Expanded Very Large Array	EVLA-SW-??? Revision:0.2 2004-Jan-14 *Glossary* K. Sowsinki

EVLA Software Glossary

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A Definitions and descriptions

The SSR introduced its glossary with these words. “In this Section we introduce the main entities, used to manage the whole observing process, that are constantly referred to in the requirements. These entities have some kind of hierarchical structure that will be further refined at the analysis stage of software development.” This document, which is clearly based on SSR terminology, is the first step of the refinement process, an EVLA software glossary of terms which are important at the highest level. The purpose of this list is to provide the design group wih a vocabulary to enable consistent discussions. The present version is limited to terms relevant to our initial efforts. This document will be updated as meanings alter or new terms are needed. As the list grows it may be divided into sections each relevant to different components of the system. We prefer to think of it as a logical description rather than a dictionary. The glossary is written only with the EVLA in mind. It should sometime be read with the future NMA and VLBA operations in mind to see what changes are needed.

I have taken bits and pieces of various existing documents and have made a first pass at reconciling the disparate definitions. Terms in the definitions which themselves appear in the glossary are written in **bold face**. The term “observation” has been used to mean too many things in this discussion. I suggest that it be left free as a generic word whose meaing is obvious (one hopes) in context. Usually it will mean something like “session”. There has been much confusion over the term used to describe the components of a “scan”. I concur with the usage of the SSR which calls this a “record”.

Proposal:

A request to NRAO for telescope time, including scientific justification, target sources, telescope setup, etc. A proposal is reviewed by referees and if approved is promoted to one or more **projects**.

Project:

One or more projects are derived from an approved **proposal**.

Program:

Within each **project**, observations in different configurations are each assigned to a separate program. Each program has associated with it an observing description (a **program block**), which describes (in greater detail than is available in the **proposal**) how the observations are to be completed for the program.

Program Block (PB):

The set of **scheduling blocks** derived from a single **program** that are to be submitted to the Scheduling Tool for queuing at the same time. An observer would normally create these in a single run of the Observing Tool.

Scheduling Block (SB):

The minimum scheduling unit. If a scheduling block cannot be completed in its entirety, it must be rescheduled. It may not be resumed in the middle. The scheduling block consists of an **observe script** and information for the scheduling tool to schedule it on the array in an appropriate fashion.

Observe Script:

A script in the language of the **real-time** computer system directing the EVLA or a **subarray** thereof to collect data with a specified receiver setup, phase tracking center, and antenna pointing. The EVLA is operated by having the Scheduling Tool, human operator, or observer pass an observe script to the **real-time** computer system. See **subarray** for more about observe scripts and subarrays.

Observed Block:

A succesful execution of the **observe script** associated with a **scheduling block** produces an observed block. There will be one for each execution of a **scheduling block**.

Observing Session:

The time contiguous execution of one or more **scheduling blocks** associated with a single **program**.

Observation:

This term has been used both in the sense of **record** and **observing session**. We should not give any special meaning to this word and understand that when used its meaning is to be derived from context.

Scan:

The scan is the lowest level object normally used by an observer. It is a sequence of one or more **records** that share a single goal. A scan is usually a single **record** of a target source or a calibrator, but, for instance, pointing and focus scans involve a pattern of **records**. This is usually the minimum unit seen by the observing tool.

Record:

A Record is the minimal amount of data taking that can be commanded within an **observe script**. One or more **integrations** comprise a record. An example of a record is a single pointing within a holography **scan**.

Integration:

An Integration is the basic unit of **astronomical data** presented to the **archive**. It is the average of a set of **correlator dumps**.

Correlator Dump:

A Correlator Dump corresponds to the minimum available integration time output from the correlator hardware. One or more of these are averaged to form an **integration**. The minimum collection of data subject to software manipulation.

Pipeline:

A sequence of data reduction operations performed according to a script present at the initiation of Pipeline operation.

Real-time System:

The portion of the EVLA software that understands an **observe script** and actually actually controls the EVLA at the hardware level.

On-line System:

The portion of the EVLA software which directly interfaces to the **real-time** system software, namely the Scheduling Tool, the Archive Tool, the Real-time Calibrator Analysis Tool, the quick-look Pipeline Tool, the Astronomer's What's Up Screen, and any other required software (for instance, that required to do the interfacing).

Astronomy Data:

Whatever is in the telescope's standard raw output data set. For the EVLA it is correlations, various calibration data (sys/cal, etc) flags, odds and ends, and **meta-data**.

Ancillary Data:

Data other than **astronomy data** relevant to the time range of interest, such as operator logs, monitor data, open work orders and known software problems, slowly changing instrumental parameters (e.g. VLA baselines and pointing model parameters), ionospheric data extracted from the GPS network, etc.

Meta-data:

A description of a telescope setup under which **astronomy data** was obtained, containing, but not limited to, the relevant time range, source parameters, receiver setup parameters (especially LO frequencies, and the switch settings used to select bands and filters), the observing proposal in aid of which the observation is made, the observing procedures followed.

Archive:

A permanent collection of all EVLA data and parameters available for access and retrieval. To be distinguished from the physical medium or media where the data resides.

Measurement Set:

AIPS++ format for **astronomy data** from a telescope. *This is a candidate for the format of data communicated between the Correlator Backend and the* **archive**.

Subarray:

A collection of one or more antennas which are producing data which makes sense to correlate. We distinguish two kinds of subarrays: administrative and astronomical. Administrative subarrays are defined by the operations staff and apportion collections of antennas to independent observers. Astronomical subarrays are defined by the observer from the collection of antennas that were assigned. It is expected that subarrays can be independently configured with no arbitrary restrictions.

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