Mission Configuration Tree for the James Webb Space Telescope (JWST)

Engineering

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Introduction & Background

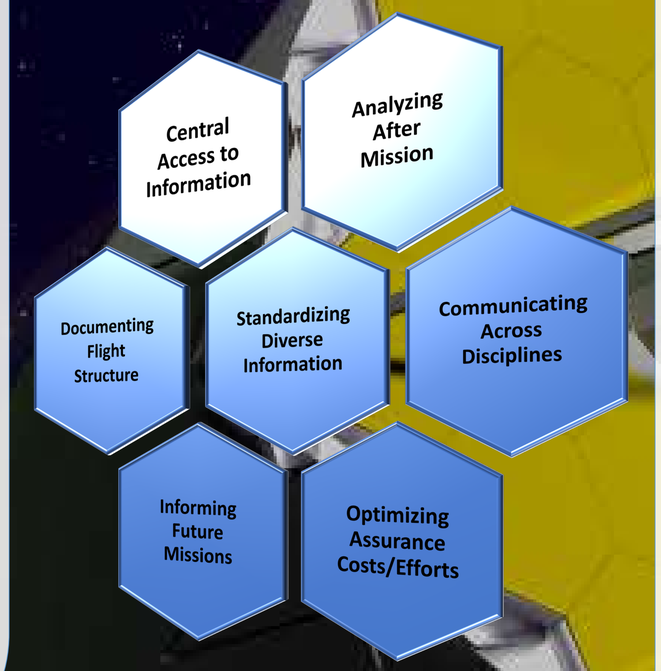
The Mission Configuration web-based application is a means of documenting the as-flown structure of all GSFC missions and making documents for all assemblies easily accessible that are pertinent or helpful for future analysis, such as schematics, drawings, parts lists, engineering orders, and images. Mission Configuration allows for searches across all missions in the database by a variety of criteria, e.g. keywords, part numbers, suppliers, etc. Mission Configuration is an NAMS access controlled database to protect sensitive information.

Technique & Results

Because of the large number of components on JWST, the scope of the work was limited to creating the configuration tree for the JWST Integrated Science Instrument Module (ISIM). Documents (Critical Design Review presentations, End Item Data packages, drawings, parts lists, engineering orders) were searched and collected from the JWST Next Generation Integrated Network (NGIN) database in order to:

- Create a configuration tree showing parent/child relationships
- Extract, save, and label all documents indicating their place in the configuration tree
- Collect supplier information (Supplier Name, Cage Code, etc.) for each part as metadata

The configuration tree and collected documents including metadata and will be entered into Mission Configuration by the database administrator.



Example Configuration Tree for NIRCam (Near-Infrared Camera)

Discussion & Conclusions

The Mission Configuration application is an important resource for providing access to engineering documents related to the components used on each mission. It is a central repository for component information across missions. Inclusion of the documents in Mission Configuration allows for a concise breakdown of information currently stored with different labels in diverse formats in a variety of configuration management system. Applying a standardized taxonomy makes the information easily searchable and more readily accessible while retaining project-specific terminology. Mission Configuration will benefit Safety & Mission Assurance, Mission Operations, Engineering and Project Management from the Proposal Phase through Operations by providing the information about the use of a component across various GSFC mission.

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