Event Analysis Proposal

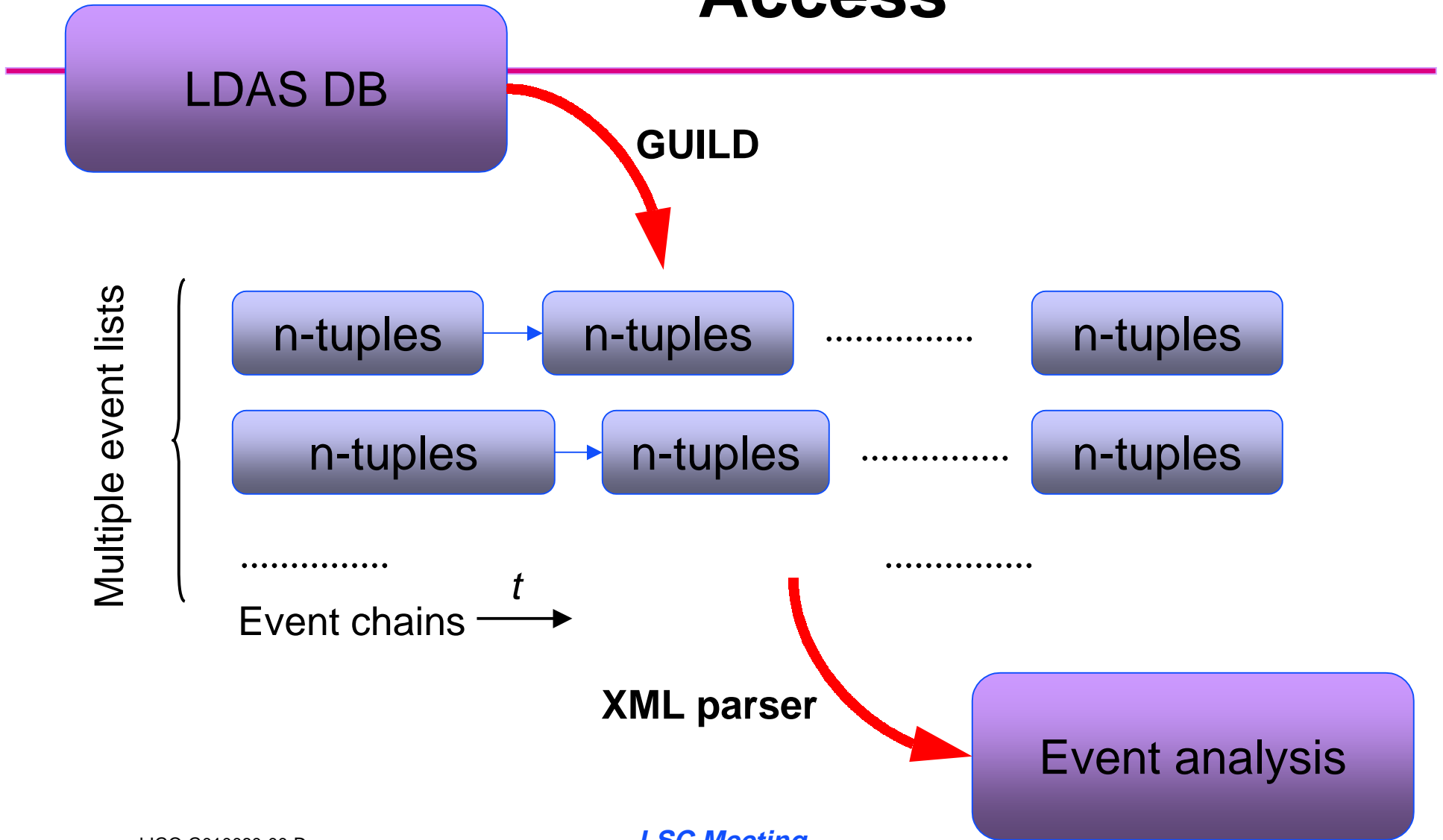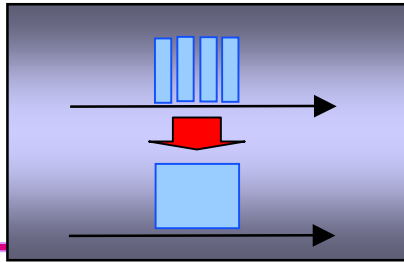## LSC meeting, March 17, 2001
Daniel Sigg

Basic Design Philosophy

- ❑ **Events are stored in the ldas database.**
- ❑ **Events are retrieved from the DB and stored locally as n-tuples (coarse selection).**
- ❑ **The core event analysis routines are implemented as a C++ library.**
- ❑ **The ROOT environment is used as the command line and the visualization tool.**
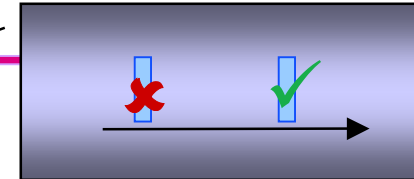
Access

LIGO

LDAS DB

GUILD

Multiple event lists

| n-tuples | → | n-tuples | .... | n-tuples |

| n-tuples | → | n-tuples | .... | n-tuples |

....

Event chains ⟶ t

XML parser

Event analysis

Analysis

- **Fine selection/rejection of events**
  - Selection of event types & cuts on event parameters
  - Adjust parameter values (normalization, calibration, derived quantities)
- **Cluster analysis**
  - Time window and multiplicity
  - Remove duplicate (closely space) triggers
  - Reclassification of clusters into a single event or veto
- **Correlation (Trigger logic)**
  - True and false (time shifted) coincidences
    - Detector/detector & between different sensors or event types
  - Veto one event type by another
  - Keep track of trigger uptime!
- **Reevaluation of data around an event(?)**
- **Histogram generation**
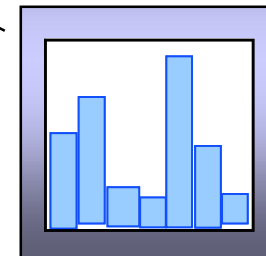- **Simple parallel processing paradigm: split in time**
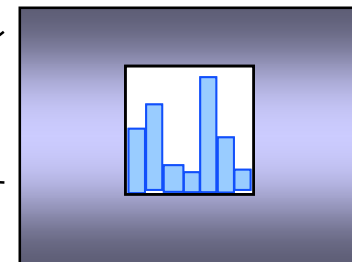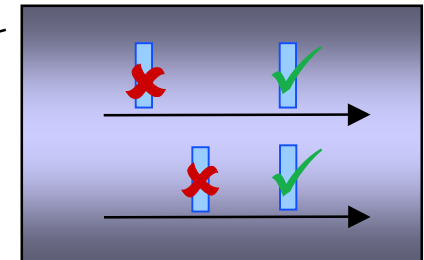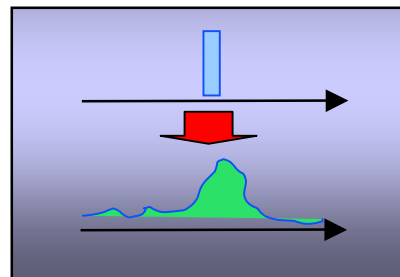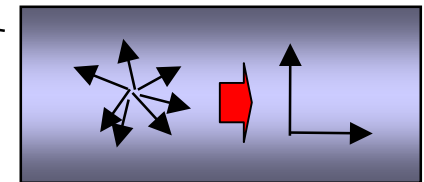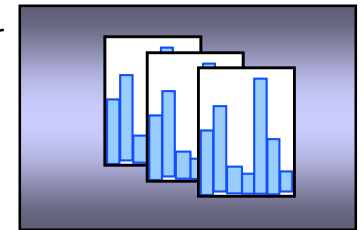
Results

□ Output

➢ New event lists or event list chains

• Ability to inject events back into ldas DB

➢ Histograms or sets of histograms
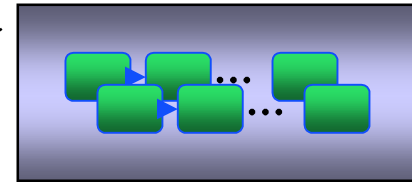
□ Visualization

➢ Selection of histogram dimensions (projection)

➢ One or more dimensional histogram plots

➢ Event lookup (time traces)

Interface

- **ROOT command line**
  - Advantage: command line = programming language
  - Works together with DMT infrastructure
    - On-line histograms
- **Platforms**
  - Solaris/Sparc
  - Linux/Intel
  - Windows/Intel(?)
  - Others?