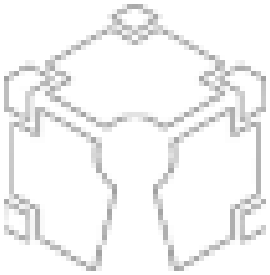

Contribution ID: **5** Type: **Talk**

DOCKS, a growing software suite for space mission prototyping

Monday, 14 October 2019 09:50 (20 minutes)

DOCKS is a C²ERES endeavour to provide everybody with free tools for mission design, in Earth vicinity or in deep space. Modules in DOCKS include:

- A carefully validated Deep-Space propagator with enough flexibility to simulate cruise trajectories or proximity operations at a non-sphérical asteroid; for Earth vicinity, user-friendly interfaces to STELA, free software by the French agency CNES are embedded; also simple Keplerian trajectories can also be generated.
- An "easy-quaternion" generator module to simulate various pointing strategies, such as inertial pointing, slew or tracking; an ADCS early-simulation tool is also under consideration.
- An intervisibility-computation module produces Event Files for ingress or egress with ground stations' horizon or Sun eclipses.
- A Telecom module gathers and interfaces early assessments of telecom design with the orbit, intervisibility and attitude data as well as with a datalink tool by CNES to monitor the datavolume on-board.
- A Power module gathers an early-design of arrays and batteries and interfaces with a scenario (orbit and attitudes) to monitor the right sizing of the power design.

All these modules read or write their interfaces in CIC-CCSDS ascii format and configure a 3D display of their results, permitted by VTS, another free software by CNES for space data visualization.

Spread the word: only open source or 100%-free code, mainly in Python. Early releases are freely available. Experts are invited to cross-check our results and provide data or modules. Textures or configuration panels could be greatly improved with the support of the community.

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Session Classification: Talks

Track Classification: Software