

# WP7 Task 6: Photometry Data Model and services

**Jesús Salgado**

*Jesus.Salgado@sciops.esa.int*

**ESAVO Team**

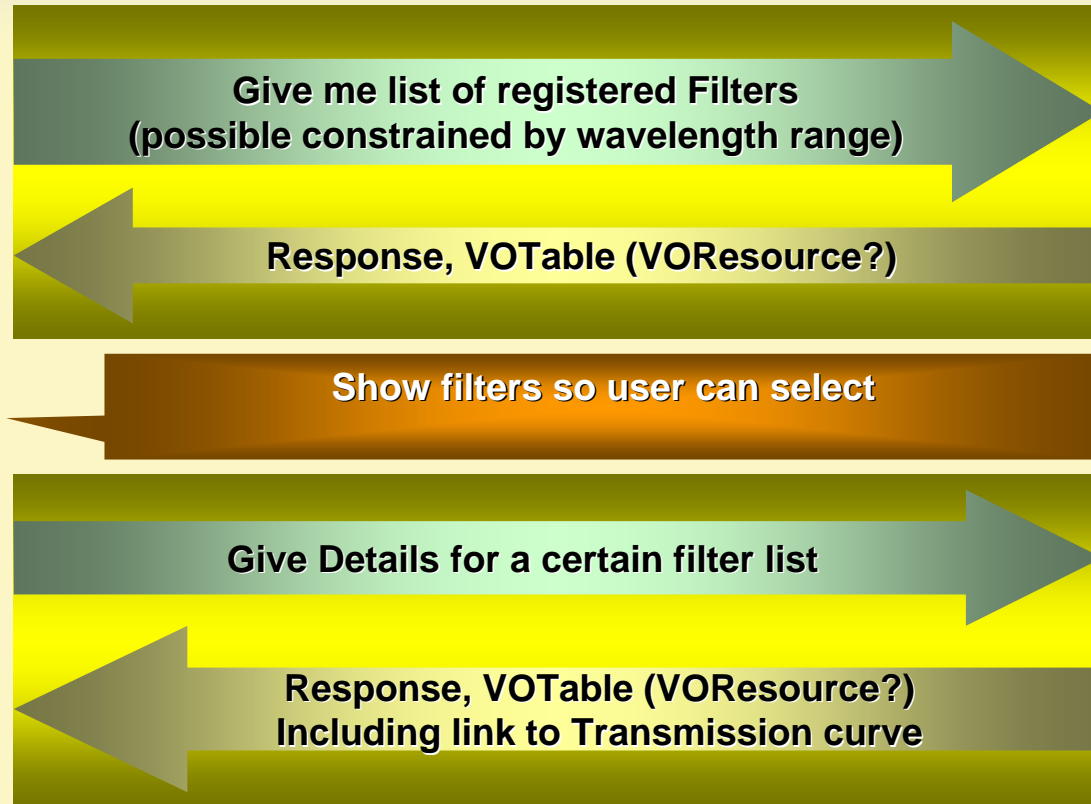
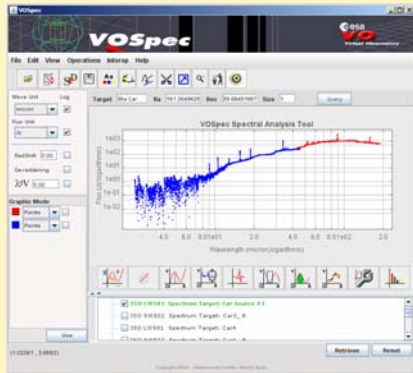
**European Space Astronomy Centre (ESAC)**

**European Space Agency**

- ❑ Include photometry data in VO context
- ❑ This is an old and recurrent request of astrophysical community. One of the main topics raised during community workshops
- ❑ Photometry data have many related problems but we can include a lot of data by very simple work
- ❑ In theory, SSAP gives support to photometry data, but no services providing photometry data are created. Something is missing
  - Filter characterization
  - Format of the different ways to serialize photometry data
- ❑ Present effort will not cover ALL the possible photometry issues but many (most?) of them

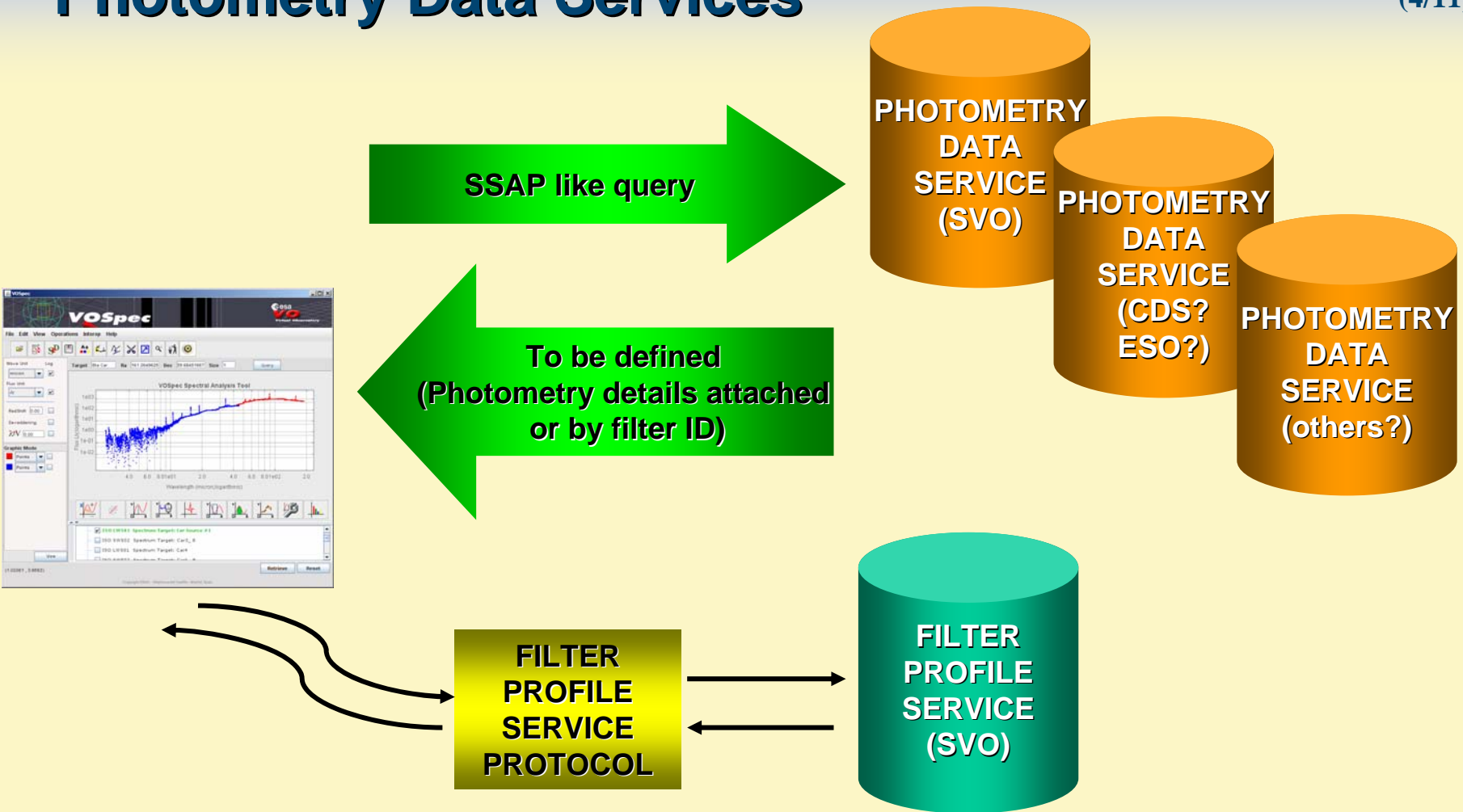
# Photometry filter service

(3/11)



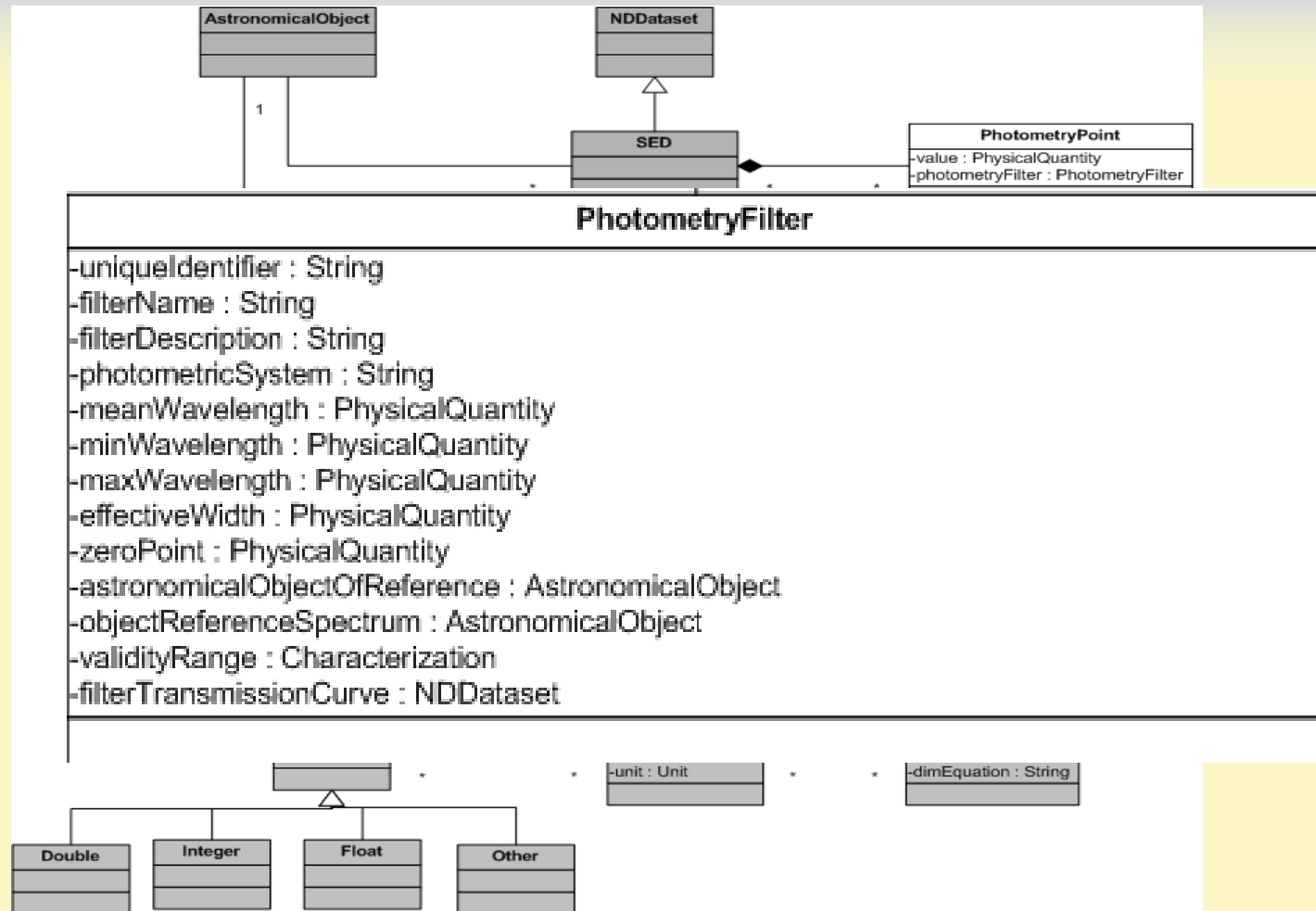
# Photometry use case II: Photometry Data Services

(4/11)



- ❑ **Definition of SSAP services for photometry data (ESAVO/SVO)**
  - Implementation of 5 SSAP new services following this definition
  - (4 TSAP- COND, DUSTY, KURUCZ, NEWGEN and
  - 1 pure SSAP- IUE photometry)
  - As far as we know, these are the first services of this type in VO context
  - Services registered in EuroVO registry (SVO)
  - Adaptation of VOSpec to consume these photometric SSAP services
  
- ❑ **Definition of a Filter Profile service**
  - FPS server implemented by SVO
  - FPS client implemented by ESAVO and integrated in VOSpec
  
- ❑ **Photometry Filter DM updated** as per result of previous exercise
  
- ❑ Special thanks:
  - **Carlos Rodrigo** (SVO) – SSAP Servers and Filter Profile Service implementation
  - **Isa Barbarisi** and **Juan Gonzalez** (ESAVO) – VOSpec client implementation

# Photometry DM updated DM



# Photometry TSAPs & VOSpec implementation

The screenshot displays the VOSpec software interface, which is used for spectral analysis. It consists of several main windows:

- Server Selector:** A window on the left showing a list of services. The "Synthetic photometry for Kurucz models" and "Synthetic photometry for NextGen models" are checked. A message at the top states "Green services are online and support params selected".
- Query by params:** A central window showing a query tree for the target "Vega". The query parameters are: `TARGET.NAME Vega`, `Simple Query`, `POS 279.234735,38.78369194`, `SIZE 1`, `Advanced Query`, `Service Specific Query`, `Far Ultraviolet Spectroscopic Explorer (Simple Spectrum Data)`, `Hubble Space Telescope Spectra`, `The ISO Data Archive InterOperability`, `International Ultraviolet Explorer`, `Synthetic photometry for Kurucz models`, `teff_min 9000`, `teff_max 10000`, `logg_min 3.50`, `logg_max 3.50`, `meta_min -0.50`, `meta_max -0.50`, `lambda_min`, and `lambda_max`. Below the tree is an "Insert Param Value" section with a dropdown menu set to "meta\_max" and a value of "-0.50".
- VOSpec Spectral Analysis Tool:** A window on the right showing a plot of flux versus wavelength. The plot title is "VOSpec Spectral Analysis Tool". The y-axis is labeled "Flux (erg/cm^2/A/lambda logarithmic)" and ranges from 1e-17 to 1e-09. The x-axis is labeled "Wavelength (Angstrom logarithmic)" and ranges from 2.0 to 2.0. The plot shows a spectrum with various data points and a fitted model. Below the plot is a "Spectra List" window showing a list of models: "Kurucz ODFNEW /NOVER models", "Synthetic photometry for Kurucz models", "Synthetic photometry for Kurucz teff=9000 logg=3.50 meta=-0.50", "Synthetic photometry for Kurucz teff=9250 logg=3.50 meta=-0.50", "Synthetic photometry for Kurucz teff=9500 logg=3.50 meta=-0.50", "Synthetic photometry for Kurucz teff=9750 logg=3.50 meta=-0.50", and "Synthetic photometry for Kurucz teff=10000 logg=3.50 meta=-0.50".

# TSAP server for photometry data

- TSAP response
- Photometry data file



# Filter profile service output

- Filter profile service output
- Filter description

- ❑ Photometry data is widely distributed in catalog way
- ❑ Access to these catalogs look more related to Cone Search Extension or, more probably, TAP access
- ❑ Similar approach done in ESAVO VOQuest application (ADQL search on catalogs and photometry data sent through Plastic/SAMP to SSAP client applications)
- ❑ Cone Search Approach
- ❑ Other possible and more accepted approach is the adaptation of catalogs with photometry data to SSAP
  - Response records, one per source
  - Links to photometry files
- ❑ This approach looks a little bit verbose, but it would be immediately integrated in SSAP client applications

- ❑ Add module in VOSpec to create synthetic at client level using Filter Profile Service information
- ❑ Release public version of VOSpec with support to TSAP/SSAP with photometry data and synthetic photometry
- ❑ Notes to be sent to IVOA (Photometry DM and Filter Profile Service protocol)
- ❑ We are very close to include a lot of photometry data in VO
  - Look for other data providers to create SSAPs for photometry (CDS? ESO?)
- ❑ Discussion on photometry in catalogs with relevant AIDA partners