



Common Instrument Interface (CII) Workshop 1

CII for Earth Science Instruments

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CII Team

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CII Workshop Agenda



- Welcome
- CII Purpose and Goal
- Approach
- Workshop Purpose and Goal
- Outcomes
- CII Working Group/Team
- Level 1 CII Guidelines
- CII Interfaces
- Summary



CII Purpose and Goals



- Common Instrument Interface (CII)
- What is it? What is its purpose?
- Problem statement:
 - NASA's Earth Science Division (ESD) will be developing secondary payload Earth Science instruments that will need to be matched up with Missions of Opportunity (MoO).
 - How can we improve this matching?
- Proposed solution:
 - If these Earth Science instruments had some common instrument to S/C interfaces then there would be a better possibility of this matching to occur.



CII Purpose and Goals



- Goal:
 - To develop a set of Common Instrument Interface (CII) guidelines for Earth Science instruments that will improve the match up with Missions of Opportunity and reduce instrument to spacecraft interface complexity



Approach



- Approach:
 - Form a CII Working Group to work with industry, academia, and other government agencies to see how instrument interface guidelines could be developed to understand the key drivers that help or hinder the matching of these secondary payloads.
 - CII Working Group will hold CII Workshops several times a year and also participate in Rideshare conferences.



CII Workshop Purpose & Goal



- Workshop Purpose:
 - Give an overview of CII
 - Discuss some MoOs
 - Cover similar CII lessons learned
 - Hold sessions on each of the instrument interfaces to engage S/C and instrument developers in the development of these CII guidelines.



Outcomes



- Outcomes:
 - CII Guideline documents will be briefed to the ESD on a regular basis to provide feedback on the Earth Science instrument to MoO accommodations.

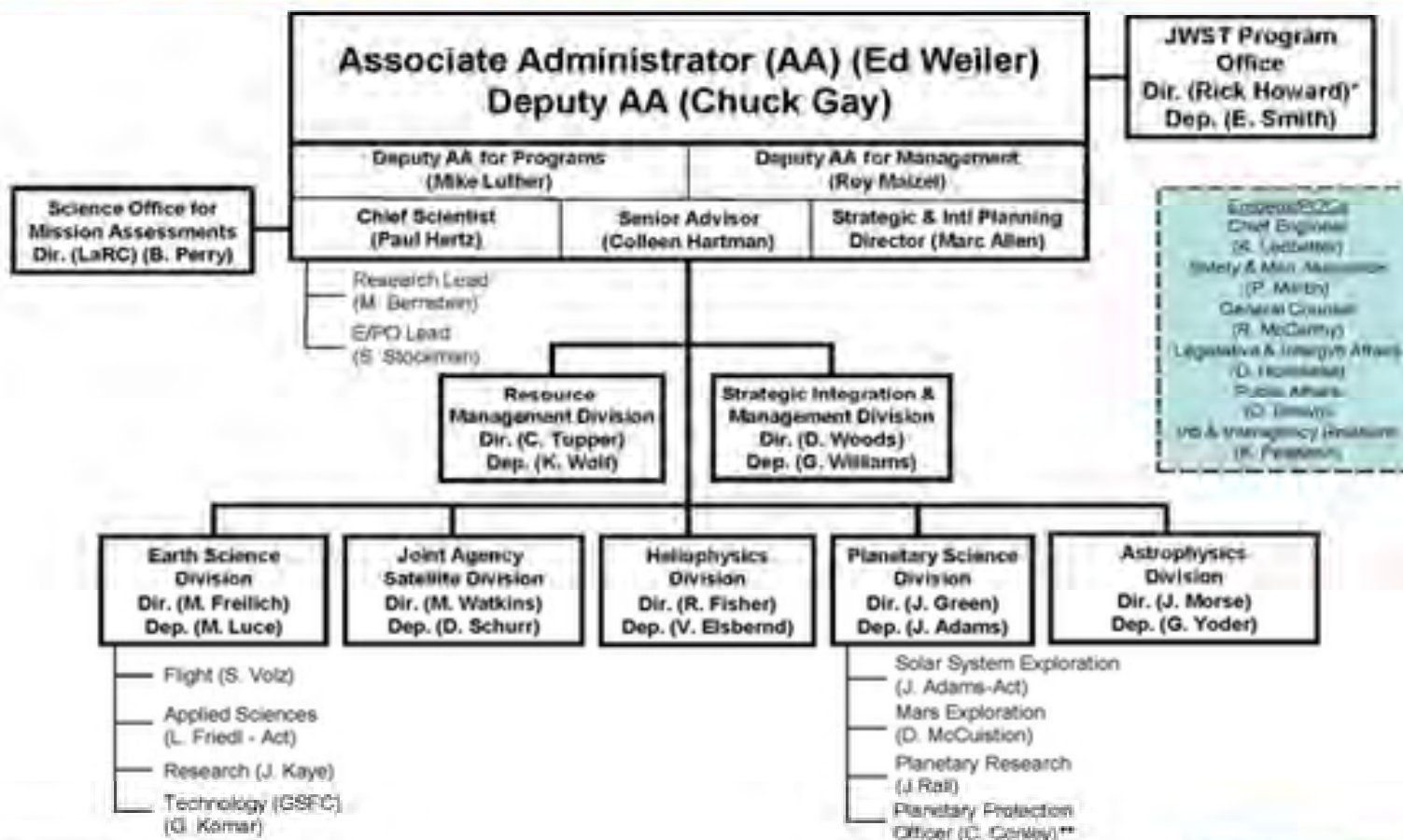


CII Team



NASA Science Mission Directorate (SMD)

SMD Organization



* Direct report to NASA Associate Administrator
 ** Co-located from the Front Office

February 2011



CII Team (cont.)



CII Organization

HQ Flight - Dr. Steve Volz

HQ
Program Scientist EV-I – Dr. Ken Jucks
Program Executive EV-I – Dr. Mitra Dutta

ESSP Program Office
Program Director/Dep. Program Director –
Frank Peri/Greg Stover
Mission Manager EV-I - Diane Hope

Special Projects – CII
PO Lead/Chief Engineer - Randy Regan
Business Manager - Cathy Murray-Wooddell
Consultant - John Rogers
Workshop Support - Craig Hutchinson

Management Group

Project Manager
Dr. Satya Kotaru (LaRC)

Working Group

International Contacts
Dr. Satya Kotaru

JPL Lead
Dr. Benny Toomarian

GSFC Lead
John Carey

ARC Lead
Deborah Westley

MSFC Lead
Roy Young



CII Team (cont.)



ESSP PO & LaRC	JPL: (WG & Testbeds/Simulators)
PO Lead/Chief Engineer - Randy Regan	Management POC - Dr. Steve Bard
Business Manager - Cathy Murray-Wooddell	Lead - Dr. Benny Toomarian
Consultant - John Rogers	Instrument Electronics - Larry Hovland
Project Manager/International POC - Dr. Satya Kotaru (LaRC)	Instrument System Engineering - Michael Brenner
Workshop Support - Craig Hutchinson	Instrument Data and FSW Management - Ben Bornstein
	Instrument Mechanical Engineering - Randy Hein
ARC: Systems Engineering - Deborah Westley	Instrument Thermal Engineering - Eric Sunada, Gaj Birur
MSFC: Systems Engineering - Roy Young	Engineering - Raul Romero
	GSFC:
	Management POC - Barbara Pfarr
	Lead - John Carey
	Instrument Interfaces - Jeff Hein
	Systems Engineering - TBD
	Instrument System Engineering - Evan Goldstein
	Testbeds/Simulators - TBD



CI Interfaces



- Interfaces
 - Data
 - Power
 - Instrument modes
 - Power distribution
 - Mechanical / Structural
 - Mass / volume constraint
 - Moment / CG constraint
 - Contamination
 - Pointing: Degrees of movement, launch lock
 - Alignment, optical bench
 - Thermal Interface
 - Field of View
 - Environments



Level 1 CII Guidelines



Requirement ID	Function	Guideline
LEVEL 1-1	Priority	The instrument should be classified as a secondary payload
LEVEL 1-2	Operational Lifetime	The instrument design operational lifetime should be ≤ 2 years (based upon a mission risk classification of Class C or D and NPR 8705.4)
LEVEL 1-3	Power	The orbital average power required by the instrument should be ≤ 200 Watts
LEVEL 1-4	Mass	The mass of the instrument should be ≤ 200 Kg
LEVEL 1-5	Data Rate	The instrument data rate should be ≤ 1.5 Mbps
LEVEL 1-6	Electrical Ground	The instrument should electrically ground to a single point on the spacecraft
LEVEL 1-7	Software Classification	The instrument software should be Class C
LEVEL 1-8	Thermal	the instrument should be thermally isolated from the spacecraft



Summary



- The CII guidelines are provided to increase instrument compatibility with spacecraft so that the maximum number of Missions of Opportunity (MoO) can be realized
- The CII guidelines are designed to allow both the instrument and the spacecraft providers to work independently through the early phases of the applicable design processes
- Final implementation details will still require some resolution between the instrument and the spacecraft once paired in an MoO via the Spacecraft to Instrument ICDs
- CII Workshops provide a method to engage S/C and instrument developers in the development of these CII guidelines