

# Overview of Client Tools

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*Part of the EPICS “Getting Started” Lecture Series*

## **Argonne National Laboratory**



A U.S. Department of Energy  
Office of Science Laboratory  
Operated by The University of Chicago

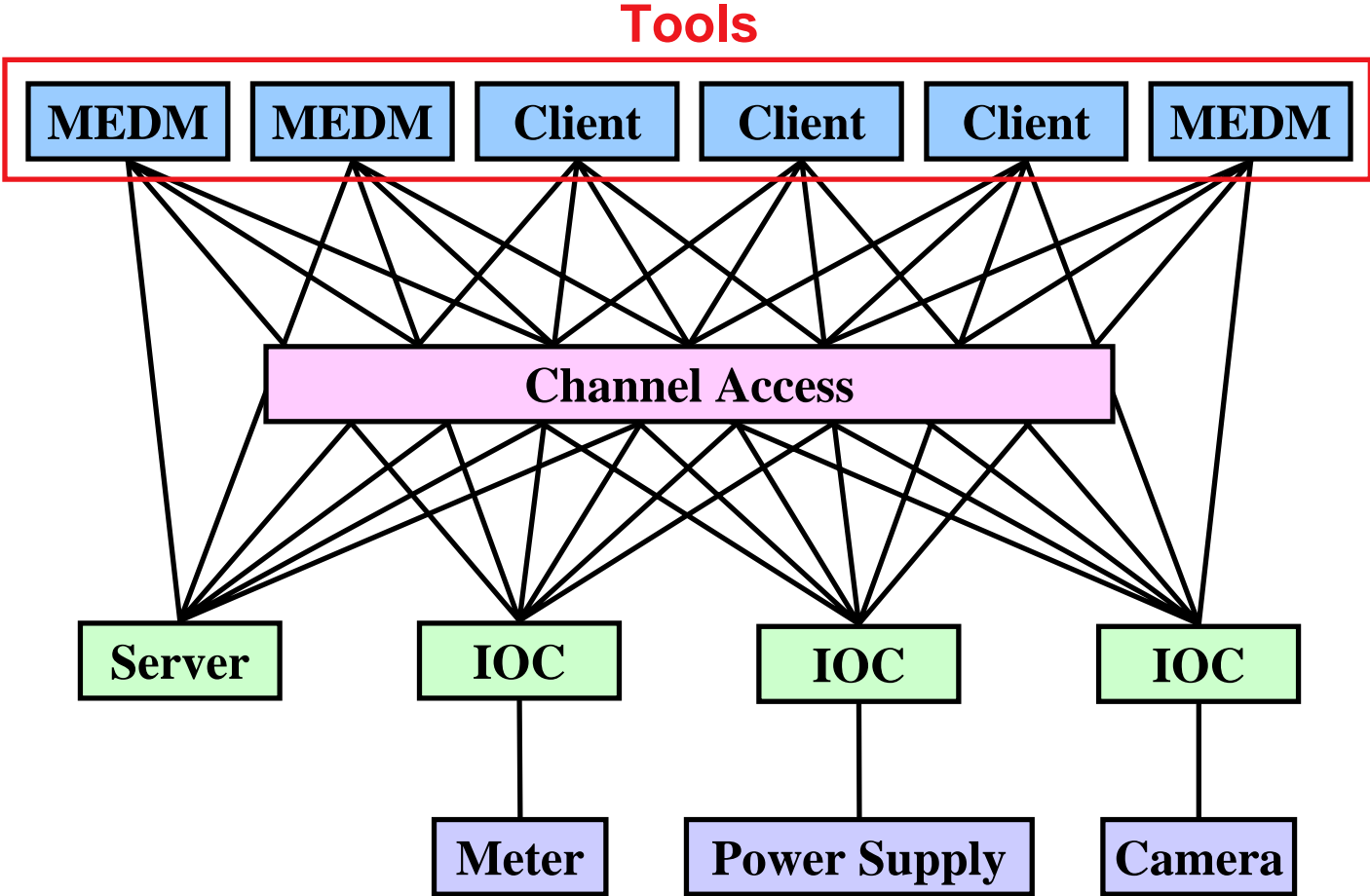


# EPICS Software

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- For software development EPICS is divided into several parts
- **Base**
  - Build system and build tools
  - Common and OS-interface libraries
  - Channel Access client and server libraries
  - Static and run-time database access routines
  - Database processing code
  - Standard record, device and driver support
- **Extensions**
  - Channel Access clients
  - Other tools that typically run on workstations
- **Support Modules**
  - Record, device, and driver support

# EPICS Overview



# ***Tools Covered in This Presentation***

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- **Command-Line Tools**
  - caget, caput, camonitor, cainfo
- **MEDM**
- **ALH**
- **Probe**
- **StripTool**
- **HistTool**
- **SGA**
- **ADT**
- **EPICS WIN32 Extensions**
- **Pocket PC Applications**



# More Information

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- **There is a wealth of information in the EPICS web pages**
  - <http://www.aps.anl.gov/epics/index.php>
- **Each of the Extensions covered here has its own page with much additional information**
  - Including tar files of the latest releases
- **There are many other tools described there as well**
- **The Extensions **executables** are typically located at**
  - ...epics/extensions/bin/<platform>/<executable>
  - e.g. /usr/local/epics/bin/solaris-sparc/medm
  - Platforms are solaris-sparc, linux-x86, win32-x86, etc.
- **The Base command line tools are typically at**
  - ...epics/base/bin/<platform>/<executable>

# EPICS Extensions Web Page

**EPICS** Experimental Physics and Industrial Control System  
Advanced Photon Source  
ARGONNE NATIONAL LABORATORY

## Extensions

The following list gives access to individual pages for most of the standard EPICS host tools and CA clients. Note that some of the minor pages linked below do not appear in the sidebar on the left.

Some of this software can be downloaded from the individual web-pages linked below, and the collection of tools from APS are also available bundled together. See the [Extensions Download](#) page for details.

If your extension does not appear in this list, or there's something wrong with an entry on this page, please [send me an email](#), giving a URL for your web-site if applicable.

### Config Files

- [Extensions build config files \(R3.13\)](#)
- [Extensions build configure files \(R3.14\)](#)

### Standalone CA Clients

- [ADT: Array Display Tool](#)
- [ALH: Alarm Handler](#)
- [AR: Data Archiver](#) (the original, deprecated)
- [BURT: Backup and Restore Tool](#)
- [CAEX: Channel Access Examples](#)
- [CASR: Host-based Save/Restore](#)
- [CAU: Channel Access Utility](#)



# Command-Line Tools

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- **There are several versions of these tools**
- **We will discuss the ones that comes with EPICS Base**
  - Starting with Base 3.14.6
  - These should become the standard ones
- **The tools we will cover are:**
  - Caget
    - *Gets the value of one or more process variables*
  - Caput
    - *Sets the value of one process variable*
  - Camonitor
    - *Monitors the value changes of one or more process variables*
  - Cainfo
    - *Gets information about one or more process variables*
- **All accept `-h` to display usage and options**

# Caget Example

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- **Get the values of two process variables**

```
caget S35DCCT:currentCC S:SRlifeTimeHrsCC
```

- **Returns**

```
S35DCCT:currentCC      102.037
```

```
S:SRlifeTimeHrsCC     7.46514
```



# Caput Example

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- **Set the value of a process variable**

```
caput Xorbit:S1A:H1:CurrentAO 1.2
```

- **Returns**

```
Old : Xorbit:S1A:H1:CurrentAO      0
```

```
New : Xorbit:S1A:H1:CurrentAO      1.2
```

# Camonitor Example

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- Monitor two process variables

```
camonitor evans:calc evans:bo01
```

- Returns

```
evans:calc      2004-08-05 17:23:04.623245 1
evans:bo01     2004-08-05 17:23:04.623245 On
evans:calc      2004-08-05 17:23:05.123245 2
evans:bo01     2004-08-05 17:23:05.123245 Off
evans:calc      2004-08-05 17:23:05.623245 3
evans:calc      2004-08-05 17:23:06.123245 4
evans:calc      2004-08-05 17:23:06.623233 5
evans:calc      2004-08-05 17:23:07.123183 6
```

- Use Ctrl-C to stop monitoring

# Cainfo Example

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- **Get information about a process variable**

```
cainfo S35DCCT:currentCC
```

- **Returns**

```
State:      connected
```

```
Host:      ctlapps41188:5064
```

```
Access:    read, no write
```

```
Data type: DBR_DOUBLE (native: DBF_DOUBLE)
```

```
Element count: 1
```

- **Currently there is not as much information as with Probe or PvInfo in MEDM**

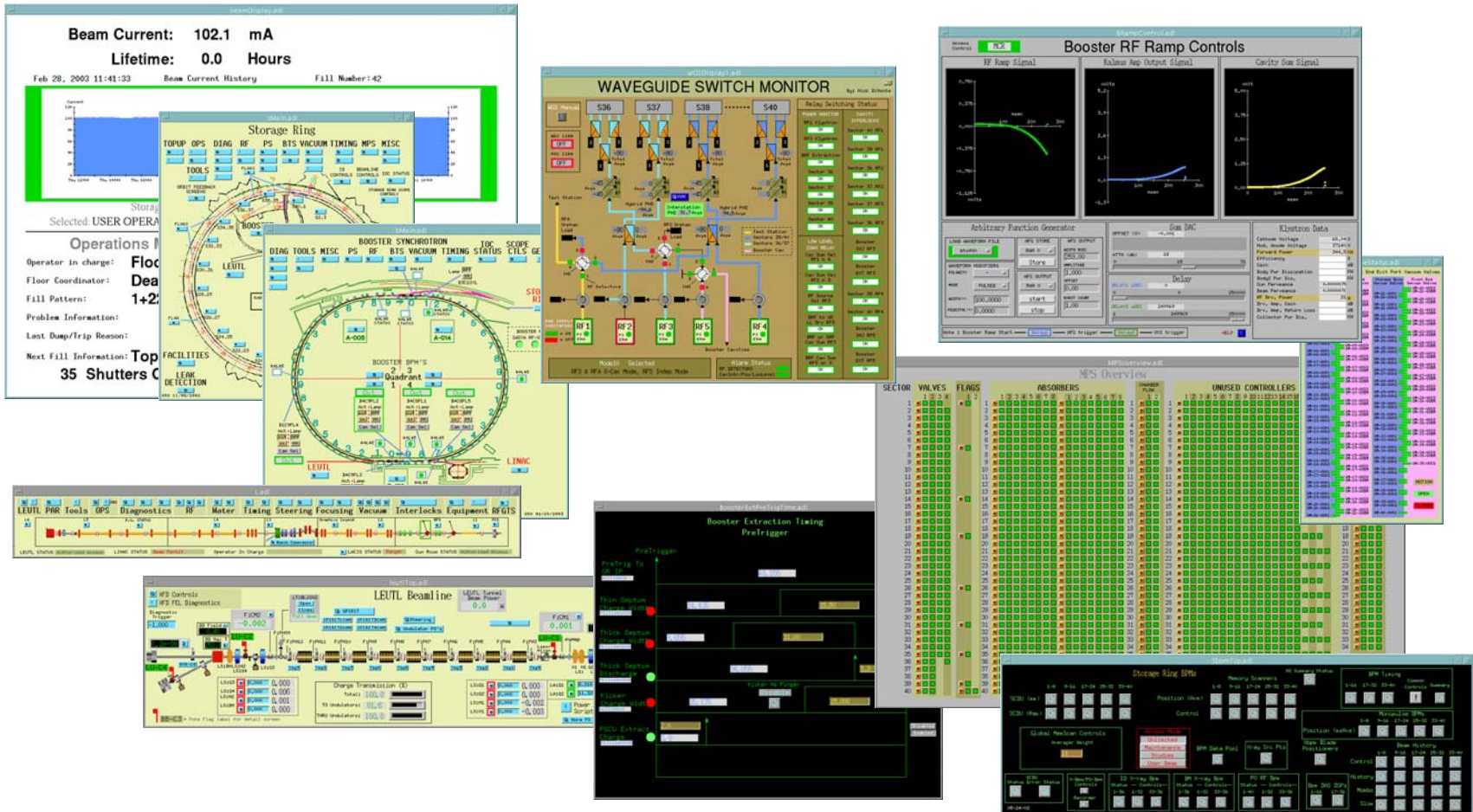
# MEDM

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- Stands for Motif Editor and Display Manager
- The principal human interface to the control system
- What you see on the television monitors around the site
- Used by most of the technical staff
- Used worldwide at many facilities
- Both runs and creates control screens



# MEDM Screens



- And thousands of others

# ***MEDM***

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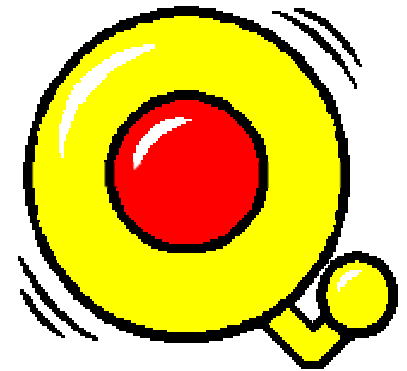
- **MEDM will be covered more fully in another session**



# ALH

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- **Stands for Alarm Handler**
- **Important GUI application in the Control Room**
- **Brings alarms to the operators' attention**
  - It dings and flashes
- **Allows the operator to globally acknowledge alarms**
- **Provides a hierarchical display**
  - Allows managing alarms in overview or in detail
- **Provides guidance for handling specific alarms**
- **Logs alarms and displays alarm history**



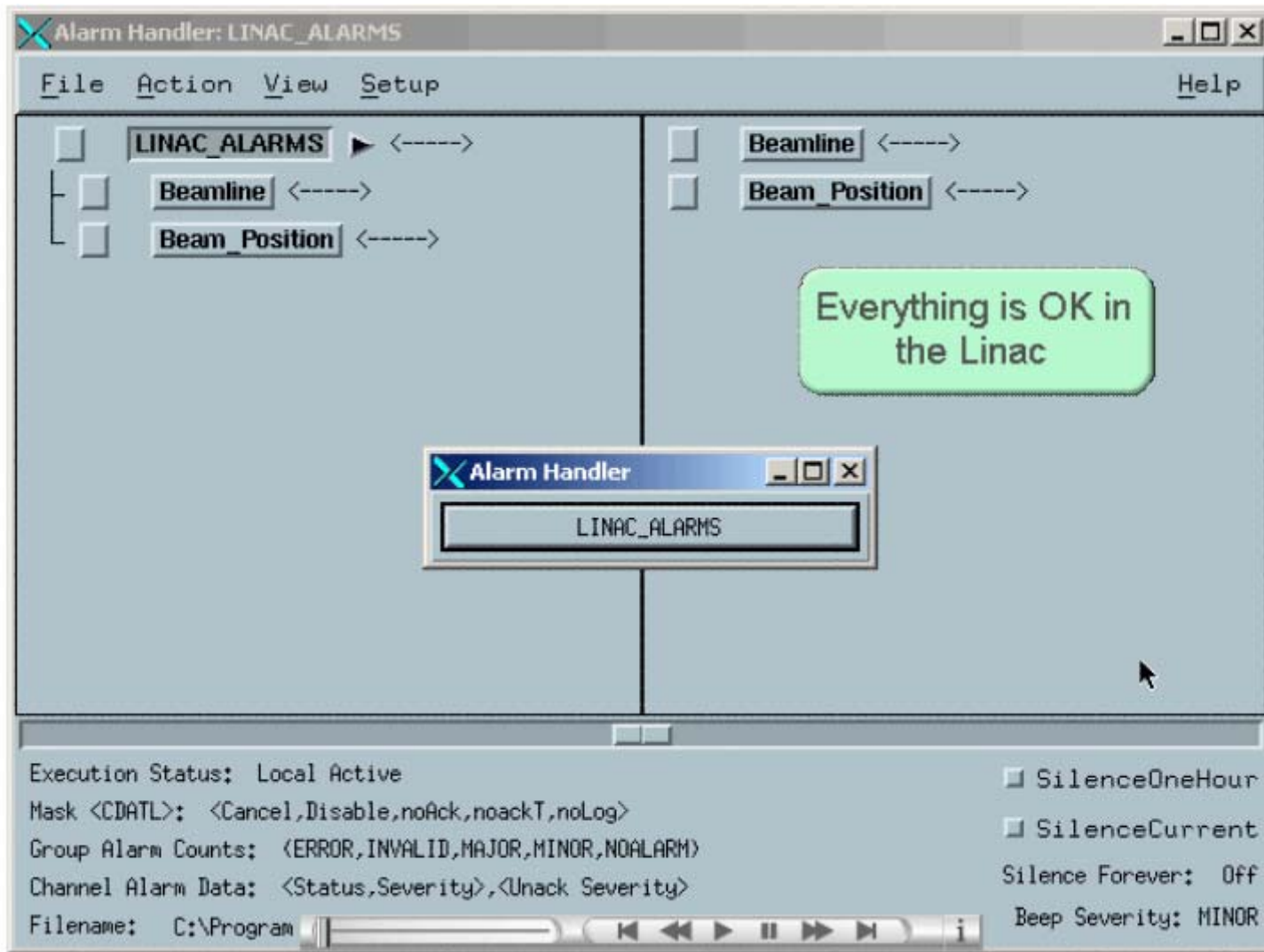
# Flash Demos

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- The demos in this presentation use Flash
- The Flash Player is installed on most computers
- If you do not see the demos, try right clicking where they should be and check if Play is selected
- If there is no right-click menu, you do not have the Flash Player
- If the version on the right-click menu is not 7 or above, you may have trouble with the slides, particularly advancing them
  - The advance arrow at the bottom left of the slide may work
- You can get or update the Flash Player via the link at:
  - <http://macromedia.com>
  - It is a Plug-in for Netscape/Mozilla and an ActiveX Control for IE
  - You need the IE version for PowerPoint
    - *(Use IE to visit the link)*



# ALH Demo

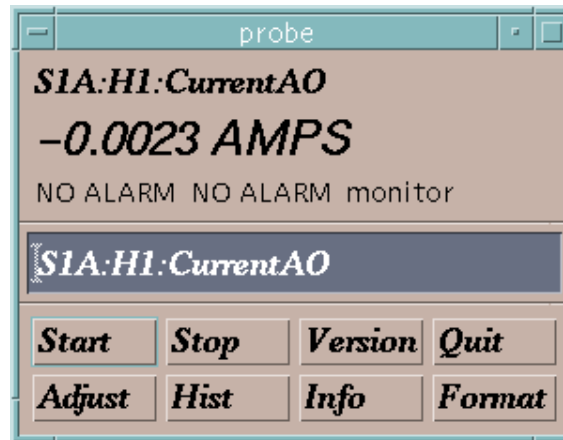


- **ALH will be covered more fully in another session**

# Probe

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- Simple way to get information about a single process variable
- Combines the features of caget, caput, camonitor, and cainfo in a graphical interface
- Very useful in diagnosing problems



# Probe Demo

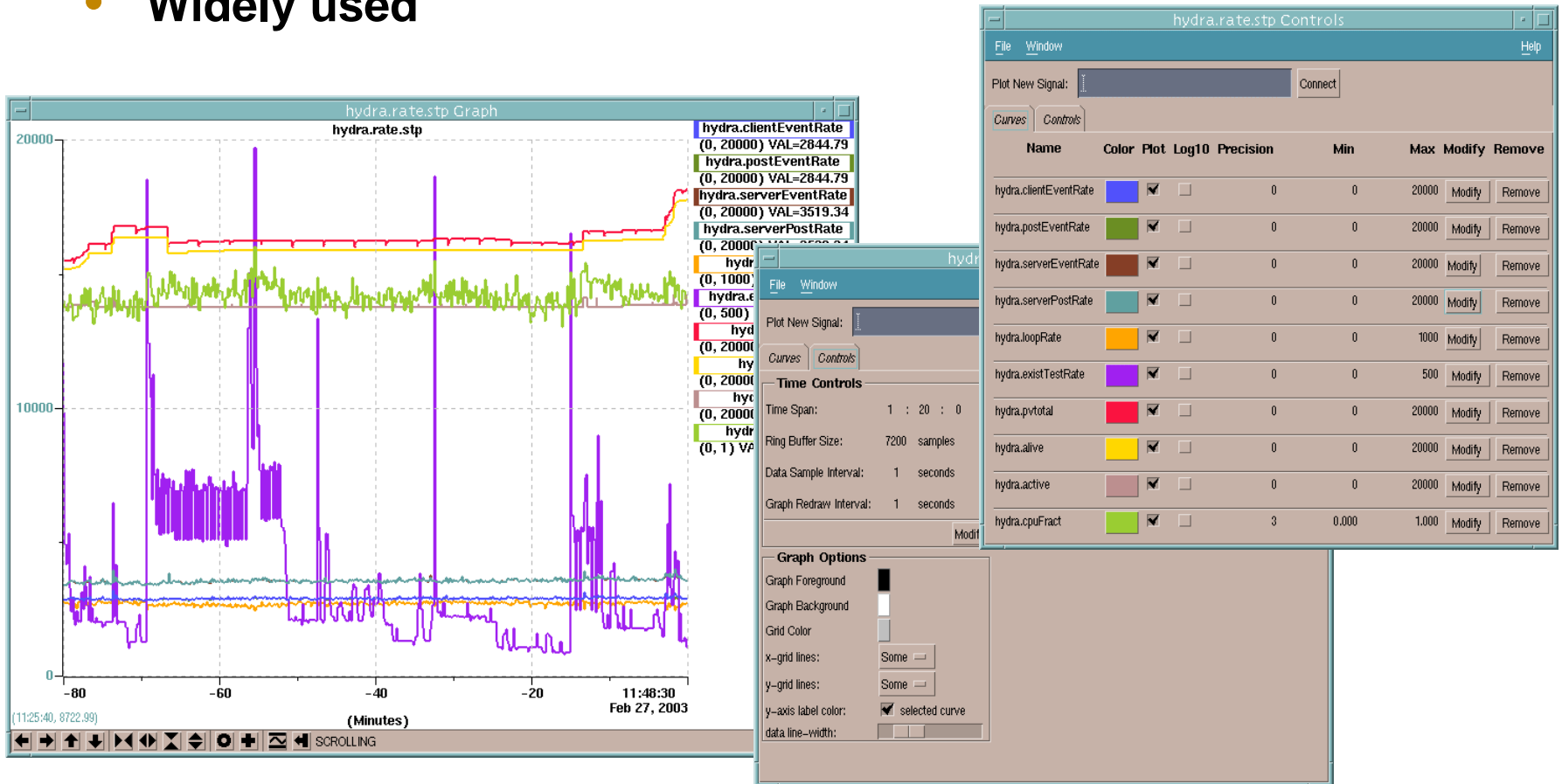


Start by entering a process variable name

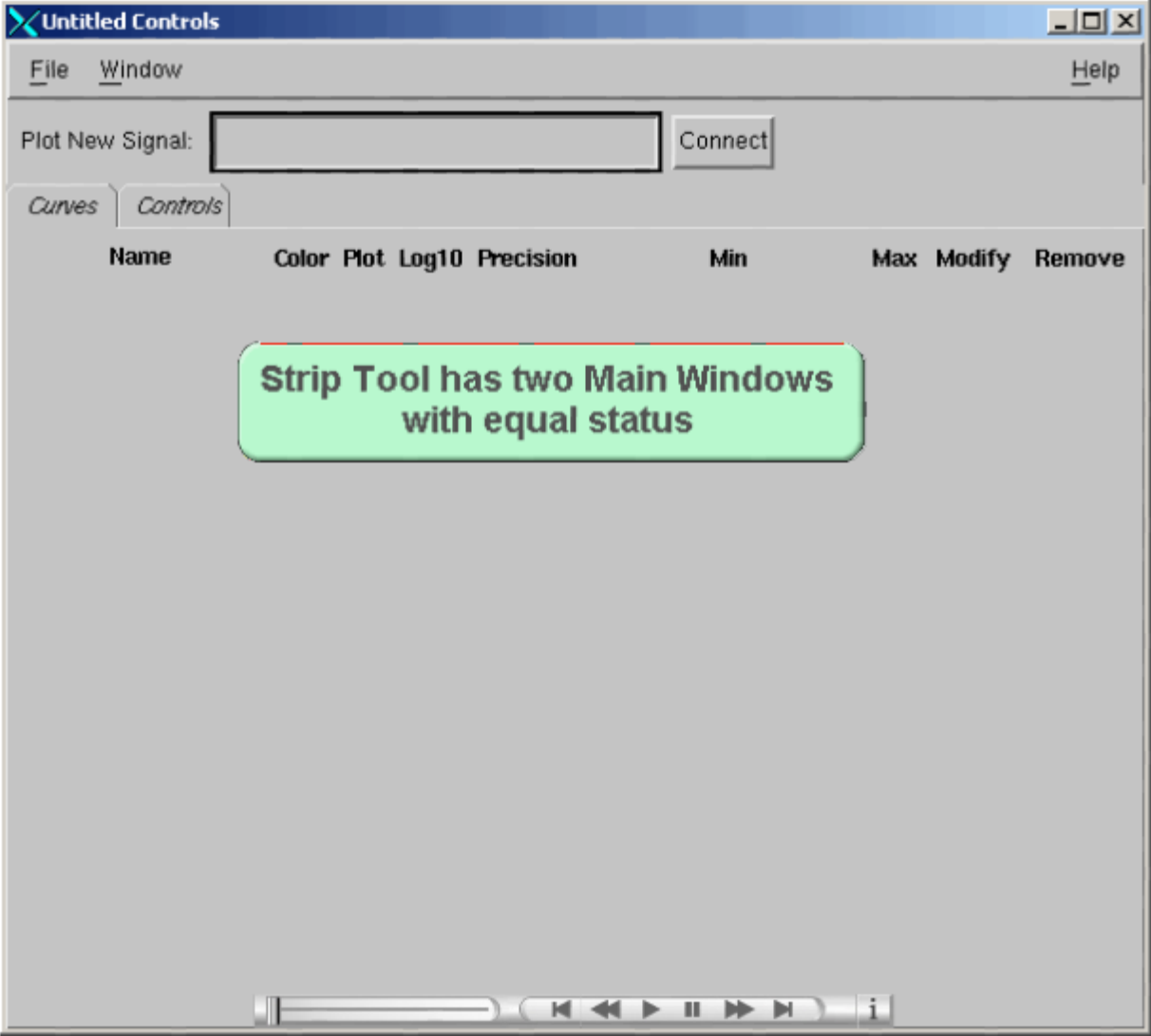


# StripTool

- Plots process variables in real time on a strip chart
- Widely used

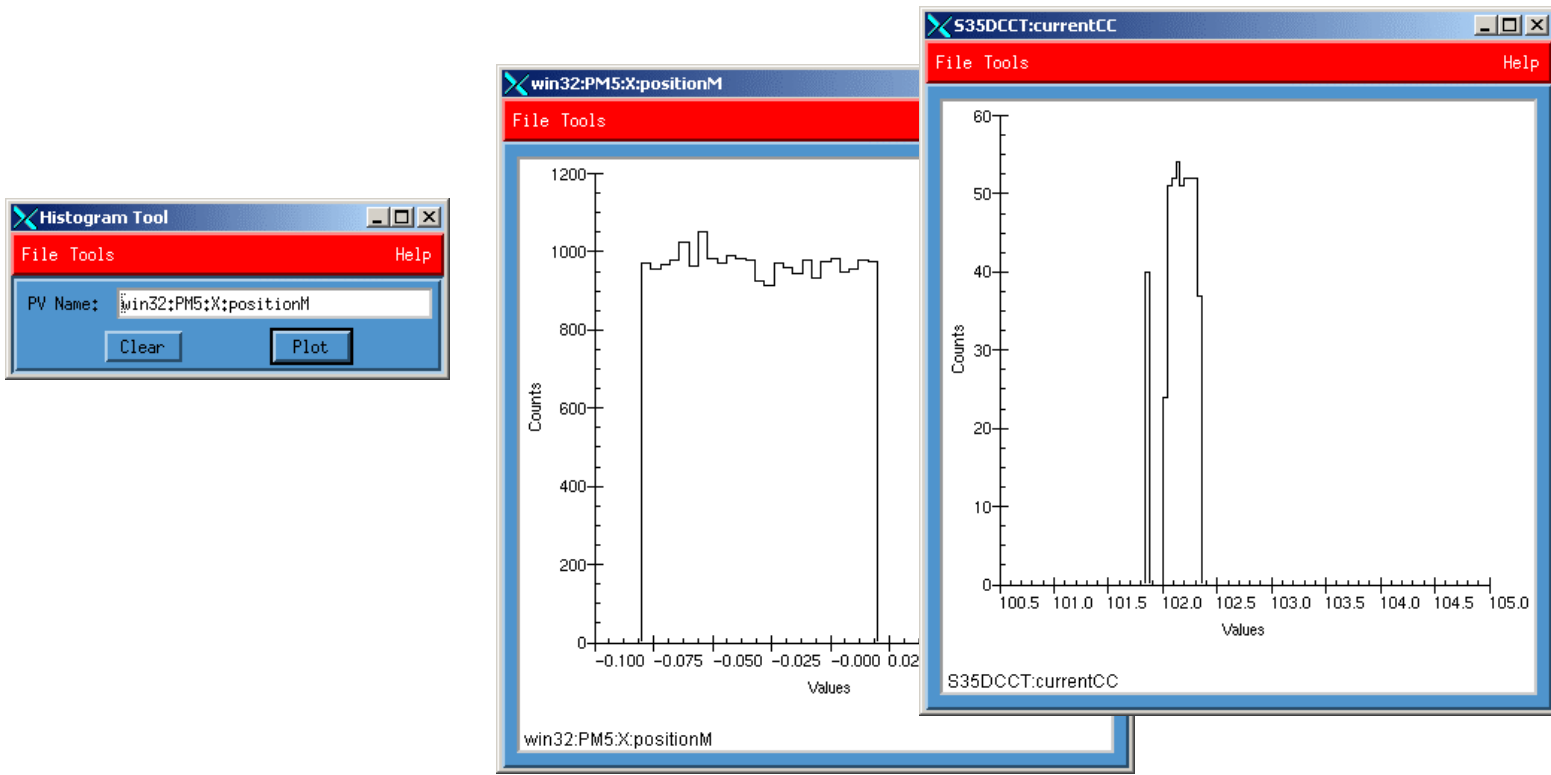


# StripTool Demo



# HistTool

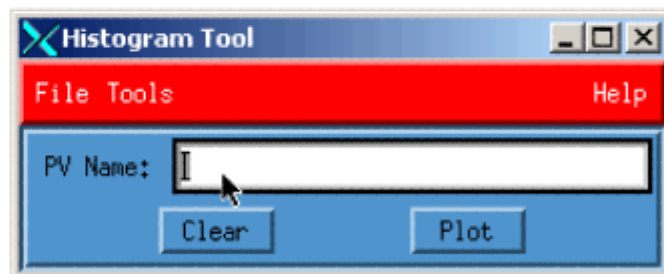
- An easy way to get a histogram of a process variable
- Drag and drop a process variable name from MEDM
- As many times as you want



# HistTool Demo

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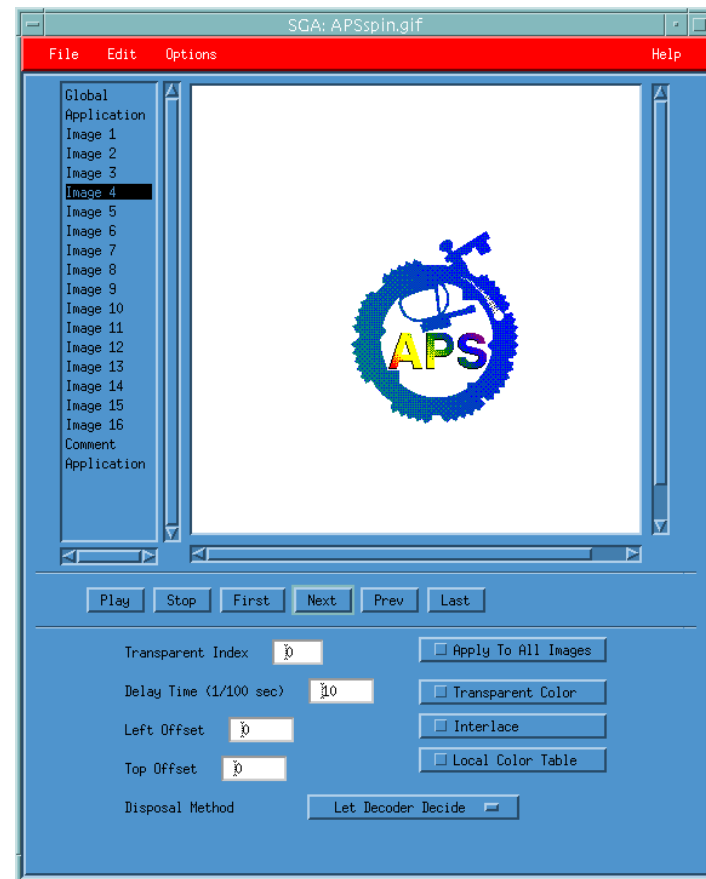
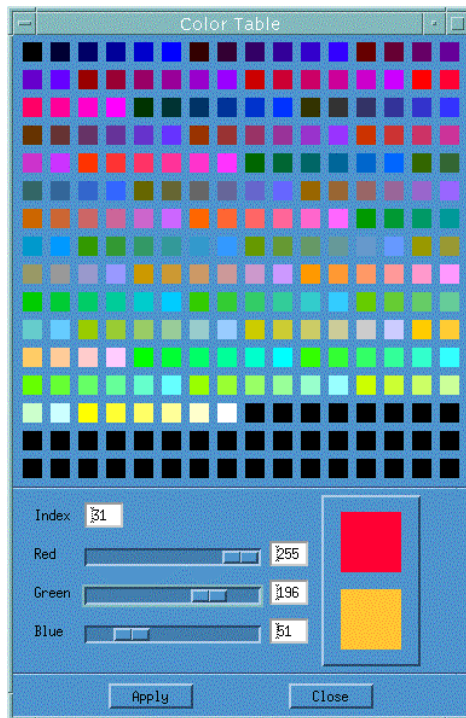
This is the HistTool Main Window





# SGA

- Stands for Simple GIF Animator
- Use it to make animated GIFs for MEDM
- You need to already have the images



# SGA Demo



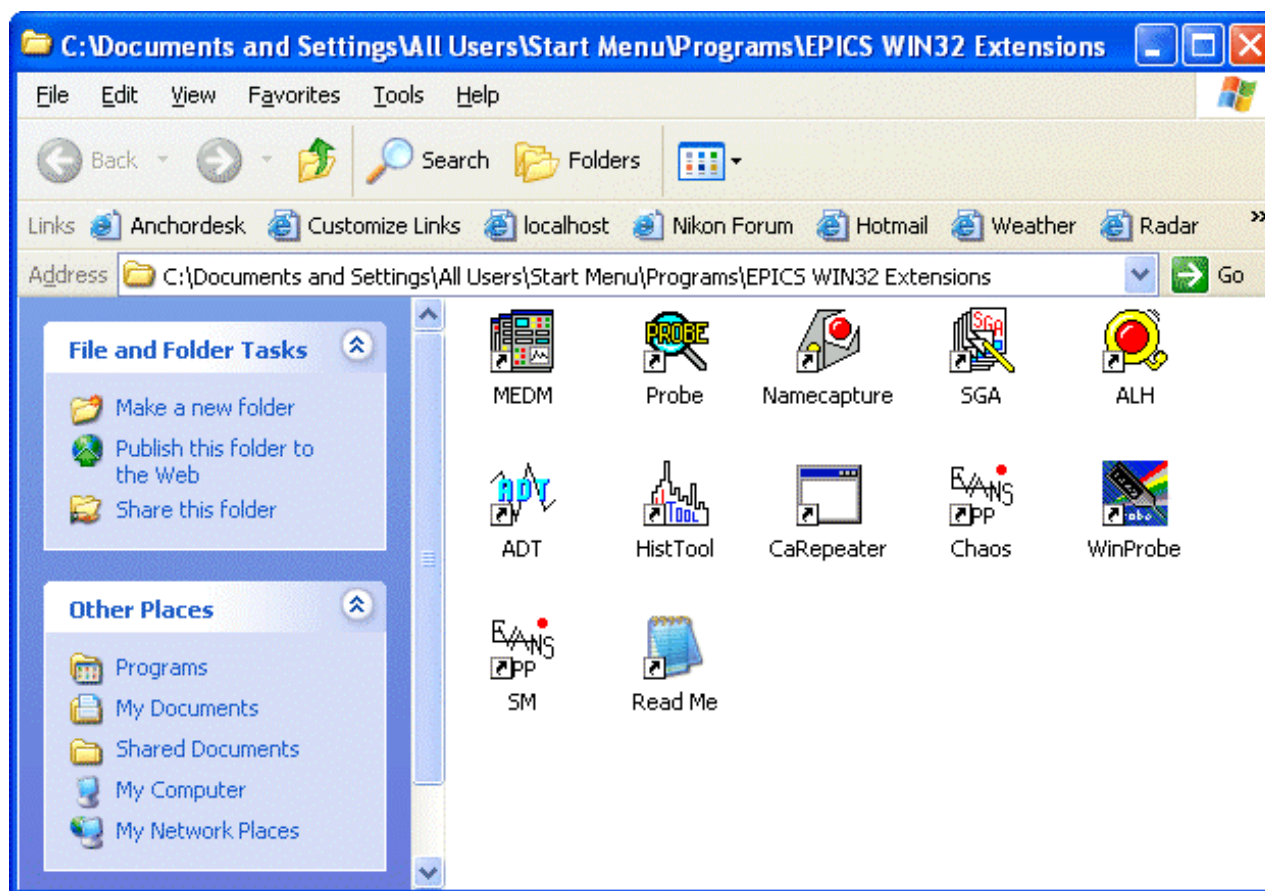
# ADT

- Stands for Array Display Tool
- A way to display arrays of single process variables
  - Such as BPM or vacuum readings around the ring
  - Not waveforms
- Configurable menus and displays
- Uses SDDS extensively
- Many features
- Primarily used by Physicists
- Will not be covered further in this presentation



# EPICS WIN32 Extensions

- **Package of the important EPICS applications**
  - Built to run on Windows



# ***EPICS WIN32 Extensions***

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- **Require Hummingbird Exceed**
  - Arguably the best Windows X Server
  - The only viable source of Motif libraries for Windows
  - Possible to use other Windows X Servers but it is not supported
- **There is an InstallShield installer located at**
  - <ftp://ftp.aps.anl.gov/pub/extensionsStatic/win32>
  - You usually want the latest version there
- **The installation is easy and should not mess up your computer**
- **Uninstalling them is also easy**
  - If you be sure to stop all running programs first
  - Closing Exceed stops all except CaRepeater
- **Read the README before starting!**
- **Historical Note: The EPICS Logo was designed for and first used with the installer for the EPICS WIN32 Extensions**

# Pocket PC Applications

- **EPICS has been ported to the Pocket PC**
- **Two EPICS applications are available**
  - ProbeCE
  - BeamDisplay
- **There are better ways to access EPICS with a Pocket PC**
  - E.g. Citrix Metaframe
  - Can give access to all the EPICS WIN32 Extensions
  - Covered in the presentation on Remote Access



# Virtual Linac

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- **The Virtual Linac includes examples and startup scripts for**
  - MEDM
  - StripTool
  - Probe
  - ALH
- **You can use the other tools with it as well**
- **You are encouraged to go out and play with it**

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# *Thank You*

*This has been an  
APS Controls Presentation*



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# *Thank You*

*This has been an  
APS Controls Presentation*