

An Overview of NASA's Common Instrument Interface (CII)

The Common Instrument Interface (CII) Study activity supports NASA's Earth Science Directorate (ESD) by identifying a common set of Earth Science instrument-to-spacecraft interface guidelines that will improve the likelihood that these instruments become secondary payloads on missions of opportunity. The CII team works with industry, academia, and other government agencies to analyze the interface trade space, which helps ESD understand the key drivers in the matching process. CII also hosts periodic workshops to bring together stakeholders to review team guidelines and nurture relationships within the community.

The CII data interface guidelines recommend the use of one of three common spacecraft data buses: MIL-STD-1553B, RS-422, or SpaceWire. SpaceWire is preferred for its scalable, high data rates and low power consumption. The CII data interface recommends CCSDS for packet control, a CRC for reliable data transmission, and defines five message types: spacecraft status (i.e. time and ephemeris), command, command acknowledgement, instrument telemetry, and instrument science data.