



*... for a brighter future*

## *Report from the EPICS Codeathon*

*Brookhaven National Lab*

*30th March — 3rd April, 2009*

*Andrew Johnson and Eric Norum*

*AES Controls Group, Argonne*



U.S. Department  
of Energy

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Argonne<sub>LLC</sub>



# Participants

- 11 people from 5 different labs
  - Argonne/Univ. Chicago (Andrew Johnson, Eric Norum, Mark Rivers)
  - Marty Kraimer
  - BESSY (Ralph Lange)
  - Brookhaven National Lab (Bob Dalesio, Michael Davidsaver, Larry Hoff)
  - DESY (Bernd Schnoeneburg)
  - Diamond (Matt Pearson, Nick Rees)

## *EPICS Base: General*

- Converted most K&R C code to ANSI C, similar cosmetic changes
- Added epicsNAN, epicsINF values to epicsMath.h
- epicsRingBytes API change, now fails on insert if not enough space
- Found and integrated a JSON parser and generator library YAJL (3.15)
- New Maximize Severity link flags (alternatives to NMS or MS flags)
  - MSI — Maximize Severity Invalid, only maximizes Invalid alarms
  - MSS — Maximize Status and Severity, copies alarm status as well
- New CA Monitor event type DBE\_PROPERTY
  - Will be posted when an attribute changes, such as the units string, display limits, alarm levels or ENUM strings for a field
  - Additional mechanisms will be added to R3.15 to automate this

## ***EPICS Base: General cont.***

- Long string field I/O as a char array
  - Append '\$' to field part of PV name to use: myAi.INP\$
  - Added -S option to catools (caget, caput, camonitor)
  - MEDM and EDM already support this, set widget format to 'string'
- Output field separator and character escapes from catools
  - Can now distinguish between array elements containing spaces
- Make PINI processing follow PHAS order
- Additional PINI choices for processing later in ioclnit, redundant IOC
- vxWorks: Generate TIMEZONE from TZ
  - Won't have to set EPICS\_TIMEZONE every year
- Record Reference Manual updates to description text

## *EPICS Base: Record and Device Support*

- Waveform Record supports posting monitor on change
  - Calculate a hash of the buffer to discover when data has changed
  - New menu fields MPST and APST control whether this is used
- Analog records accessed using the DBR\_ALARM\_xxx types
  - get\_alarm\_double() returns NAN when xxSV = NO\_ALARM
- Alarm Filtering added to analog record types
  - time-constant to control the frequency of alarm severity changes
- Soft Channel device support for ai record now implements SMOO filter
- DBE\_PROPERTY monitor events from mbbi and mbbo records
  - These now post DBE\_PROPERTY on the VAL field when any of the xxST ENUM string fields are modified

# ASYN

- Redesigned how auto-connect works internally
  - Reconnection attempt every 20 seconds, not every I/O attempt
- asynReport is now much less verbose at lowest level of detail
  - Only displays disconnected devices
- Can set trace masks globally or hierarchically
- New asynStatus codes for disconnected, disabled etc.
- Converted the Asyn Motor Driver into C++, derived from Mark Rivers' C++ base classes; this significantly simplifies the code.

## *Nick Rees, Ralph Lange and Marty Kraimer*





# Eric Norum and the Task List



## Where's Mark Rivers?

