

Product Review

Date of Review: 10 December 2020

Recipient Group: TON

Committee Members: Julio Camargo, Felipe Braga Ribas, Gustavo Rossi, Marcelo Assafin, Bruno Morgado, Altair Ramos Gomes Júnior.

Note: Julio Camargo is not part of the evaluation committee which was composed by Felipe, Gustavo, Marcelo (absence justified), Altair and Bruno.

Product: SSO Portal

Date of Report:

Abstract:

Brief description of product and purpose of the current review (preliminary design; first implementation, final review before public deployment, upgrade) Describe participants in the review, the meeting and the documentation presented.

FBR: The presented product aims to be a portal to analyze DES data (up to Year-6 DR), searching for known solar system objects, provide their astrometric positions, use it to update the object's orbit and predict stellar occultations. The committee was composed by specialists in the domain, and possible future users. It was the final review before its first public deployment.

Findings:

Brief description of the presentation, product, in particular, what it does, and if it meets the objectives and requirements set for the tool.

FBR: The presentation was divided in three parts: i) the aims, design and project development; ii) the applied technology and infrastructure; iii) a live demo of the portal capabilities. Aiming to analyse the DES data for the search of Solar System objects, it uses the log of DES points to verify which SS objects would be visible and creates a data base with the relevant information. The users can then make a catalogue of objects according to their orbital class or with individual bodies. The portal then uses MPC plus DES astrometric positions to calculate a new orbit and ephemeris to the concerned objects and calculates future stellar occultations, which are displayed with the prediction maps and relevant information, as a catalog. The portal is functional in all its steps and makes use of powerful tools to deliver the results with an adequate time-interval.

GBR: the presentation was concise and described well the functionalities of the portal. The SSO portal is a very practical and useful tool to deal with big data in the context of the first steps in the stellar occultation science and also in preparing the data from big surveys for use in astrometry and the prediction of stellar occultations. In the current version it meets the proposed objectives and leaves space for future implementations and integration with new tools.

BEM:

- The tool is impressive and has high potential.

Comments:

General comments about the tool - does it meet the requirements, is the design adequate and user-friendly, is there enough documentation/tutorial on how to use; is it complete; are the functionalities adequate for the purpose.; does the tool is consistent with LIneA's standard; authentication/authorization; does it have the proper acknowledgements (LIneA, agencies, project)

FBR: The portal is a powerful tool, and it is ready to be delivered as a first version. It is of interest for many Solar System researchers. It was created presenting the new Linea visual standards.

Note by JIBC (not a member of the evaluation committee): GBR remarked that more information is necessary to comment documents and tutorials. Only brief comments about them were made during the presentation.

Recommendations:

Possible ways to improve the tool; suggestions for future upgrades, specific corrections to be made for final approval

FBR: This version should be seen as the first step. It is a very powerful tool and should be used on data from other surveys.

- Collaborators should be able to use their own positions of individual objects, considering different weights on the orbit determination;
- The scientific board should suggest and prioritize a list of other surveys from which the same work can be done; Users should be able to suggest other surveys (via ticked?);
- Decision of obtaining, or not, the astrometry from the surveys' images can be based on the influence of it to the final ephemeris. The result can be validated by the scientific board analyzing the rms of the respective positions on the orbit fit.
- Predictions of stellar occultations should be obtained with the available data for ALL Solar System objects; Predictions would be calculated, once in a year, for the whole year. As a suggestion, predictions would be updated in a every-month basis, for the 1,5 month ahead;

GBR:

- In the current version, the session “occultation” and “calendar” presents the same information in different ways. I believe that this could be in the same tool and the user chooses which way to present. The way it is, it seems that they are 2 different tools;
- Stetically, I would change the figure for the modules to some figures more related to the topic, instead of presenting a galaxy, for example.
- For improvements:
 - include the process for other surveys;
 - Adapt the astrometry tool to work with a specific object (similar to what was done in version 1);
 - Besides the prediction maps, it could be implement a GoogleMaps tool;
 - Include a brief description - one sentence - within every module/tool (for example, on mouse over the figure of the module/tool Occultation in the main page put “Presents the occultation prediction maps”)
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BEM:

- The tool seems user-friendly, but a detailed tutorial and a recorded hands-on session (or small videos about each funcionability) can benefit the users.
- The Science team should investigate an automatic and scheduled way to update the Skybot. The possibility of a filter to select strongly affected objects (discoveries and highly updated ephemeris) should also be investigated. In that case, only the selected objects should be re-run in the Portal at each Skybot update (avoiding unproductive procedures). That will allow an efficient way to deal with discoveries in the LSST era.
- The star catalogue utilized in the reduction (astrometry and stellar occultation predictions) should be clearly stated and easily updated (e.g. Gaia DR2 to Gaia EDR3).
- A tool to compare the results in some steps can be developed to access the differences in each step effortlessly.
 - For the dynamical fit (NIMA) comparing the observed residuals and the ephemeris' propagated uncertainty will help the Science team choose between one astrometry or another (e.g. PRAIA x DES).
 - The comparison between predictions will allow a consistency check.
- It was not clear (for me) if the SSO Portal already allows the upload of astrometric data-sets. If not, this feature can be highly relevant as it will allow the addition of private data-sets and last-minute updates.

Conclusions:

Describe final decision of the committee - approved for deployment; approved pending corrections; rejected. Give reasons for the final conclusion

FBR: The Solar System portal is a powerful tool and its use should not be limited to the DES data. If other surveys data are included, and predictions of stellar occultations for all solar system objects are available, it has the potential to become the reference on the subject. The current version is complete and functional, therefore it is approved for deployment.

GBR: The portal presents all the tools and functionalities that was proposed for this version, I consider it as approved for deployment.

BEM: I agree that the tool is approved for deployment.

Signature:



Julio Camargo

Rio de Janeiro, 11 de fevereiro de 2021