IVOA Status

Paolo Padovani

Chair, IVOA Executive Committee

IVOA Goals and Modus Operandi

- The final goal of the VO is to facilitate and foster astronomical research and astronomers are its ultimate users
- Therefore, scientific requirements should drive the IVOA process
- The IVOA should push forward and implement the standards, which are needed to reach the scientific goals
- Standards are “the means, not the end”
- The IVOA Standing Committee on Science Priorities (CSP) is there “to identify research needs of the worldwide astronomy community that can benefit from VO related tools and services, and to take action within the context of the IVOA to assist in placing such tools and services into the research community” (Mark’s talk)

Astronomical Data

Already many large-area surveys available: e.g., NVSS, FIRST, WENSS (radio); IRAS, 2MASS, DENIS, UKIDSS (IR); SDSS, 2dF (optical); GALEX (UV); ROSAT, XMM (X-ray); EGRET, *Fermi* (gamma-ray).

More to come (an incomplete list!):

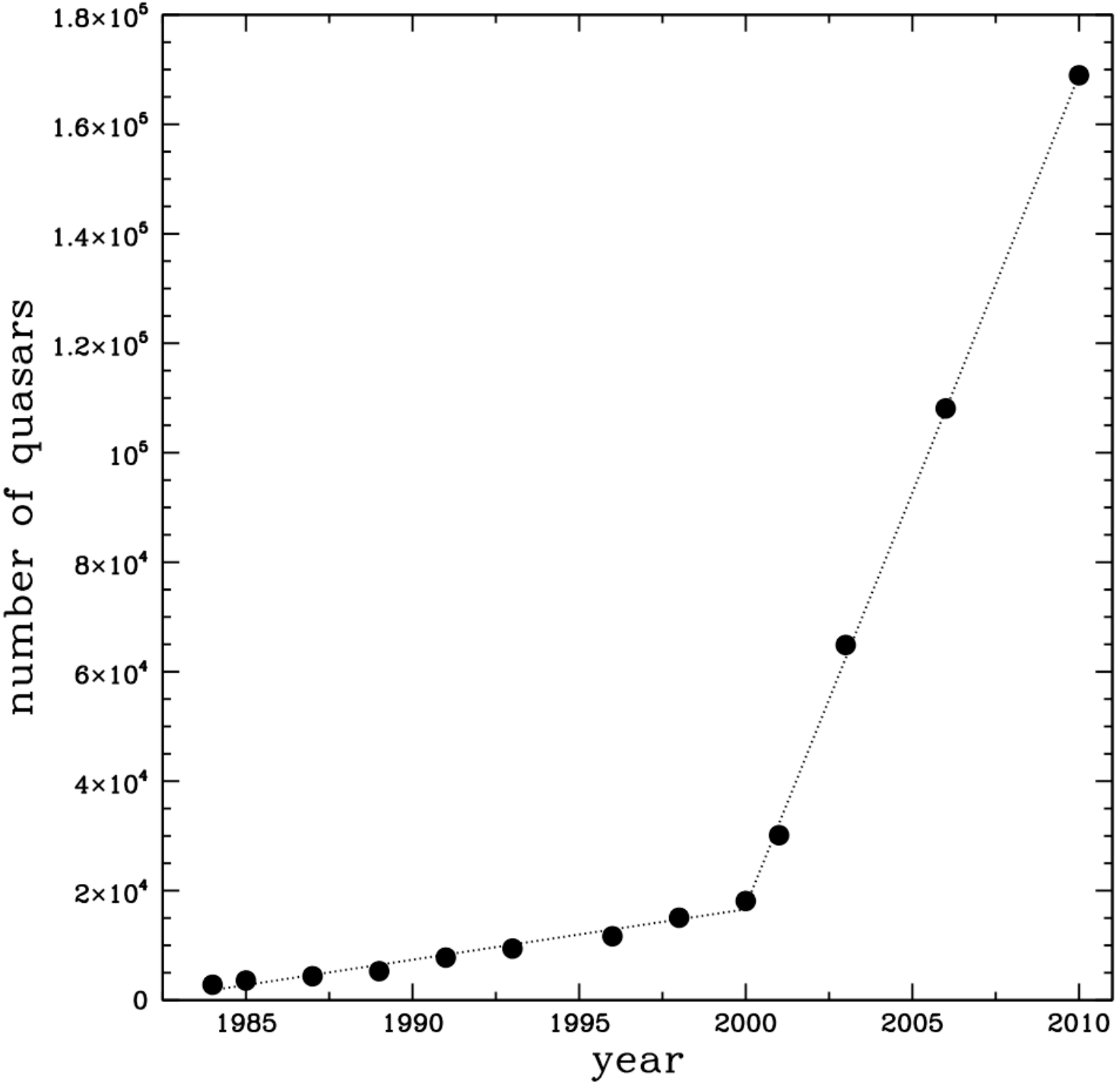
- *Wide Field Infrared Explorer (WISE):* ~ 500 million near-IR sources, all-sky [now]
- *Visible and Infrared Survey Telescope for Astronomy (VISTA):* ≈ a few billion near-IR sources, half-sky [now]
- *Low Frequency Array (LOFAR):* ~ 50 million radio sources, half-sky [now]
- *Panoramic Survey Telescope and Rapid Response System (PAN-STARRS):* ≈ 20 billion optical sources [now]

Astronomical Data

- *e-Rosita:* ~ 2 million X-ray sources, all-sky [2012]
- *Square Kilometre Array (SKA) Pathfinders (EVLA, ASKAP, ATA, Meerkat, Apertif, …):* ≈ 100 million radio sources each (half-sky) [2013 -]
- *Large Synoptic Survey Telescope (LSST):* ≈ 20 billion optical sources [2018?] (catalogue: 300 Terabytes/year x 10)
- *SKA:* ≈ 2 billion (?) radio sources (half-sky) [2020?]

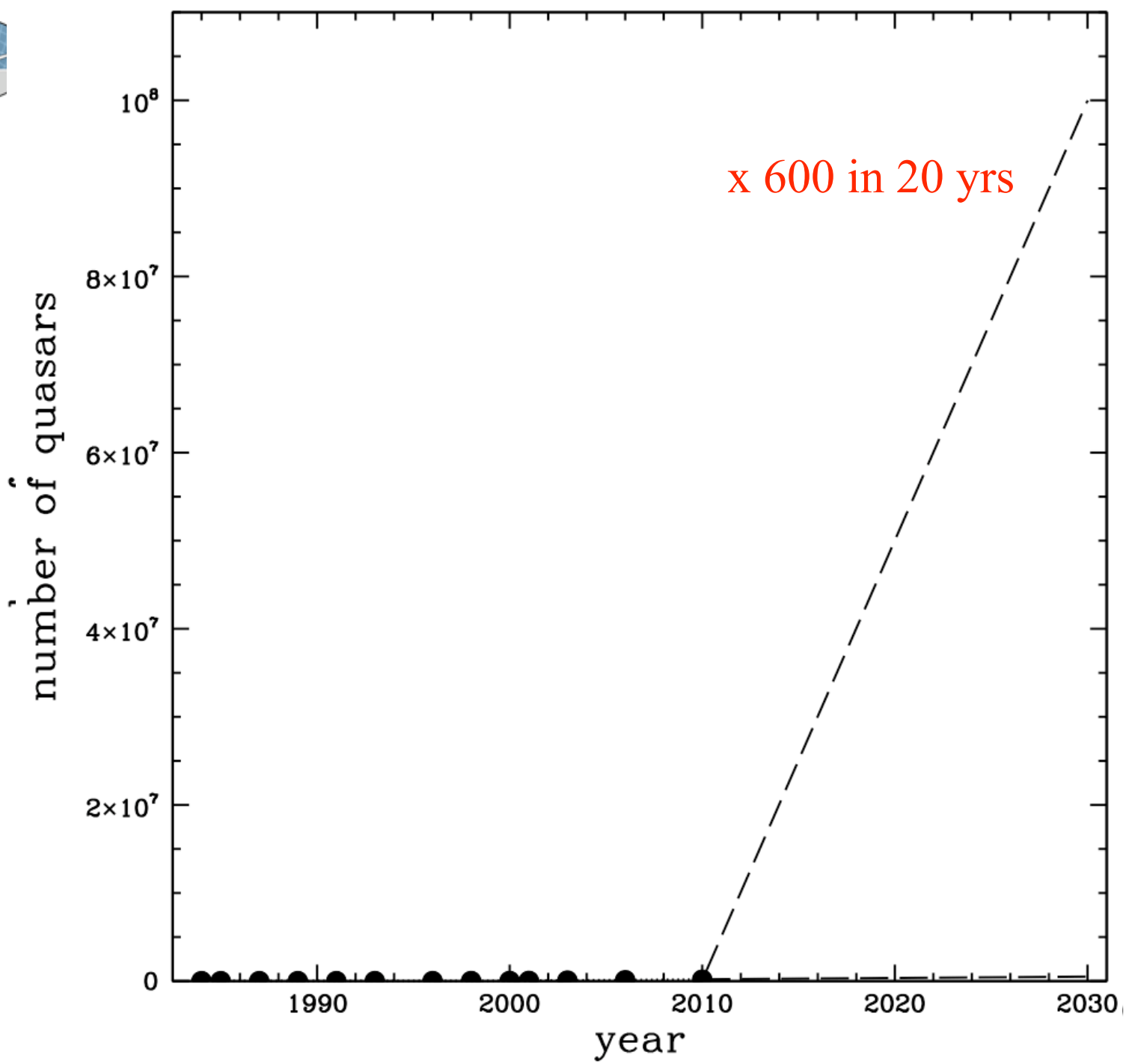
Not yet approved:

- *Wide Field X-ray Telescope (WFXT):* ~ 10 million X-ray sources, all-sky
- *Euclid:* ~ 10 million near-IR spectra, all-sky



Number of known quasars

asars


x 600 in 20 yrs
number of quasars
year
0
2×10⁷
4×10⁷
6×10⁷
8×10⁷
10⁸
1990
2000
2010
2020
2030

IVOA related events since the Victoria Interop

- Ajit Kembhavi is the IVOA Exec vice Chair
- Exec telecon on September 20
- IVOA Newsletter
- Astroinformatics2010 in Pasadena (June) (attended by many IVOA members)
- More Euro-VO days and events in Europe: France (June), Sweden (June), Serbia (June), Germany (October), Spain (October)
- Release of the US Decadal Survey report, which sets US astronomical priorities for the next decade (Bob's talk)
- European Commission report on "Riding the wave. How Europe can gain from the rising tide of scientific data" (Francoise's talk)

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Status of IVOA standards

- Universal Worker Service 1.0, VODataService 1.1, Simple Spectra Line DM 1.0, and Simple Line Access Protocol 1.0 approved (all with new non-technical preamble)
- Web Service Basic Profile 1.0 and SAMP 1.2 ready to be sent to the Exec for approval
- More on these from Christophe
- Do we have all the basic standards or do we need more (e.g., Photometry DM, ObsCoreDM)?
- Is there a need for a revision of some of the "old" standards? Are they "intelligible" to non VO experts?
  ⇒ Implementation and feedback session for WGs

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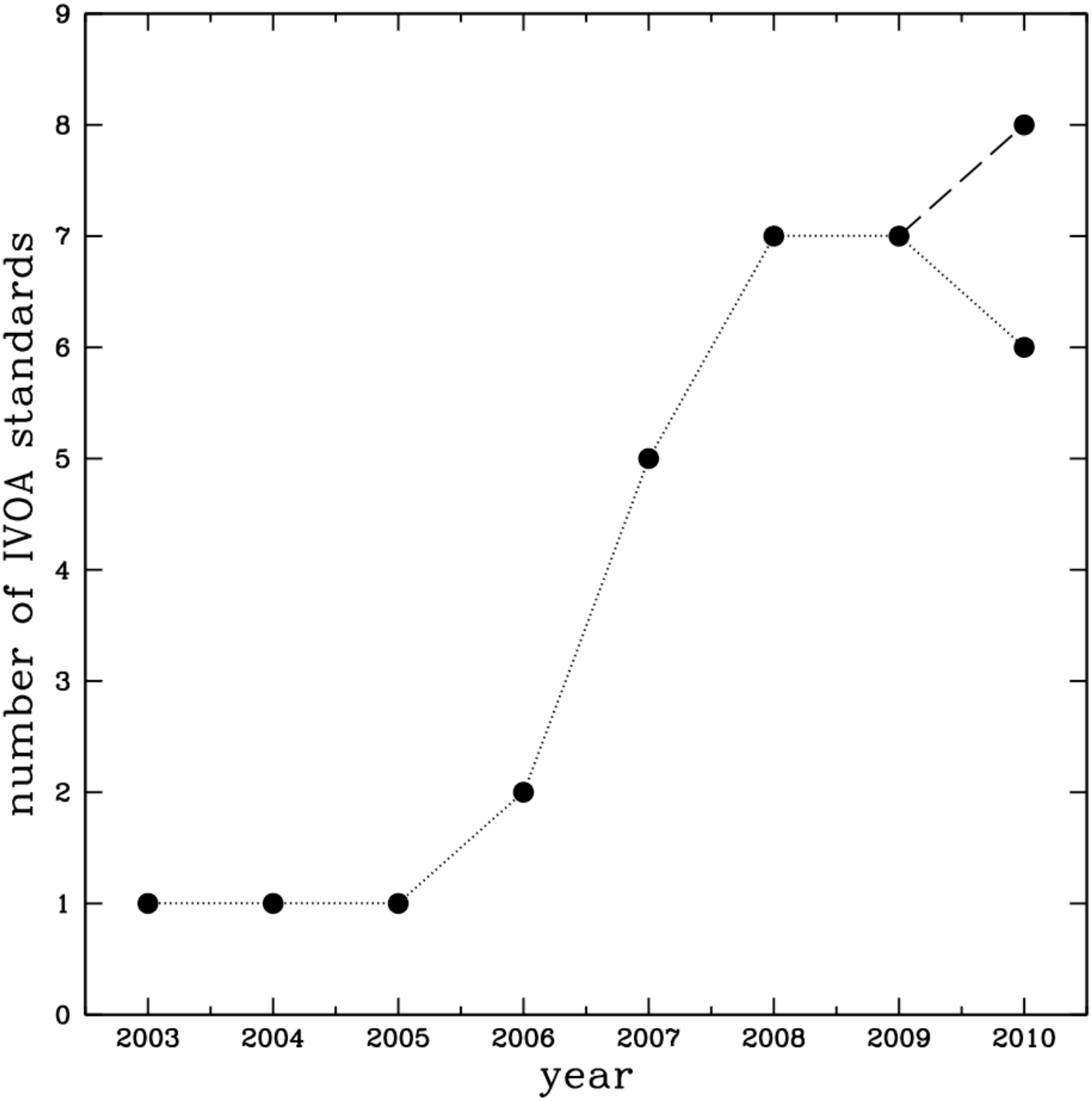
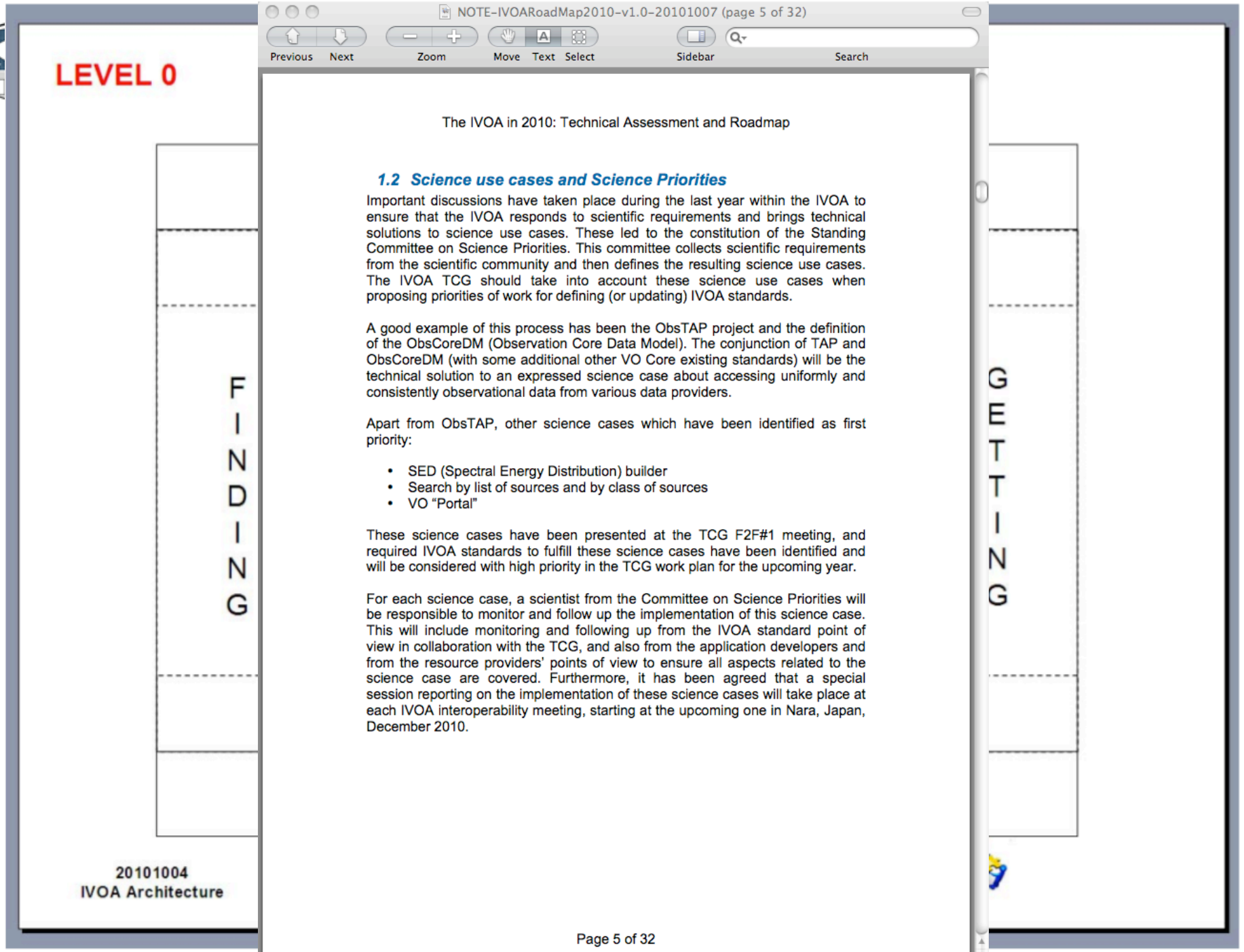


Status of IVOA standards

- IVOA Technical Assessment and Roadmap 2010 approved by Exec in October; it features Science priorities very prominently and makes reference to the new IVOA Architecture
- Revised IVOA Architecture (from first ever TCG meeting) approved by Exec in November (previous one in 2004)
- Science needs leading the process ➔ dedicated plenary sessions to the three Science cases supported by the Committee on Science Priorities



1.2 Science use cases and Science Priorities

Important discussions have taken place during the last year within the IVOA to ensure that the IVOA responds to scientific requirements and brings technical solutions to science use cases. These led to the constitution of the Standing Committee on Science Priorities. This committee collects scientific requirements from the scientific community and then defines the resulting science use cases. The IVOA TCG should take into account these science use cases when proposing priorities of work for defining (or updating) IVOA standards.

A good example of this process has been the ObsTAP project and the definition of the ObsCoreDM (Observation Core Data Model). The conjunction of TAP and ObsCoreDM (with some additional other VO Core existing standards) will be the technical solution to an expressed science case about accessing uniformly and consistently observational data from various data providers.

Apart from ObsTAP, other science cases which have been identified as first priority:

- SED (Spectral Energy Distribution) builder
- Search by list of sources and by class of sources
- VO "Portal"

These science cases have been presented at the TCG F2F#1 meeting, and required IVOA standards to fulfill these science cases have been identified and will be considered with high priority in the TCG work plan for the upcoming year.

For each science case, a scientist from the Committee on Science Priorities will be responsible to monitor and follow up the implementation of this science case. This will include monitoring and following up from the IVOA standard point of view in collaboration with the TCG, and also from the application developers and from the resource providers' points of view to ensure all aspects related to the science case are covered. Furthermore, it has been agreed that a special session reporting on the implementation of these science cases will take place at each IVOA interoperability meeting, starting at the upcoming one in Nara, Japan, December 2010.

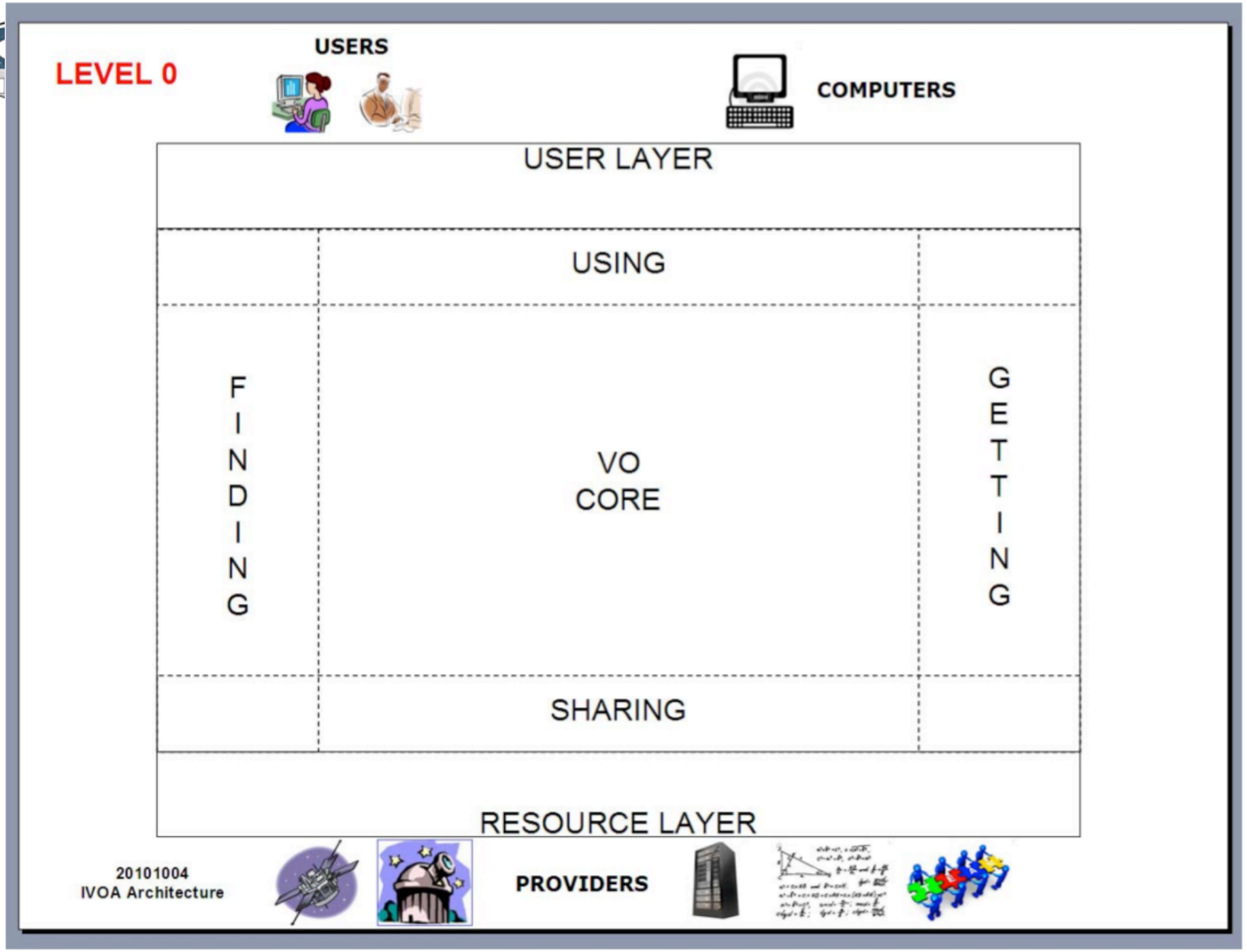


Figure 1 : IVOA Architecture Level 0

Exec Telecon Highlights

- Revised “About the IVOA” and “Guidelines for Participation” documents (available from the IVOA main page)
- Peppe Longo is the Chair of the newly formed Knowledge Discovery in Databases (KDD) IG
- Roy Williams is the “new” vice Chair of VOEvent (Alasdair Allan resigned)

- Discussion on IVOA Interops attendance and frequency
- Discussion on IVOA standards and data centres
- Proposal for an IVOA Education Interest Group

Possible New IVOA Members

- Argentina: application submitted today!
- Bulgaria: interested
- Chile: under development
- Portugal: interested
- Serbia: interested
- Ukraine: almost ready to submit application

Inactive IVOA Members

New policy for inactive members included in revised "Guidelines for Participation" document

- Korea: not any longer a member (all VO efforts have stopped 5 years ago)
- Australia: contacts resumed, new (temporary) contact point (Andrew Hopkins), willingness to be more active
- Hungary: willingness to be more active at Exec level

Upcoming IVOA related events

- The International Centre for Radio Astronomy Research Astroinformatics School, Perth, Australia, Feb. 16 – 18, 2011
- Third Euro-VO School, around March 2011(exact location and date still TBD)
- IVOA Interop in Naples, May 16 – 20, 2011

- Thanks to the Programme Organizing Committee and to the Local Organizing Committee!

- Wishing us all a great and proficuous Interop