Comparison of IV&V of Uncrewed Projects and Crewed Projects

Uncrewed

- Flight software often has more innovative approaches
- Variety of science mission technology, e.g., ion propulsion
- Projects tend to be smaller, therefore, more innovative methods needed
- Late and/or extensive changes may occur to a new spacecraft software while instruments/science package software tends to be new
- IV&V needs to ask clearly for needed information and/or access to artifacts
- Need alternative or backup for one software solution if the other fails
- IV&V participation in post-launch support sees the benefit of the changed mission environment
- Uncrewed missions may have greater flexibility and time to reconfigure/

Crewed

- Need better document access in order to maximize review and repository
- Flights are more tightly managed since this is a cost to the taxpayer
- Importance of reusable future flight experience, based on a standard platform
- Need better document access to enable monitoring and repository
- Flight software is usually more thoroughly documented and software is well structured
- More innovation throughout the project involves the software
- Software tends to have existing methods that should be used

Comparison of IV&V of MPCV EFT-1 and MPCV EM-1 and Beyond

- MPCV's Avionics Software is a large effort and software-intensive system
- Significant amount of legacy code for MPCV
- Rhapsody tool for design/code is also new for IV&V and the current projects
- Significant domain knowledge (onboard/ground systems/ESD level)
- Need IV&V analysts to have gained experience working with Rhapsody tool for design at least on ECLSS and HSSD software

Features of EFT-1 and EM-1

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IV&V Participation in Post-Launch Support

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Post-Launch Support

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