



Facility/Observatory, Telescope, Instrument, Filter

Xiuqin Wu
NED task lead, Caltech/IPAC



What is NED?



- **NASA/IPAC Extragalactic Database**
 - Provides free access to the public since 1990 (more than 34 years).
 - The longest running project at IPAC
- **A comprehensive database of multiwavelength data for extragalactic objects**
 - On-going fusion of information integrated from catalogs and science publications
 - Basic data: cross-IDs, coordinates, redshifts, distances, diameters, photometric measurements, references, links to other archives
- **TDAMM support: Gravitational Wave Followup service added in 2019**
 - Provides host candidate lists within minutes of GCN alerts <https://gcn.nasa.gov/>,
 - Responds by cross-matching galaxies in the local Universe with event's HEALPix map in 3D
- **Examples of catalogs joined in NED**
 - DESI Early Data Release (EDR) Catalog
 - Chandra Source Catalog (CSC 2.0.1)
 - AllWISE Source Catalog
 - 2MASS Point Source Catalog (PSC)
 - Spitzer Source List (SSL)
- **NED has data or links to over 135K published references**
 - Nature, A&A, AJ, ApJ, MNRAS ...



What We Are Doing Now



Redesign, refactor, reimplement ... with cloud in mind

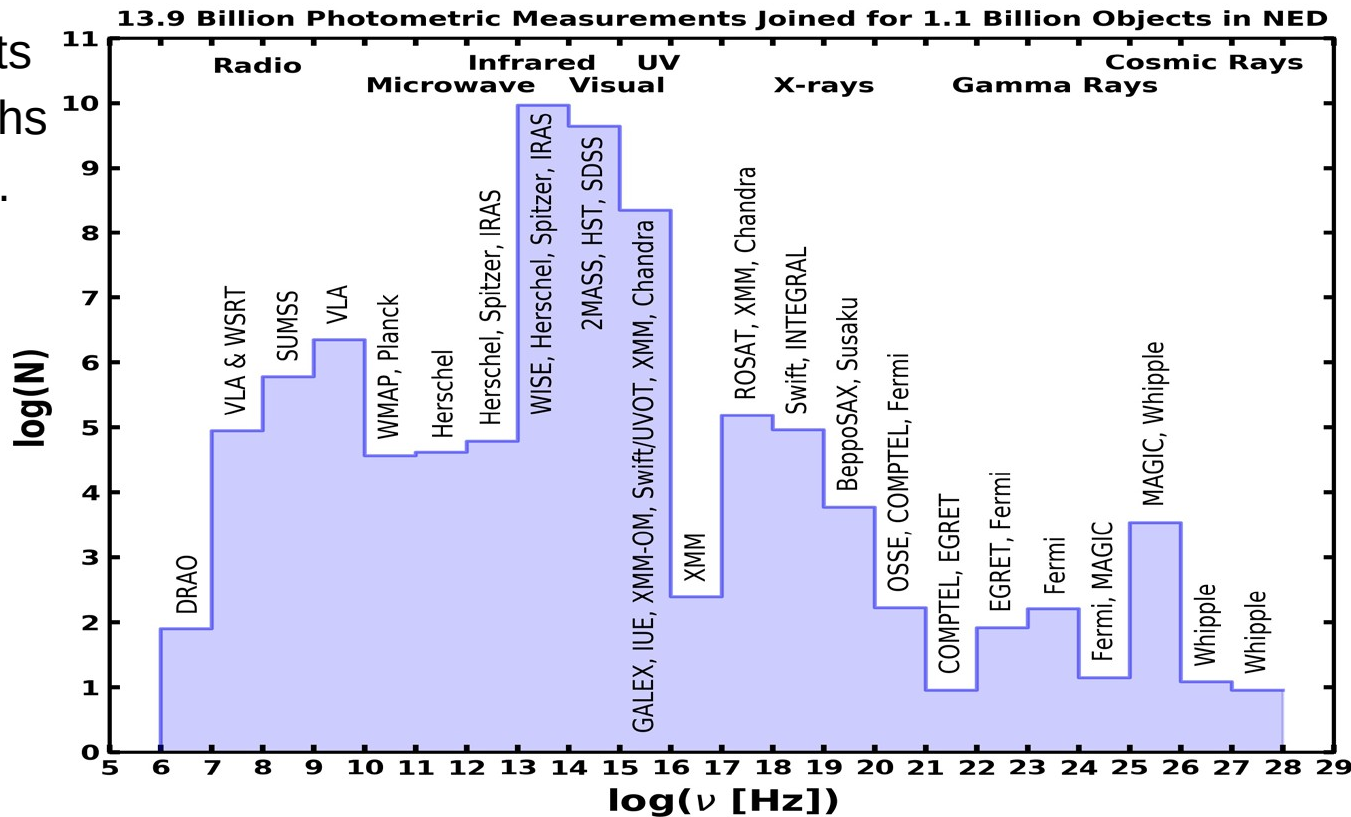
- Database schema
 - Inspect every data table and normalize the data content throughout
 - Reorganize and reduce duplication everywhere
 - Rename tables and columns to be consistent and self-explainable
- Search engines
 - Follow the same design pattern for each search function
 - Separate the data and presentation
 - Isolate the search function in stored procedure or base functions so future changes do not affect APIs and UI
- APIs
 - Based on the search engines
 - Replace the classic cgi-bin functions
 - Update Astroquery.ned package
- UI
 - Calling the new search engines
 - Consistent presentation of data in VOTable with UCDS



NED Photometry Data



- 13.9B data points
- Wide wavelengths
- 19K header info.
- Not consistent
 - WISE w1,
 - w1 WISE ...





Details on FOTIF



Facility/Observatory, Telescope, Instrument, Filter

- Goal of the task
 - Normalize the tables
 - Eliminate duplicated entries
 - Fill in the missing information
 - Make the content consistent
- Status
 - 95% done, in process of final checking

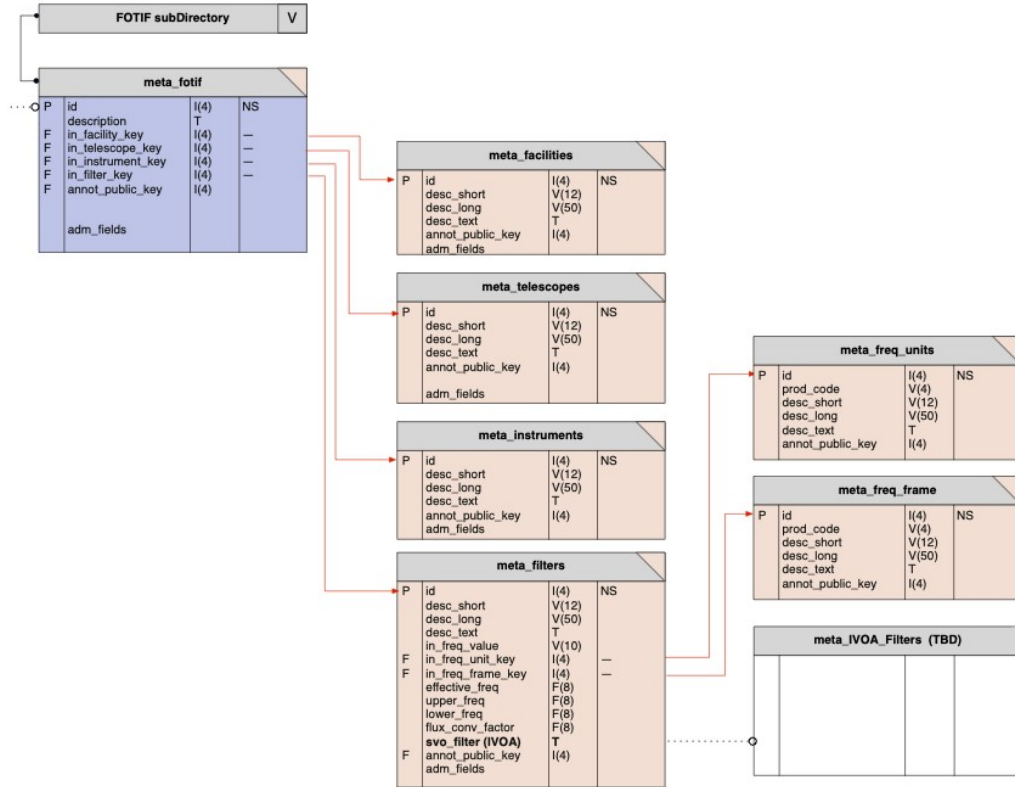


NED FOTIF
Schema 2024

R. Ebert 20240315 / 20220601

Facility
observatory
Telescope
Instrument
Filter

Note: some data fields of tables are not shown to clearly expose the primary and foreign key constraints.



NED FOTIF view sample

select * from meta_fotif_view limit 20;

id	facility	telescope	instrument	filter	freq_hi	freq_lo	freq_eff	ref_frame	ivoa_filter_id
20043	Arecibo, Green Bank, MPIfR	Arecibo, 91m, Effelsberg, Nancay						1.420e+09	
42625	Arecibo Obs	Arecibo	ALFA				1.420e+09		
47537	ASTRON	WSRT	Drift scan mode				1.420e+09		
24767	ATNF	Parkes					1.420e+09		
10304	ATNF	Parkes					1.420e+09		
48519	Chandra X-Ray Obs	Chandra	LETGS				1.150e+18		
15618	Green Bank Obs	GBT					1.420e+09		
48407	Jodrell Bank Obs	Lovell 76m	Multibeam receiver				1.420e+09		
33953	Mauna Kea Obs, CFH Obs, Austr. Astro. Obs	UKIRT, CFHT, AAT	IRCAM1, MONICA, IRIS					1.390e+14	
25259	Nancay Radio Obs	NRT					1.420e+09		
30210	NAOC Xinglong Obs	EST, TNT	CCD				4.680e+14		
44111	Nobeyama Radio Obs	NMA	RAINBOW interferometer				8.710e+10		
34991	NRAO	EVLA	D configuration				1.150e+11		
34573	Observatorio del Roque de los Muchachos	WHT	ISIS				4.690e+14		
30667	Observatorio do Pico dos Dias	1.6m	B&C spectrograph				4.450e+14		
41758	Palomar Obs	1.5m, 5m	Photomultiplier				5.421e+14		
8641	Smithsonian Astrophysical Obs/ASIAA	SMA					2.310e+11		
14172	Smithsonian Astrophysical Obs/ASIAA	SMA					2.310e+11		
33048	Spitzer	Spitzer	IRS				3.840e+13		
36184	University of Hawaii	2.2m	TeK2k				4.640e+14		

(20 rows)



What's next?



- Would like to share with you the final list when we are all done
- Would like to hear your thoughts
- Maybe provide a service to search the FOTIF tables



Contact Us



- Cgi-bin users
 - The service may stop working in August 2026.
 - Contact us now with your detailed use cases. We will provide instructions on the replacement functions.

Ned-helpdesk@ipac.Caltech.edu

<https://ned.ipac.caltech.edu/contact/NED>

Thank you!

