04.6 RA (J2000)
DEC = -34.57804 / -34:34:40.9 DEC (J2000)
EQUINOX = 2000. / Standard FK5 (years)
RADECSYS= 'FK5' / Coordinate reference system
EXPTIME = 868.9969 / Total integration time
MJD-OBS = 53052.12677353 / MJD start (2004-02-17T03:02:33.232)
DATE-OBS= '2004-02-17T03:02:33.232' / Date of observation
UTC = 10948.000 / 03:02:28.000 UTC
LST = 29118.403 / 08:05:18.403 LST

```

Current scientific priorities at IVOA



- Time-domain astronomy: light-curves -> VOEvent and Data Models
- Multi-dimensional data: spectral or time cubes (sky + wavelength/frequency or sky + time)
- New priorities ? (yet to be endorsed by Exec):
 - An IVOA portal : one single place where users will find **all** data
- More suggestions:
 - Standard for science platforms? (check scienceplatforms.slack.com)
 - Virtual Reality/Advanced Reality standards?
 - Other growing areas/priorities?

TweetDeck e ESASky 2.0 +

sky.esa.int/?action=goto&target=202.469575 47.1952583&hips=DSS2 color&fov=0.9993670725712497&coframe=J2000

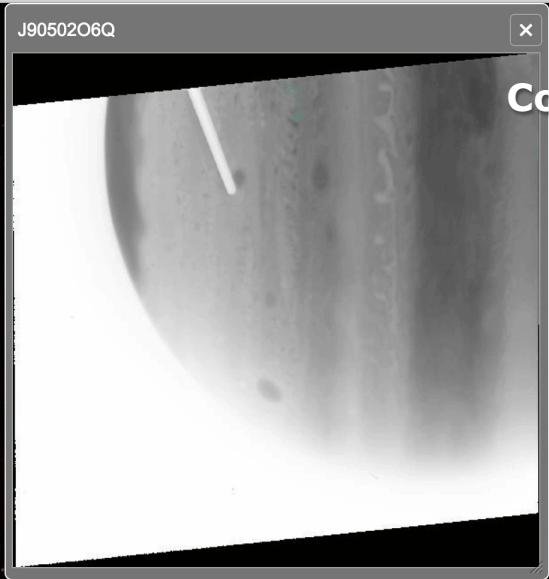
J2000 13 29 52.698 +47 11 42.93 FoV: 59.96°

Search

Sky:DSS2 color



Keep up the
good work
and see you
in Victoria !



Committee on Science Priorities :
csp@ivoa.net

Bruno.Merin@esa.int
 @BrunoMerin

<https://goo.gl/2ALRxV>

HST Ganymede (Satellite) X

		Observation ID	RA (J2000)	Dec (J2000)	Target Name	Instrument	Collection	Filter	Start Time	Duration (s)	
			J9050206Q	13h 10' 25.43"	-05d 59' 21.0"	JUPITER+GANYMEDE	ACS	HST	F892N	2005-01-19 22:24:40.0	10
			J9050205Q	13h 10' 25.42"	-05d 59' 20.9"	JUPITER+GANYMEDE	ACS	HST	F658N	2005-01-19 22:23:11.0	10
			J9050204Q	13h 10' 25.41"	-05d 59' 20.9"	JUPITER+GANYMEDE	ACS	HST	F550M	2005-01-19 22:21:41.0	3
			HST_10192_02_ACS_HRC	13h 10' 25.41"	-05d 59' 20.9"	JUPITER+GANYMEDE	ACS	HLA	F550M	2005-01-19 22:21:41.0	3
			J9050203Q	13h 10' 25.40"	-05d 59' 20.8"	JUPITER+GANYMEDE	ACS	HST	F435W	2005-01-19 22:20:05.0	3
			J9050202Q	13h 10' 25.39"	-05d 59' 20.8"	JUPITER+GANYMEDE	ACS	HST	F330W	2005-01-19 22:18:38.0	10
			J9050201Q	13h 10' 25.38"	-05d 59' 20.7"	JUPITER+GANYMEDE	ACS	HST	F250W	2005-01-19 22:17:09.0	20
			J9050200Q	13h 10' 25.37"	-05d 59' 20.7"	JUPITER+GANYMEDE	ACS	Total mission coverage	F892N	2005-01-19 22:15:26.0	10