VLBI2010 Monitor and Control Infrastructure

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Overview

- VLBI2010 present a myriad of new system parameters "points" that will require monitoring and/or controlling

- A working group "VLBI2010 MCI Collaboration" has been organized including the following:
  - Wettzell Observatory
  - NASA/Goddard/NVI
  - MIT Haystack

- Tasked with the following goals
  1. Develop standardized interface
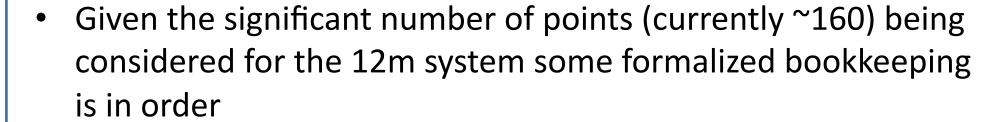 2. Make a recommendation to the geodetic VLBI community for MCI

Approach

- System-level definitions to MCI points
  - Analysis
  - Diagnostics
  - Safety

- Each point is further classified into those critical for various levels of operations:
  - Local: personnel at the station are responsible
  - Remote: personnel are off-site are responsible
  - Unattended: responsibility put on system developers

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NASA/Goddard 12m VLBI2010 MCI System Decomposition

- Given the significant number of points (currently ~160) being considered for the 12m system some formalized bookkeeping is in order

- The decomposition provides a means of tracking and accounting that is key for MCI sub-system integration

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NASA/Goddard 12m VLBI2010 MCI System Decomposition

Analysis Points

Node	Component	Point Name	Operations Categorization	Necessity
Antenna	Pedestal	Height	Analysis	Non-critical
Antenna	Pedestal	Tilt	Analysis	Non-critical
Antenna	Reflector System	Quadpod/Subreflector Deformation	Analysis	Non-critical
Antenna	Reflector System	Backstructure Deformation	Analysis	Non-critical
Antenna	Reflector System	Dish Deformation	Analysis	Non-critical
Antenna	Reflector System	Azimuth Pointing	Safety/Diagnostics/Analysis	Critical
Antenna	Reflector System	Elevation Pointing	Safety/Diagnostics/Analysis	Critical
Antenna	Reflector System	Wind Speed	Safety/Diagnostics/Analysis	Non-critical
ControlRoom	DBE	Channelized Digital Gains	Diagnostics/Analysis	Critical
ControlRoom	DBE	System Temperature	Diagnostics/Analysis	Critical
ControlRoom	DBE	Phase Cal Phase	Diagnostics/Analysis	Critical
ControlRoom	DBE	Phase Cal Amplitude	Diagnostics/Analysis	Critical
ControlRoom	DBE	Bit Code Version	Diagnostics/Analysis	Non-critical
ControlRoom	DBE	Serial Number	Diagnostics/Analysis	Non-critical
ControlRoom	DBE	DOT offset	Diagnostics/Analysis	Critical
ControlRoom	UDC	LO Frequency	Diagnostics/Analysis	Critical
ControlRoom	UDC	Serial Number	Diagnostics/Analysis	Non-critical
ControlRoom	UDC	Software Version	Diagnostics/Analysis	Non-critical
TimeFrequency	GPS	Station GPS/1PPS	Diagnostics/Analysis	Critical

Analysis Points

Field System Computer — Front-End Node — Antenna Node — Control Room Node — Internet

Local Subnet

Data Backup Server — Time/Frequency Node — Ancillary Node — Firewall

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