

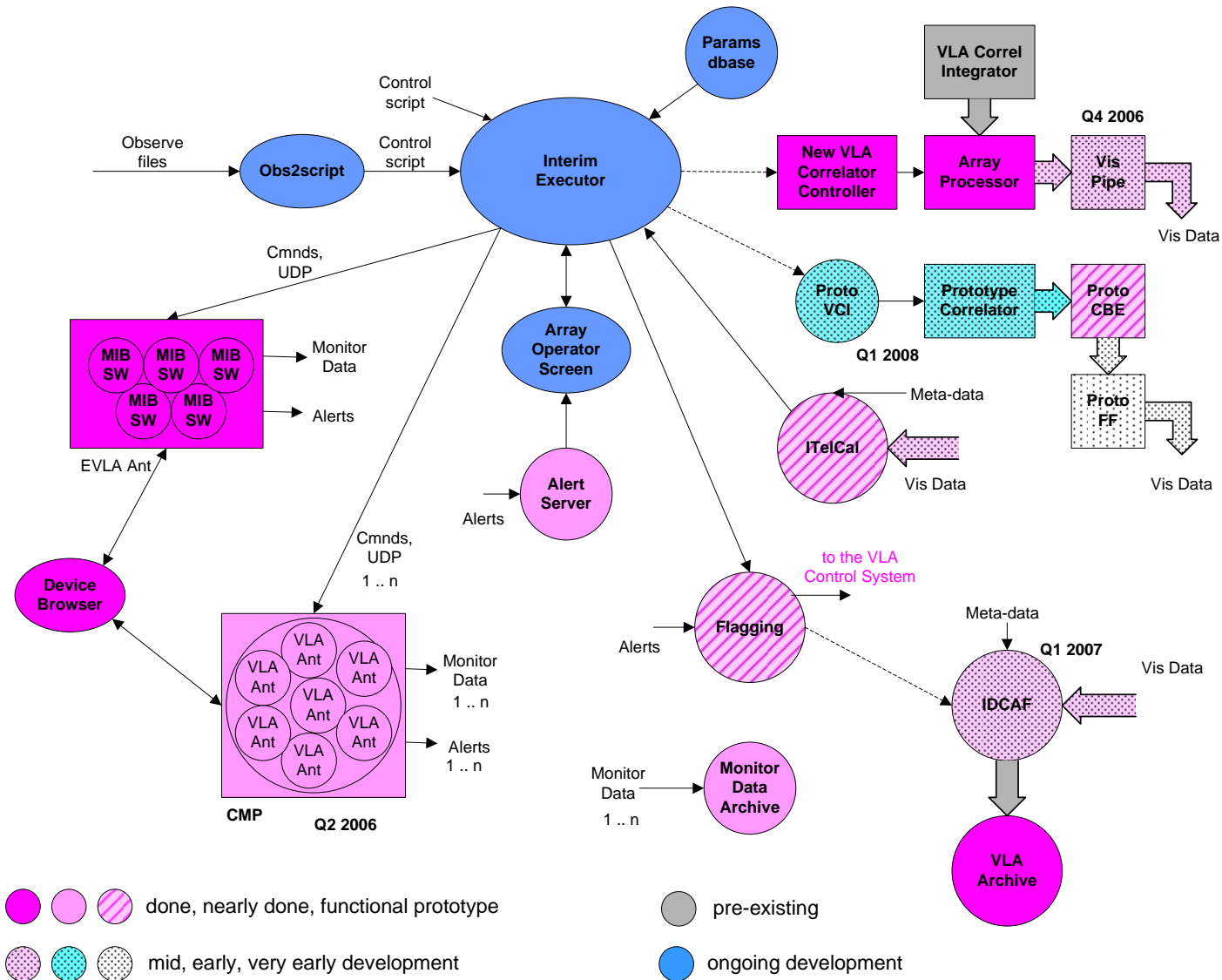
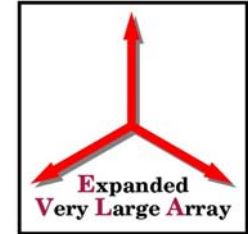
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# EVLA Monitor & Control System

## Status, Interaction With Correlator, Schedule

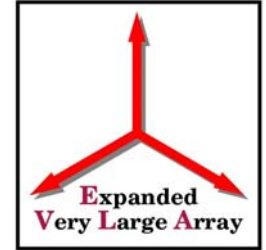


# EVLA M&C Transition System





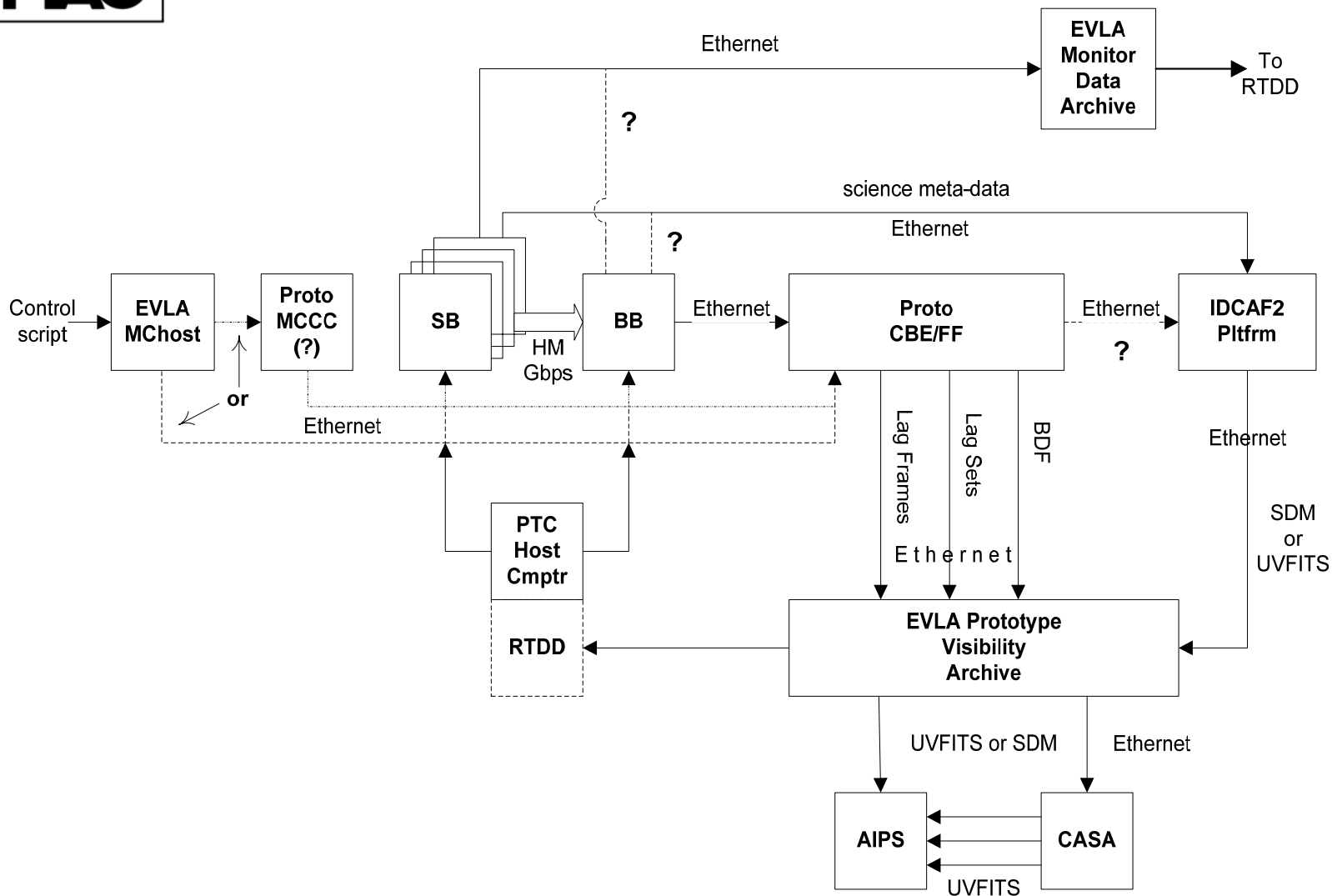
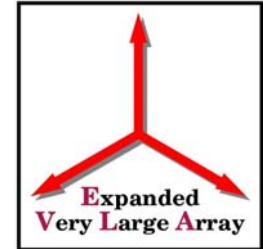
# Prototype Correlator Questions Dates



- What are the (current) dates for:
  - Installation of the PTC at the VLA Site?
  - DRAO's OTS Testing at the VLA site?
  - Based on email communications with Amy & Brent, as of 9/1/2006 the working dates were:
    - **Prototype Correlator Installation: 02-29Jan2008**
    - **OTS Testing: 30Jan-13May2008**
  - However, these dates assumed a delivery date of end-Sept 2006 for the Baseline Board & end-Oct 2006 for the Station Board.

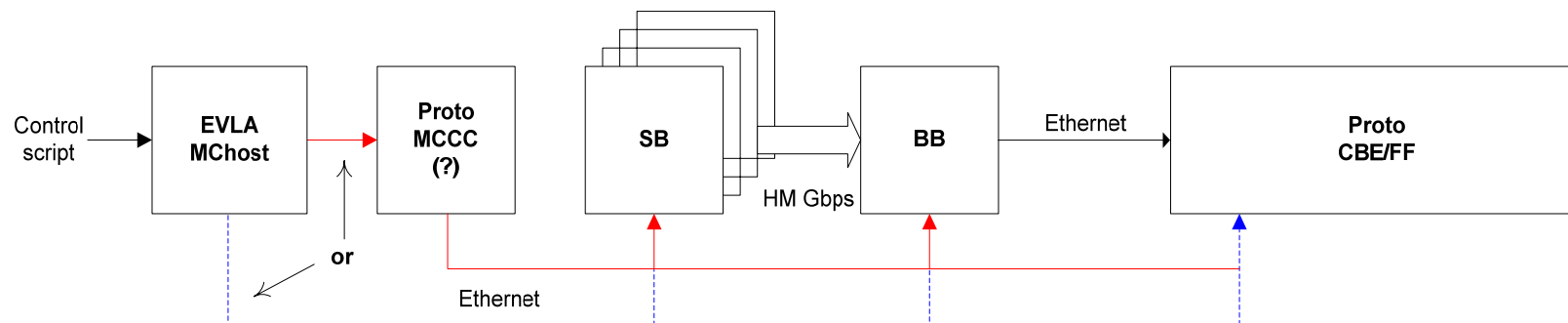
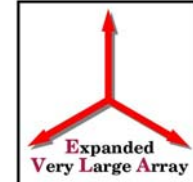


# Prototype Correlator Data Flows





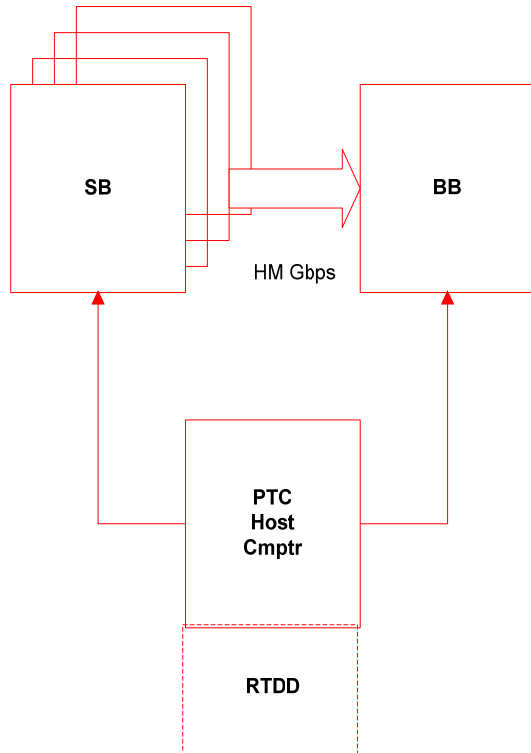
# PTC Data Flow – EVLA M&C Connection



- The Interim Observation Executor runs on Mchost.
- Delay models will be generated by the Interim Observation Executor.
- Will Phase models be generated by the Interim Observation Executor ?
- Will Dump Trigger Control be generated by the Interim Observation Executor ?
- Prototype MCCC Software
  - Will the Prototype Correlator be delivered with software that serves as a single point of reception for the models/messages coming from the EVLA M&C System (including the models generated by the Interim Observation Executor), with that software then handling delivery of the models/messages to the Station Boards, the Baseline Board, and the Prototype CBE/FF as needed?  
(This functionality is at least part of what is meant when we at NRAO speak of a prototype VCI.)
- OR
- Is it expected that the Interim Observation Executor and other components of the EVLA M&C System will speak directly to the Station Boards, Baseline Board, and CBE/FF as necessary?



# PTC – Configuration, Monitor, Control



## Configuration

- For OTS testing:

- Chip level & Board level screens developed for Prototype Boards
- Rack level & System level GUIs (TVP A25010N0005, Draft3)
- Test Configuration Builder (Board Prototype RFS A25204N0001)
- Test Executor (Board Prototype RFS A25204N0001)

- Question

- Will there be an attempt to deliver, either with the Prototype Correlator or sometime “soon” thereafter, a prototype VCI that would make it possible to configure the Prototype Correlator programmatically, i.e., via high level configuration messages generated by the Interim Observation Executor? Is this capability what is meant by the term “configuration mapping”?

## Monitor & Control

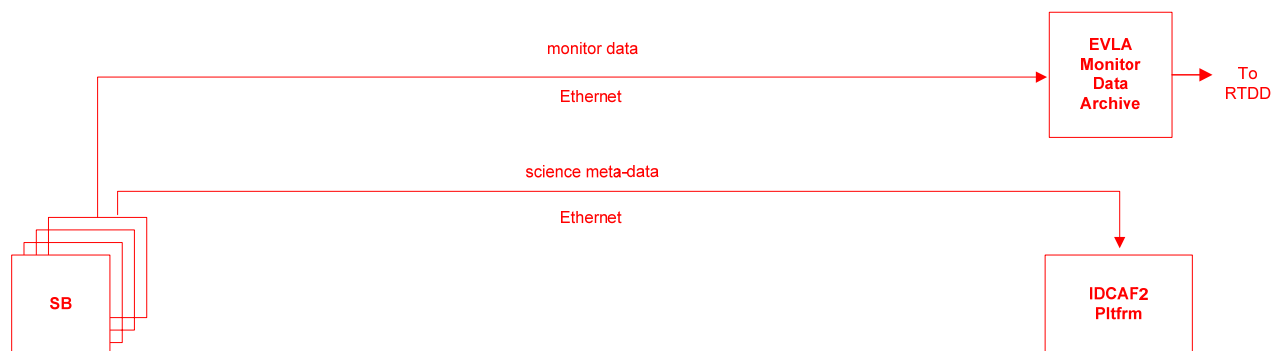
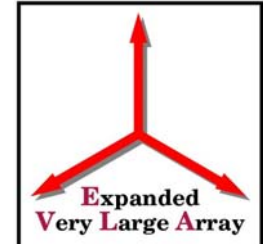
- For DRAO testing, will “higher-level” real-time monitor and control of the Prototype Correlator be accomplished via the aforementioned GUIs?
- Near real-time analysis of results via
  - Test Analyzer (“Intelligent Diff”, RFS A25204N0001)
  - Real Time Data Display (RTDD)

Question

- At what point in time will correlator software be produced that delivers status and multicast alerts to the EVLA Monitor & Control System?



# Station Board Data Products

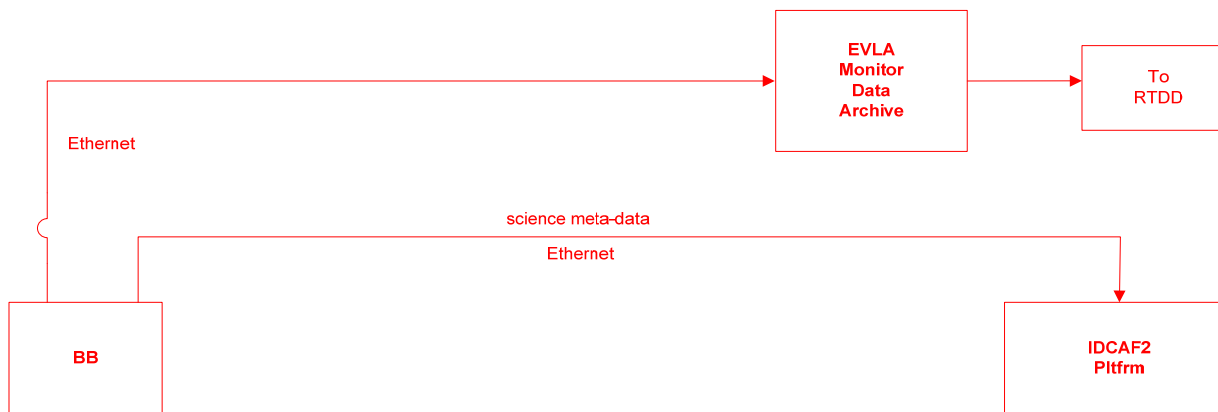
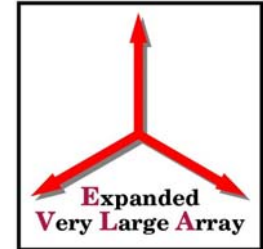


## Station Board Data Products

- Enumerated in EVLA Correlator Output Data Format (RFS A25205N0000)
- Graphical representation of Station Board outputs provided by the RTDD.
- Board & aggregate data rates examined in EVLA Correlator Output Data Format (RFS A25205N0000) & EVLA Correlator Network Traffic Performance Analysis (NRC-EVLA Memo #027)
- Board & aggregate data rates not yet mapped onto ports & switches (next step needed for COTS throughput analysis)
- For Prototype Board Testing
  - Formats defined for Prototype Board testing at DRAO - Station Board XML Schema in Correlator Output Data Format RFS & posted on the web.
  - Data Store for Prototype Board testing at DRAO ? Database? Flat files?
- For Prototype Correlator
  - **To be categorized as Monitor Data or SDM data (New format definitions?)**
  - Directed to EVLA Monitor Data Archive & IDCAF2 platform for Prototype Correlator. **(Fallback position if characterization as Monitor Data not appropriate ?)**



# Baseline Board Data products



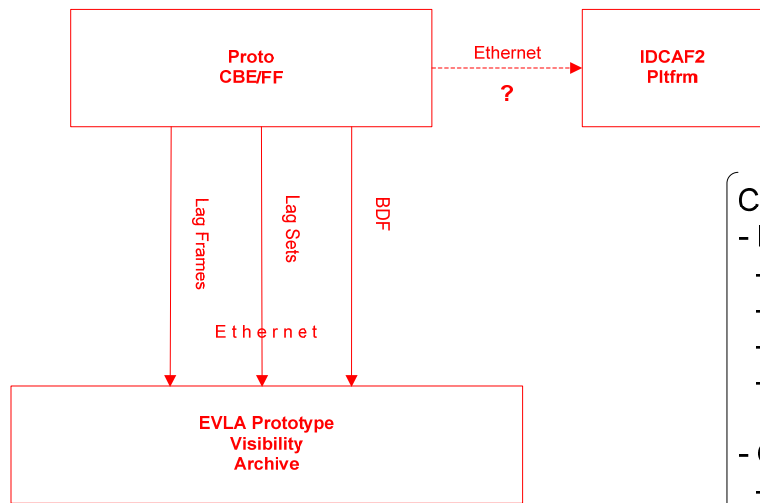
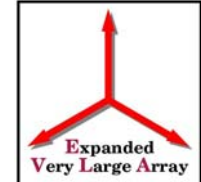
## Baseline Board Auxiliary Data Products

- Configuration (as monitor data?)
- LTA Frame
- Question
  - Is it still true that the full list of data products to be saved has not yet been specified?
- For Prototype Board Testing
  - Formats defined ?
  - Archiving strategy defined ?
  - Needed software ready ?
- For Prototype Correlator
  - Connection to Monitor Data Archive needed ?
  - Connection to IDCAF2 needed ?
  - Is a redefinition of the format implied by these connections?





# Correlator Backend (CBE) & Fast Formatter (FF)

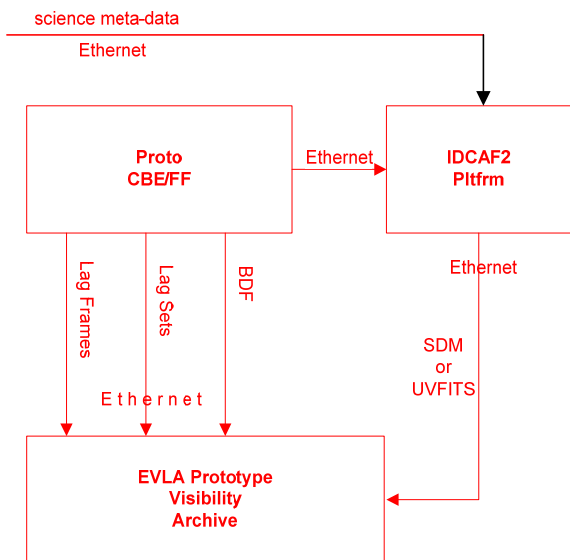


## Binary Data Format

- Report on suitability of & needed modifications to the ALMA Binary Data Format (A)BDF
- Report on final, EVLA version of the BDF
- Formal, written EVLA BDF specification, specific enough for coding
- First EVLA implementation of the BDF
- Coordination with the CASA group on the BDF format & a BDF reader

## Correlator Backend (CBE) & Fast Formatter (FF)

- Basic Functionality
  - Long term integration
  - FFT
  - RFI excision (?) **Will not be ready in time for OTS Testing.**
  - Archiving of its data products
- Outputs
  - CBE Configuration (as monitor data ?)
  - Lag frames before CBE integration (ASCII format)
  - Lag sets after CBE integration (ASCII format)
  - Visibility data format
    - **For prototype board testing – BDF with minimalist or no headers?**
    - For the Prototype Correlator - EVLA Binary Data Format (BDF)
- Question
  - The ability to archive lag frames & lag sets is wanted for the prototype board tests and for the Prototype Correlator tests. Will it be wanted for the full production version of the WIDAR correlator?
- Question
  - Does the CBE/FF need a connection to the DCAF (IDCAF2) platform? Yes. The BDF includes a number of tables (headers) that contain information, such as pointers to the actual visibility data, that must be included in the archive records created by DCAF (IDCAF2).



## Data Capture & Format (DCAF)

- Prototype Board Testing
  - **No DCAF component specified. Is this omission understood & acceptable ?**
- Prototype Correlator
  - An IDCAF2 (I=interim) software component will be written to create archive records.
  - Archive records to be written as UVFITS or (ALMA) Science Data Model (SDM)
  - If SDM then IDCAF2 is a true prototype for the EVLA DCAF

## Archive Record Format

### UVFITS

- Is UVFITS adequate for all desired PTC tests?

### SDM

- Report on SDM: adequacy of & modifications needed for PTC & production correlator

### Decision

- UVFITS or SDM for PTC ?

### IDCAF2

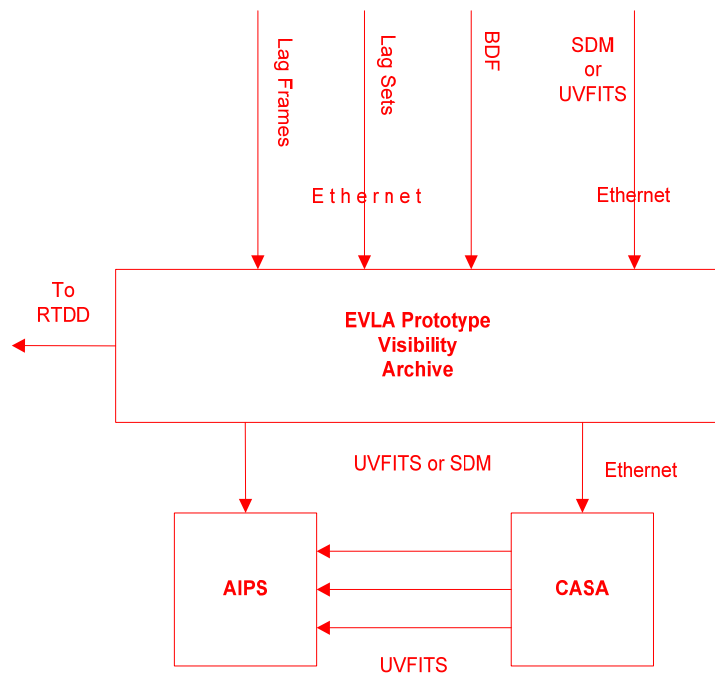
- Formal, written specification for PTC archive records, specific enough for coding
- Design & Implementation

## EVLA Prototype Archive

- **What will it be ? Not even a conceptual specification currently exists.**

## SDM

- Report on EVLA SDM format
- Formal, written EVLA SDM specification, specific enough for coding
- First EVLA implementation of the SDM
- Coordination with CASA on SDM spec & an SDM reader



## Questions

- What is the EVLA Prototype Visibility Data archive?  
An NGAS entity? A relational database? The concept requires development & specification.
- Archive filler software
- Archive retrieval software
  
- Is it correct to assume that the RTDD will obtain the lag frames & lag sets from the archive, or is a more timely connection needed?
  
- Post Processing
- AIPS is the post processing software
  
- Comparison of S2 correlator test SW to AIPS capabilities, i.e., can AIPS do all of the post processing desired?
  
- If archive records are written in SDM format, then CASA will be used to convert SDM to (multiple) UVFITS files for processing by AIPS.  
Implies:
  - a CASA EVLA SDM reader
  - ability of CASA to convert SDM to UVFITS
  
- If archive records are written in SDM format, then PTC data can be used to compare results obtained by AIPS with analogous routines in CASA.