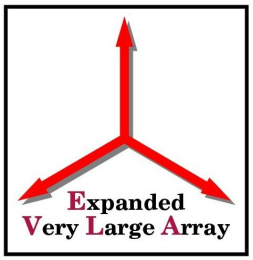
Interim Data Capture & Format (IDCAF)

Walter Brisken

2006 Dec 6

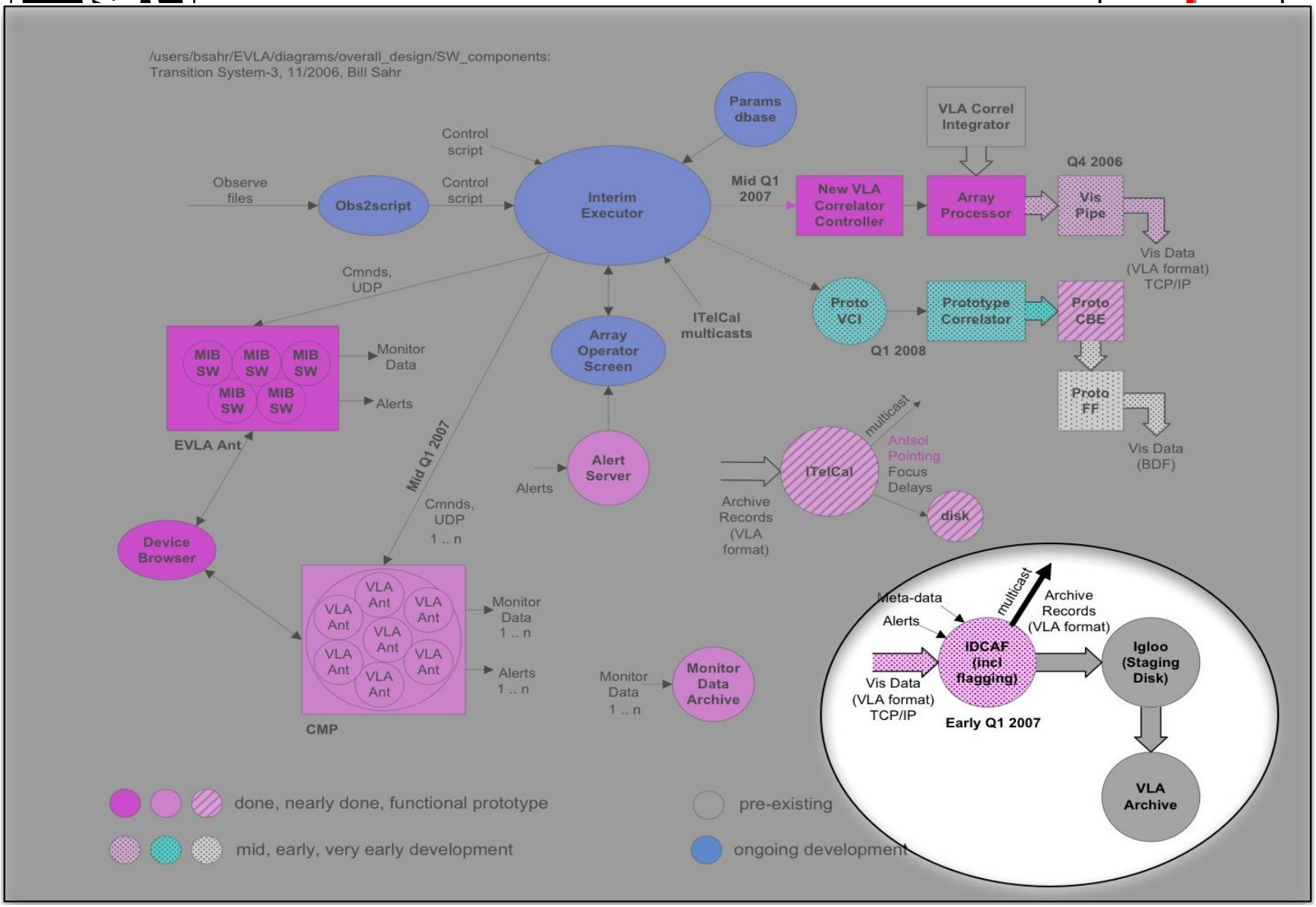
IDCAF Summary



- A single C program running on Linux
- Collects control data from Executor
- Collects monitor data from CMP
- Listens for antenna alerts (for flags)
- Collects visibility data from vispipe
- Writes VLA Archive Data Format

Replaces some Modcomp functionality

Place in the System



Block Diagram

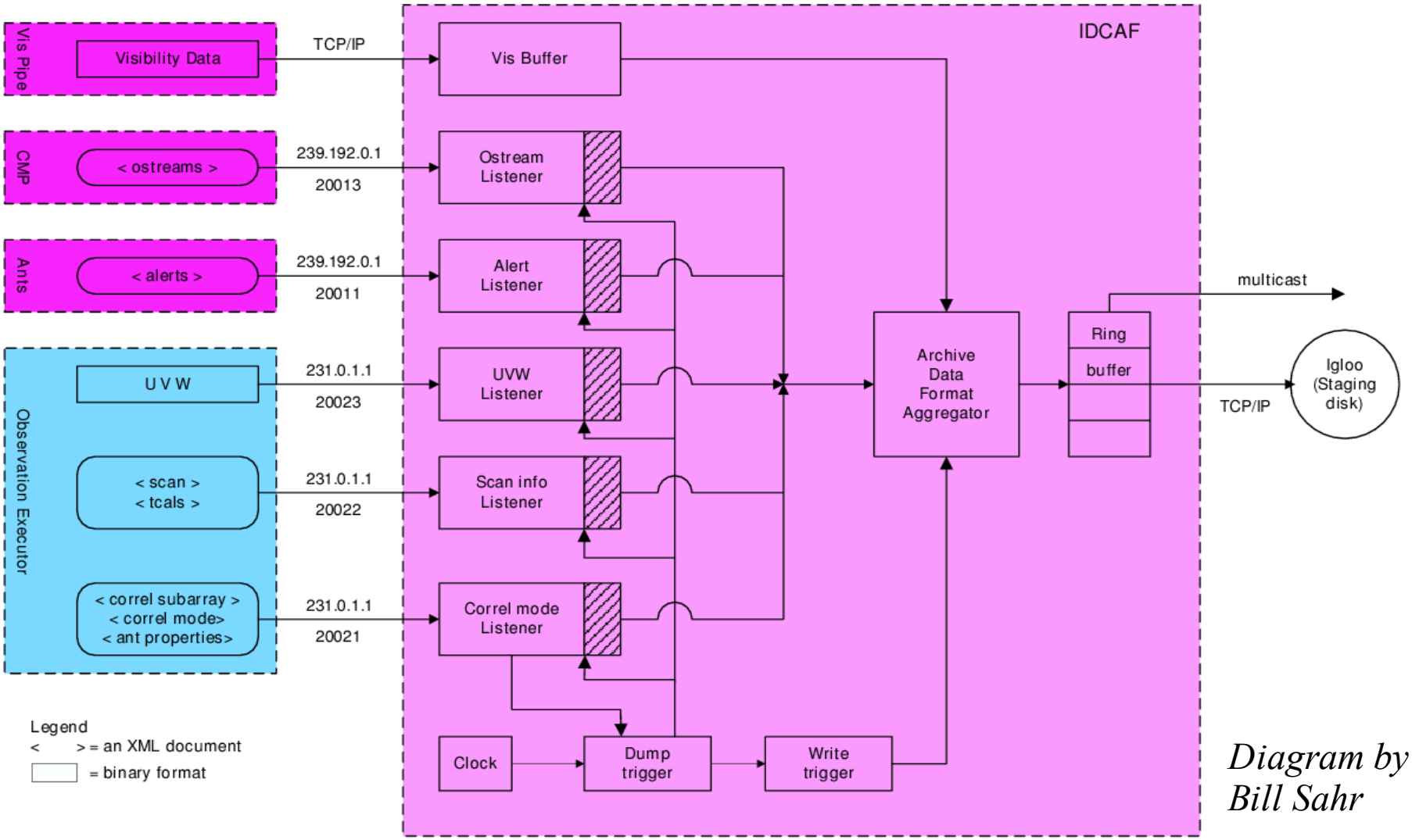
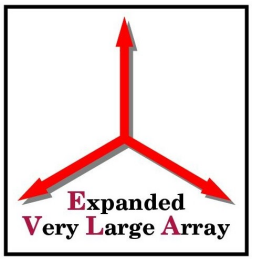


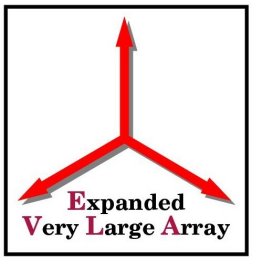
Diagram by Bill Sahr

Listeners



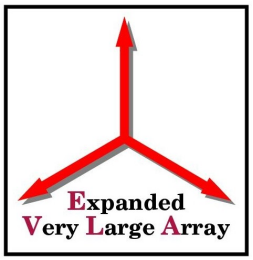
- Each data source has a listener
- Each runs in its own thread
- Mutual exclusion locks protect data
- A time-tagged dump trigger causes appropriate data to be copied to a public area
  - Except for the visibility listener

Visibility Data



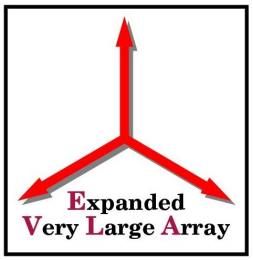
- TCP connection to VisPipe
- Vis. Data is sent each correlator dump
  - All sub-arrays sent together
  - Format and byte-order is same as in current archive data format
  - Max size : ~800 kB

Monitor data



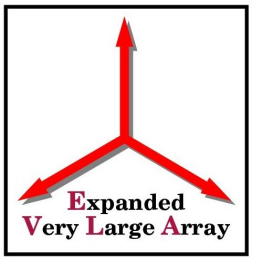
- Multicast from the CMP using the o-stream
- Sent as XML documents
- Monitor data includes:
  - Weather
  - Back end sync detector voltage
  - Back end total power

Flagging



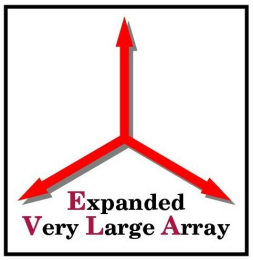
- Flagging is built into IDCAF
- EVLA antenna MIBs multicast alerts
- CMP multicasts alerts for VLA antennas
- Alerts are XML documents
- Some alerts are:
  - LO out of lock
  - Pointing error
  - Total power out of range

Control Data 1 : UVW



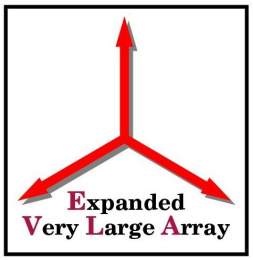
- Executor multicasts the UVW (baseline vector) data and rates every 10s
- Data in binary format, ~1kB for all antennas
  - Contains byte-order tag
- UVW is linear-interpolated to the center of the integration time.

Control Data 2 : Scans



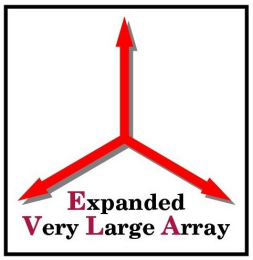
- Executor multicasts an Observation XML document at each scan change
- Includes:
  - Source (name, RA, Dec)
  - Scan start time
  - Band and frequency for each IF pair

Control Data 3 : Subarrays, Antennas & Correlator Mode



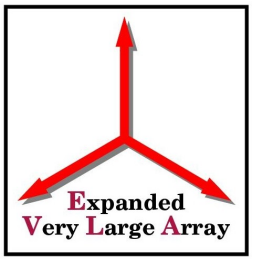
- One listener for 3 types of XML documents
- Subarray document
  - List of all subarrays at each subarray change
- Antenna properties document
  - Locations, DCS numbers & subarray membership
  - Sent when antennas enter or leave subarrays
- Correlator mode document
  - Correlator mode and integration time

Dump



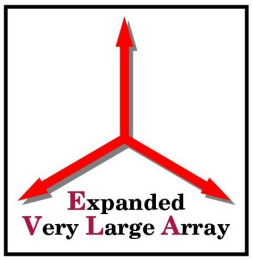
- IDCAF will initiate a dump when T mod Tint = 0
- Each listener copies relevant data to public area
- When the visibility data arrives the Archive Data Format is constructed
- IDCAF output will emulate existing system
  - Data will be sent to Data Manager via TCP
  - Optionally the data will be archived to DAT

Archive Format



- To be written in same format as existing VLA format
  - In network byte order
  - Floating point numbers in Modcomp format
- Revision number to be bumped to 30
- Some changes will be needed
  - Some values won't be populated
  - Some reinterpretation of flagging for EVLA ants.

Status on 2006/12/01



- General structure written
- 5/6 listeners written
  - 4 tested
- Archive records can be written and read
- To do
  - Visibility Listener
  - Subarray support
  - Fill in remaining 30% of parameters