



# Development of EPICS Channel Access Embedded ActiveX Components for GUI Development

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WEPD25

## Requirement for the development

- ❖ Microsoft Windows XP chosen as platform at operation console level during the commissioning phase
  - ✓ due to its compatibility with third party software, commonly used Microsoft tools and operators' familiarity.
- ❖ User requirements e.g.
  - ✓ data archiving into local file for offline / online analysis.
  - ✓ authentication based service
  - ✓ integrity with third party system etc. during commissioning phase.

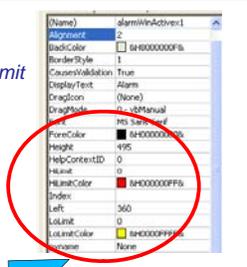
- ❖ **Microsoft ActiveX technology** is chosen because of
  - ✓ reusable, platform-independent, distributed, object-oriented binary software components.
- ❖ **Easy Channel Access (EZCA) library**
  - ✓ 25 numbers of API functions supporting CA functions for data access (process value, precision, control limits, graphical limits etc.), error handling, grouping, monitors and tuning.
  - ✓ readily available VB interface

CA ActiveX

Microsoft ActiveX technology  
CA interface

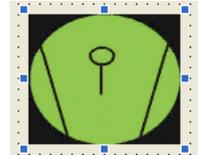
### CA Alarm

- ✓ display colour coded text information corresponding to *HiLimit* and *LoLimit* of a channel
- ✓ replicate the conventional alarm window used in control panels.



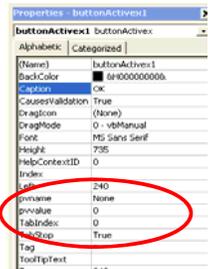
### CA Image

- ✓ display the status (ON/OFF or OPEN/CLOSE) of field components with colour coded industry standard symbols.
- ✓ Each display state is represented by an image file (bmp, jpeg, png etc).
- ✓ The standard Windows Mouse actions are incorporated in this component for allowing user to take action.



### CA Button

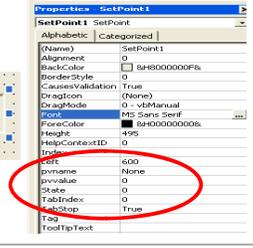
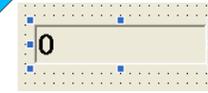
- ✓ for controlling state of a binary channel.
- ✓ for ON/OFF or OPEN/CLOSE type operation of field components e.g. valves, pumps etc



CA ActiveX Component Library

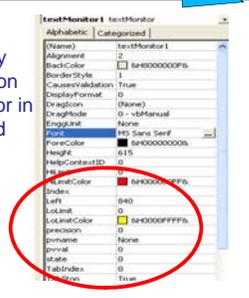
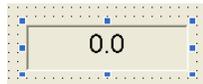
### CA Set-point

- ✓ for controlling numeric value of a channel in textual format.
- ✓ required for modifying set-points in control system



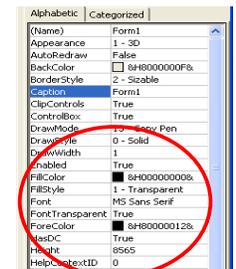
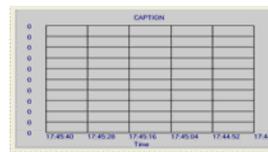
### CA Text

- ✓ display a channel's value textually
- ✓ display color coded alarm condition
- ✓ format display either in *scientific* or in *general* format with user specified *precision* and *engineering unit*



### CA Trend

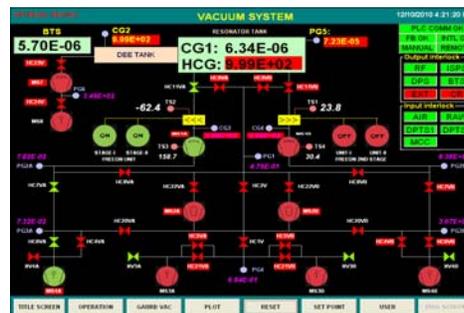
- ✓ for trending of process variable.
- ✓ incorporated features e.g. *Auto scale*, *time span* etc.



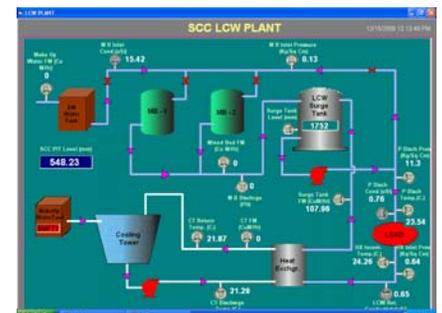
## Advantages

- Easy configuration i.e. *pvName* and *init()* call
- **Drag & drop** type reusable **component**
- More versatile **colors, fonts & features**
- Easy integration of other Winows feature e.g.
  - ✓ user authentication
  - ✓ message box
  - ✓ file handling for data storage
  - ✓ multiple windows
- **Drastic reduction** in GUI **development time**, **code complexity** and **debugging time**

## Some example GUIs



GUI for RTC Vacuum control system



GUI for LCW Plant monitoring system