IVOA Technical Roadmap status

"what are the Alliance and its members doing?"

Marco Molinaro
INAF – OATs

INAF ICT Workshop 2018
Catania – 13.09.2018

Astronomy ESFRI & RI Cluster
ASTERICS - 653477

Outline

- What is IVOA

  “IVOA is an international organisation defining standards to allow data interoperability in Astronomy and Astrophysics”

- How do VO members work/are organized
- **What are they working on**
- How can anyone help

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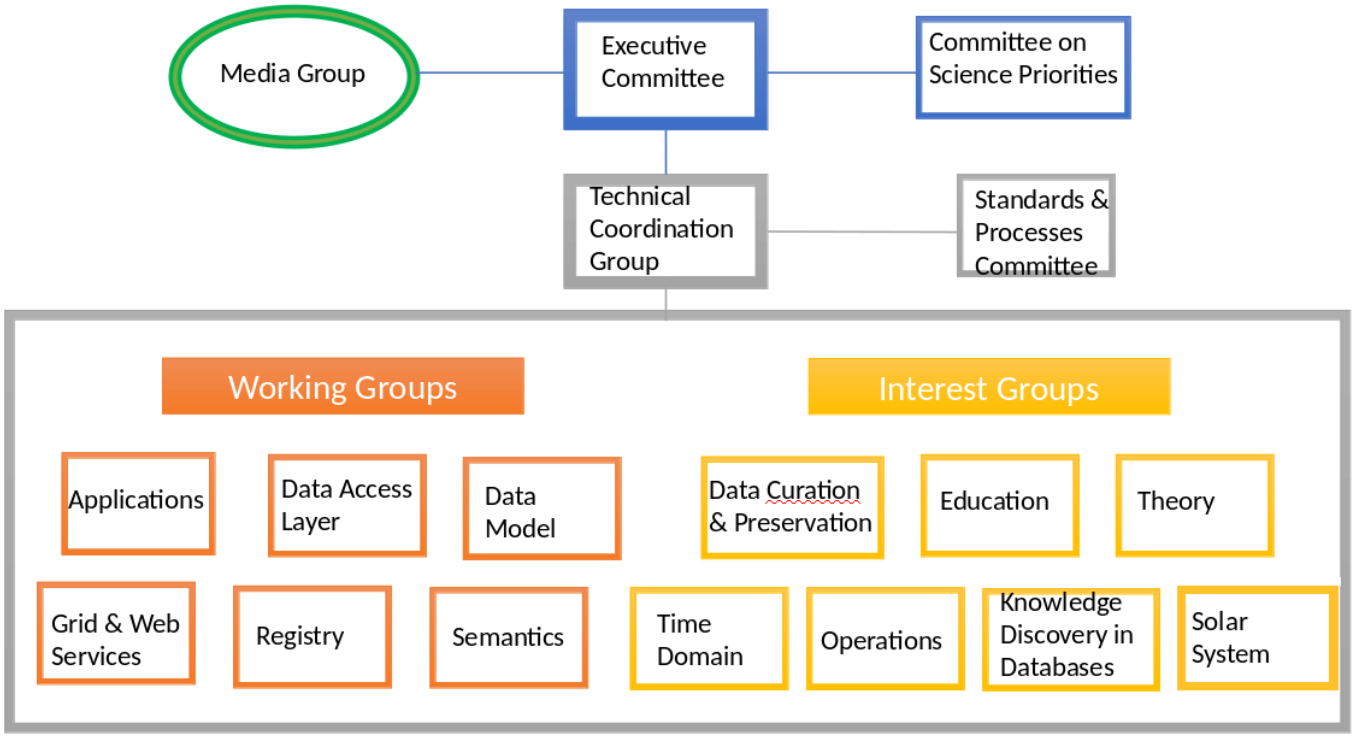
IVOA Organization



- IGs (WGs) bring in requirements
- WG build the architectural blocks
- Committee(s) steer & give advice
- TCG coordinates

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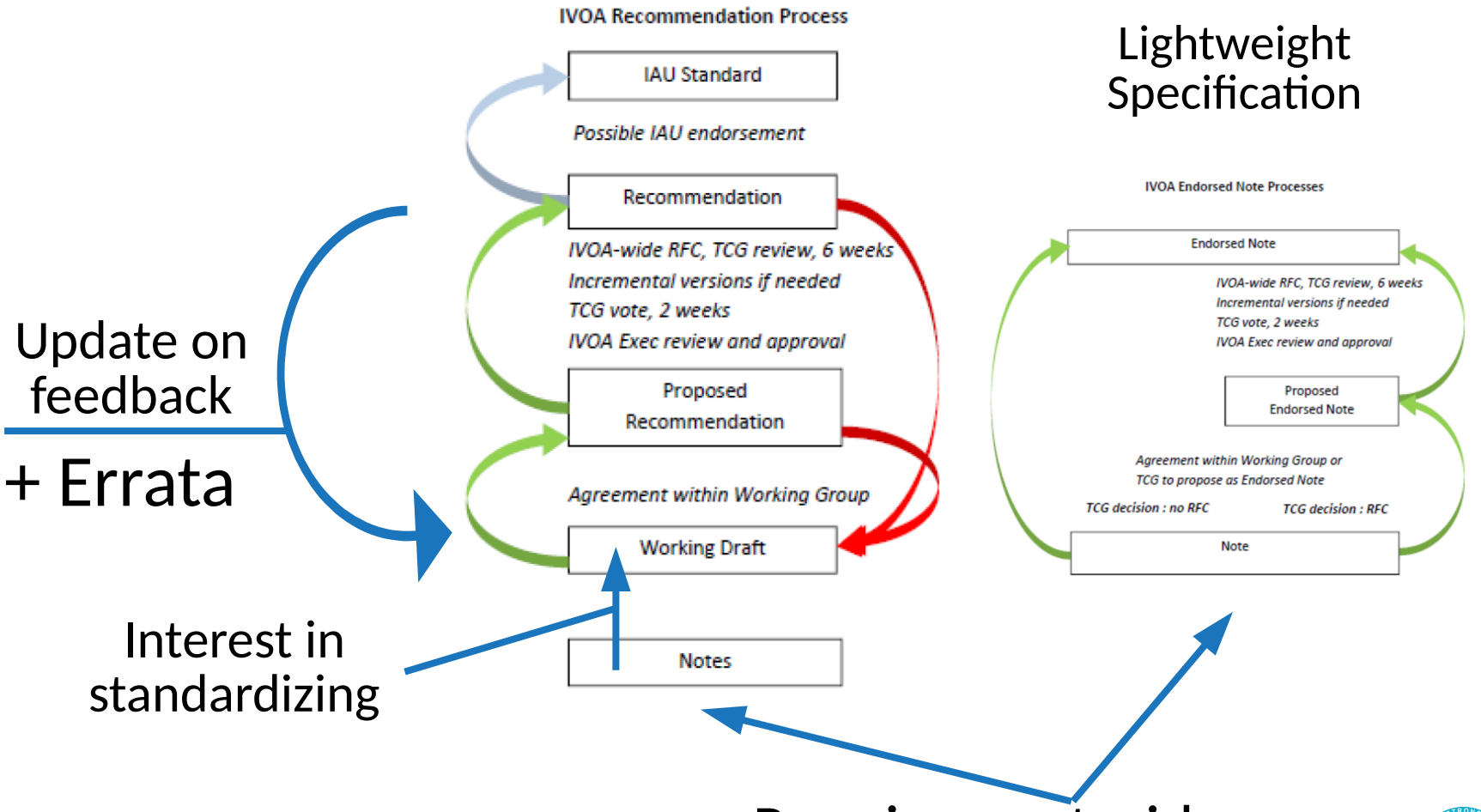
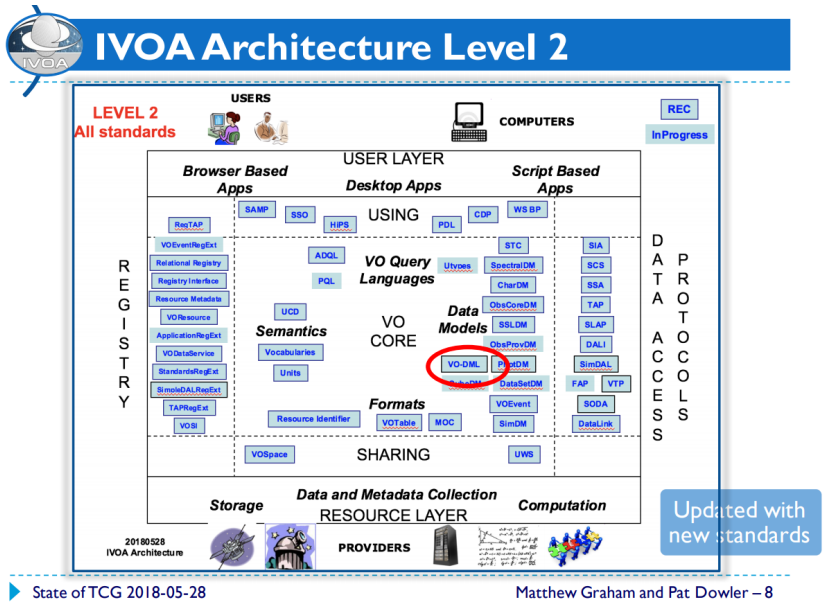
IVOA Documents Process



IVOA Recommendations



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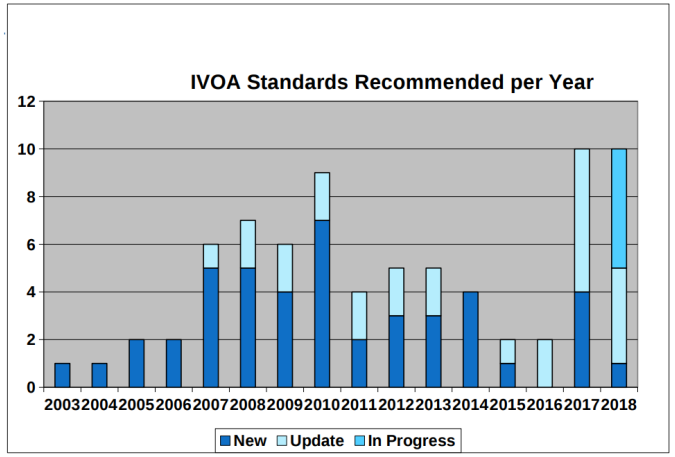
- SVN repository
  - GitHub?
- Mailing list
- Wiki
- Interop Sessions

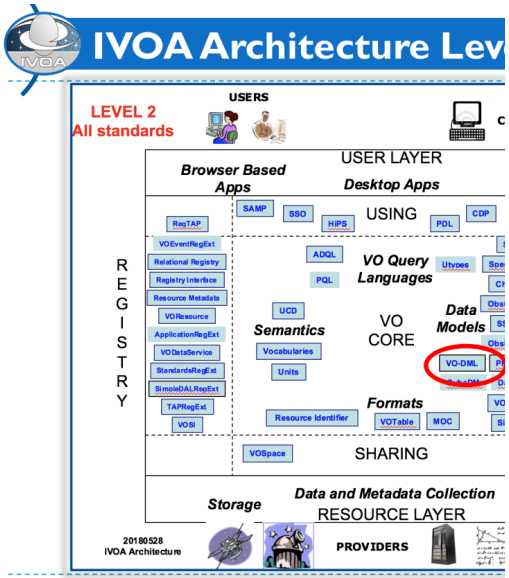
- RFC
- Reference implementations
- Validation suites
- TCG vote
- Exec approval

IVOA Standards per year



State of TCG 2018-06-01 Matthew Graham and Patrick Dowler – 3

IVOA Recomme



State of TCG 2018-05-28

- RFC
- Reference implem
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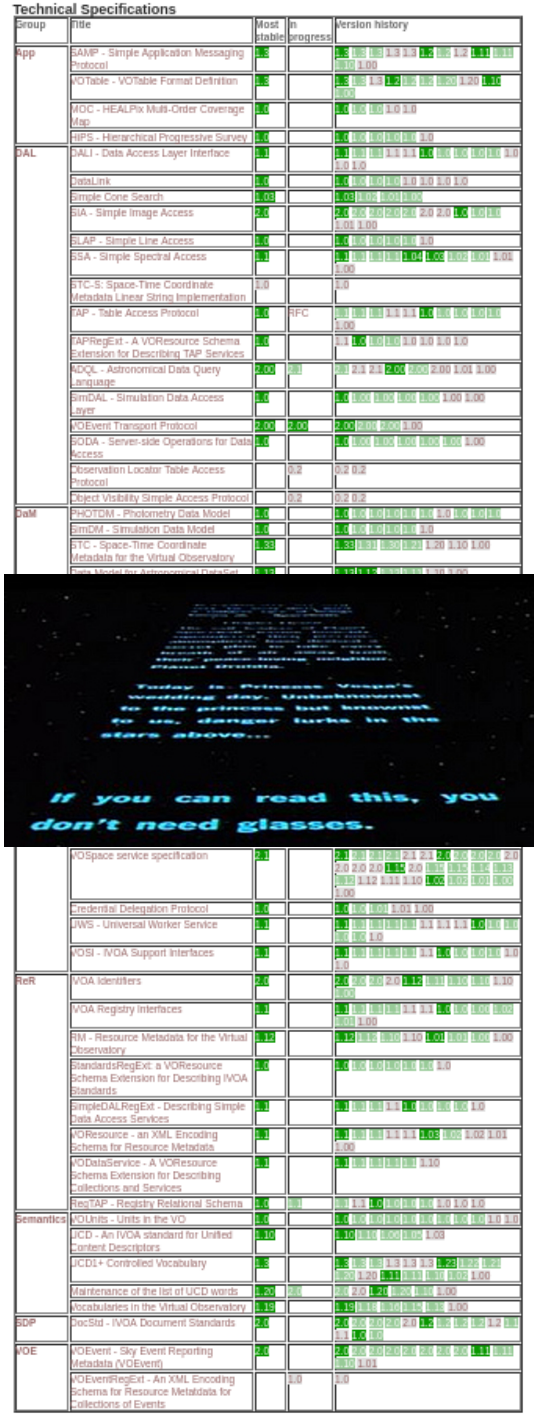
Technical Specifications



SVN repository
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Mailing list

Wiki

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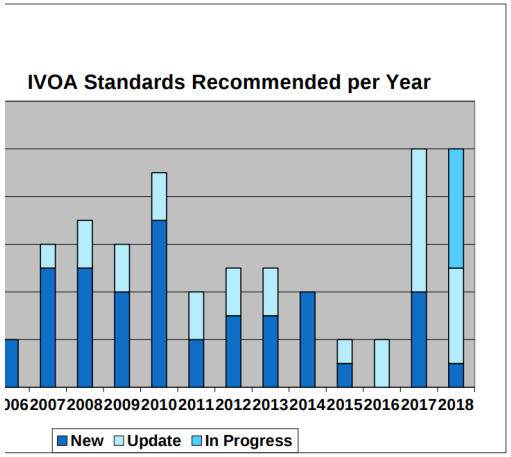
Standards per year



IVOA Roadmap

- Roadmap updated every 6 months
  - Just after the interop
- Help focus on current matters
- Not a real progress check
  - Progress depends on available resources

IVOA Technical Assessment and Roadmap Documents

- 2018A Roadmap
- 2017B Roadmap
- 2017A Roadmap
- Previous Years Roadmaps - 2016B Roadmap, 2016A Roadmap, 2015B Roadmap, 2015A, 2014B, 2014A, 2013B, 2013A, 2012, 2010, 2009, 2008, 2007, 2006, 2005

Data Access Layer WG

(roadmap updated after 2018.07.05 TCG TConf)

- Expected progress by Fall 2018 Interop (College Park)
  - TAP-1.1: new PR with RFC extension, waiting UWSRegExt Note to be published
  - ADQL-2.1: pending 1 missing implementation, new PR and RFC
  - SLAP-2.0: missing SSLDM revision (source retrieval issues), otherwise near to PR
  - DALI-1.2: gathering input at DALI-1.1-Next
    - polygon issue (see mail thread) needs to be solved
  - Time Series discovery and access Note to cover TDIG DAL roadmap
- Additional efforts to follow through and beyond next Interop
  - ObsLocTAP & ObsVisSAP (were OLAP & OVAP) Observation Locator and Object Visibility protocols: WDs
  - ProvTAP & ProvSAP Provenance access protocols: WDs
  - SIA-2.1 consolidate feedback, possible revision start
  - DataLink-1.1 consolidate feedback, possible revision start
    - SIA & DataLink feedback will be gathered in a Note (by end of Summer)
- Still on the roadmap, but waiting for more feedback
  - SODA

Current topics/goals (overview)

- VO-DML mapping
- Tessellation (including time)
- Multi-D take-up
- Time Domain as a whole
- Authentication & Authorization
- Vocabulary maintenance
- Solar System data interoperability
- Astropy engagement

random order

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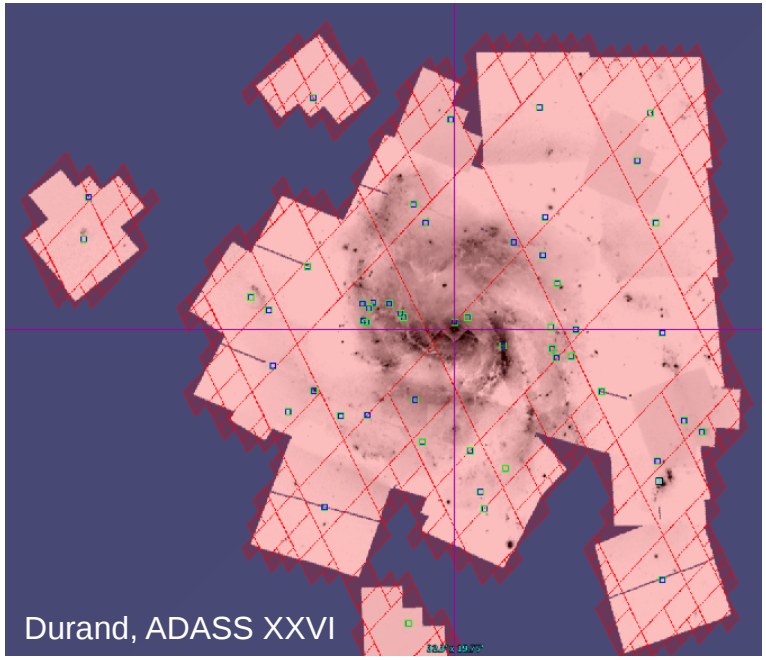
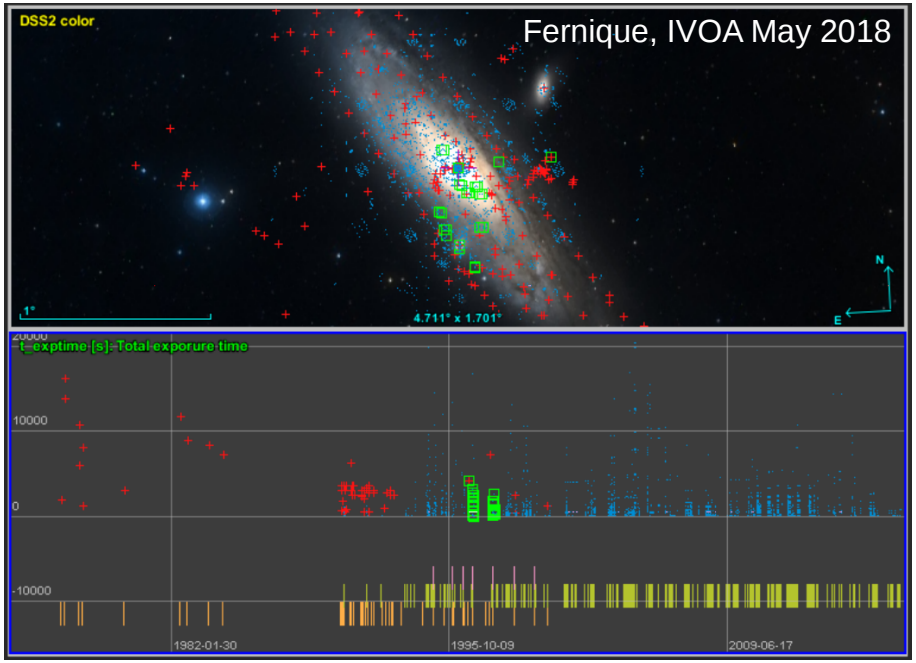
Multi-D datasets: status & feedback

- Discovering and accessing multi-dimensional datasets in a common way
  - A 2-step solution applies
    - Filter the datasets you're looking for
    - Explicitly retrieve or access them through specific services
- A set of Recommendations exist
  - Simple "Image" Access (protocol) v. 2.0
  - Server-side Operations for Data Access v. 1.0
  - DataLink v. 1.0
- Flanking & completing general dataset discovery with
  - Table Access Protocol v. 1.0 (but 1.1 on its way)
    - ObsCore v. 1.1
- Feedback has being gathered, revisions are planned in the near future

Coverage Footprint Tessellation



- HEALPix Multi-Order Coverage Maps
  - MOC v. 1.0
- Hierarchical Progressive Survey
  - HiPS v. 1.0
- T-MOC for time axis tesselation?



- MOCs are also helping the Registry coverages
- HiPS take up went faster than expected

Scalable data inspection/discovery

Time Series: data model, discovery, access

- Current top priority: Time Domain astronomy
  - Transient sky alerts
  - Time series interoperability
- An explicit Interest Group exists
- Time Domain IG provides requirements/input to
  - Data Model: common way to describe the time series datasets
  - Data Access Layer: how to discover and access those datasets

    - Already provided
      - Test bed for the VO Data Modelling language framework (next slide)
      - Input to better describe time axis characterization in ObsCore
      - Basic requirements to evolve the Multi-D DAL specifications

VO-DML: VOTable mapping

- Data Models are meant to describe common means to represents datasets/objects/relationships
- Data Models described in a *machine readable* common way allow interoperability through a self-describing solution
- VO-DML (v. 1.0) is the language used for the model description
- VOTable(s) are the exchange format
- We need a mapping of the VO-DML models into the VOTable format
  - Ongoing work…
  - DAL and Apps should really benefit from it!

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Solar System interoperability requirements

- Recently formed Interest Group
- Already active interoperability-driven community
- Providing requirements to the IVOA
  - e.g.: you cannot use ICRS framework to search a comet
  - e.g.: integrate vocabularies
- Using/adapting IVOA standards
  - e.g. EPN-TAP

Authentication & Authorization

- The ideal research world (in astrophysics) would see only public data since the start
  - We live not in and ideal world
  - Resource accounting also plays a role
- Agreed solutions to let applications (client) and providers (server) interoperate smoothly
- Currently available: (partly) Authentication
  - Single Sign-On (v. 2.0) “profile”
  - A few elements in the Resource Metadata Model & Serialization
    - i.e.: securityMethod
- Planning: Authorization
  - Interoperable exchange solution of authorization
    - In the form of “group” (~roles)
- Working: Authentication
  - Server-side & registry descriptions useful for server-client handshaking

…and also…

- Vocabulary maintenance
- Astropy engagement
- Radio community
- Exoplanets research field
- Registry maintenance and improvement
- VOTable updates
- Observation Location and Object Visibility
- DAL protocols updates
- DM models updates & translations
- Science Platforms
- Connection with other Open Science communities and organizations
- Monitoring VO resources health status
- Theory (simulations) interoperrability
- Transient events technology updates
- …

"Avoid excessive bullet-pointing […] the term <bullet-point> comes from people firing guns at annoying presenters."
(https://www.youtube.com/watch?v=KbSPPFYxx3o)

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How can I contribute

- IVOA, as an alliance, works thanks to the nation-wide members efforts and support
- VObs.it is the Italian member of the IVOA
  - Funding for the INAF component of VObs.it comes through the ICT Office
- Everyone is free to participate in the VO works
  - WG/IG mailing lists
  - (T)Wiki community
  - Interoperability meetings participation/contribution
  - National/European networking
- Scientific input is required, technology efforts are based on it

Media Group

IVOAastro

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