

## intention:

- integration to global environment of BESSY
- use of standard software tools
- graphical user interface support
- data exchange with other apps
- saving of frontend configuration data





## hardware:

- industrial PLC's with ethernet connection and serial field-bus
- one PLC per frontend system (present: 36, future: up to 60 )

## software

- support for Intel platforms and WinNT/2000
- support for OPC  
(OLE/COM for Process Control, standard methods for exchanging realtime automation data)
- OPC server software by manufacturer of PLC's
- problem: no device support to ChannelAccess

How connect our PLC's to ChannelAccess?



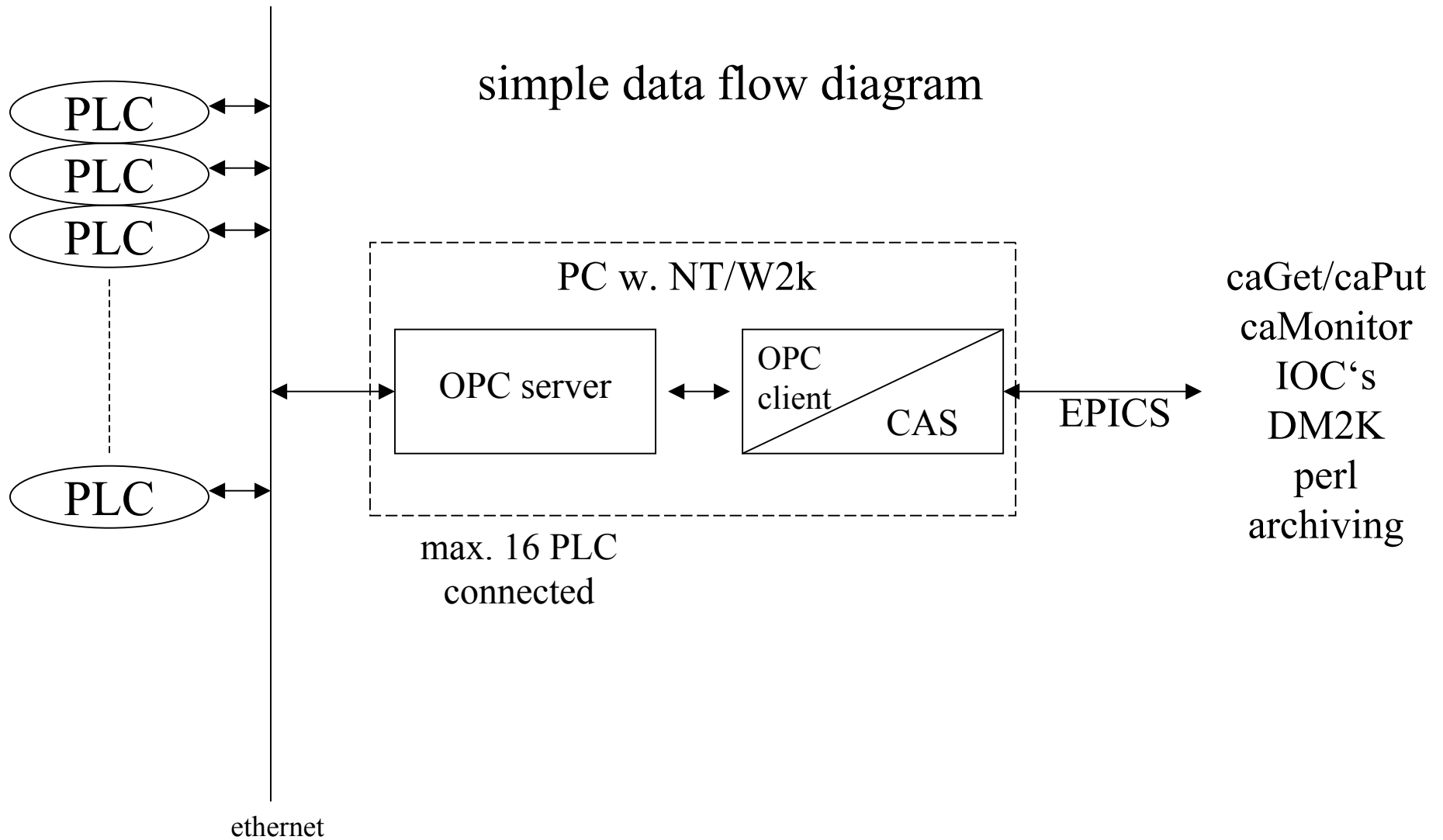


- OPC-client with server extension to ChannelAccess, based on ActiveX control for ChannelAccess (by K.-U. Kasemir), written in VB
  - OPC-server:
    - can read/write data from/to PLC's (PLC drivers, IO hardware driver)
  - OPC-client:
    - can read/write data from/to OPC-server(s)
  - CA-server:
    - serves received data to EPICS (IOC's, archiver etc.)





# frontend control at BESSY





### features:

- small, stable and easy-to-use OPC/CA-data gateway
- supports multiple OPC-servers running local or remote
- graphical item-browsing
- simple data modification (inspect, write)
- save and restore configuration to/from disk (ASCII)
- number of served items limited only by hardware

### restrictions/problems

- no security access control available
- handling of state information is difficult
- problems with alarm handler





# frontend control at BESSY



The screenshot displays the OPCClient interface with the following components:

- OPCClient Main Window:** Shows a tree view of servers and a table of OPC items.
- Item List Table:**

OPCItemID	Value	Status	PV	EGU	Prec.	Deadband	HI
40.0.0/PLC/HZ_ID0/Momentansollw_HZ1	28	Good	HZY01U010L:Mome...	celsius	0	0	3.0
40.0.0/PLC/HZ_ID0/Momentansollw_HZ2	28	Good	HZY01U010L:Mome...	celsius	0	0	3.0
40.0.0/PLC/HZ_ID0/Momentansollw_HZ3	29	Good	HZY01U010L:Mome...	celsius	0	0	3.0
40.0.0/PLC/HZ_ID0/Momentansollw_HZ4	29	Good	HZY01U010L:Mome...	celsius	0	0	3.0
40.0.0/PLC/HZ_ID0/Momentansollw_HZ5	28	Good	HZY01U010L:Mome...	celsius	0	0	3.0
40.0.0/PLC/HZ_ID0/Momentansollw_HZ6	28	Good	HZY01U010L:Mome...	celsius	0	0	3.0
40.0.0/PLC/HZ_ID0/Momentansollw_HZ7	28	Good	HZY01U010L:Mome...	celsius	0	0	3.0
40.0.0/PLC/HZ_ID0/Momentansollw_HZ8	28	Good	HZY01U010L:Mome...	celsius	0	0	3.0
40.0.0/PLC/HZ_ID0/Momentansollw_HZ9	27	Good	HZY01U010L:Mome...	celsius	0	0	3.0
40.0.0/PLC/HZ_ID0/Sollw_HZ1	220	Good	HZY01U010L:Mome...	celsius	0	0	3.0
40.0.0/PLC/HZ_ID0/Sollw_HZ2	200	Good	HZY01U010L:Mome...	celsius	0	0	3.0
40.0.0/PLC/HZ_ID0/Sollw_HZ3	200	Good	HZY01U010L:Mome...	celsius	0	0	3.0
40.0.0/PLC/HZ_ID0/Sollw_HZ4	200	Good	HZY01U010L:Mome...	celsius	0	0	3.0
40.0.0/PLC/HZ_ID0/Sollw_HZ5	150	Good	HZY01U010L:Mome...	celsius	0	0	3.0

- Connect OPC Server Dialog:** Shows 'localhost' as the server name and 'PhoenixContact.Interbus.2' as the selected driver.
- OPC Write Item Dialog:** Shows 'ItemID: 40.0.0/PLC/HZ\_ID0/Grenzw\_HZ5' and 'Data Type: Integer - 16 bit Signed'. The 'Numeric and String Values' field contains '150'.
- Add Item Dialog:** Shows a tree view of the OPC server structure and a list of available items including 'HZ9\_istw1\_kl\_10', 'HZ9\_istw2\_gr\_Grenzw', and 'HZS\_10'. The 'Item Definition' section shows 'OPC-Item ID: 40.0.0/PLC/HZ\_ID0/HZS\_10' and 'Native' data type.



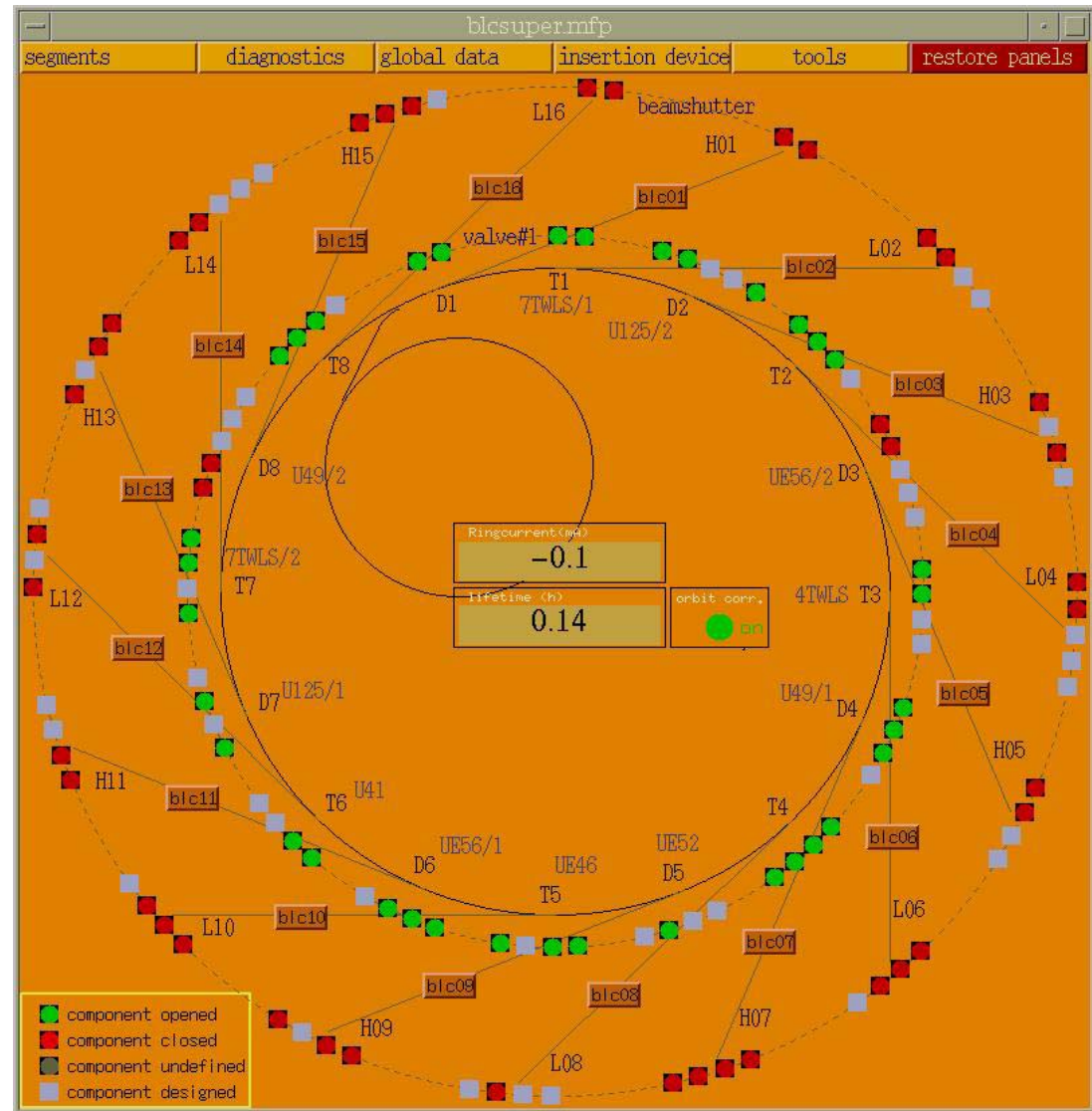


# frontend control at BESSY



applications at BESSY:

main view of BESSY  
experimental hall,  
frontend system states,  
beamshutter states





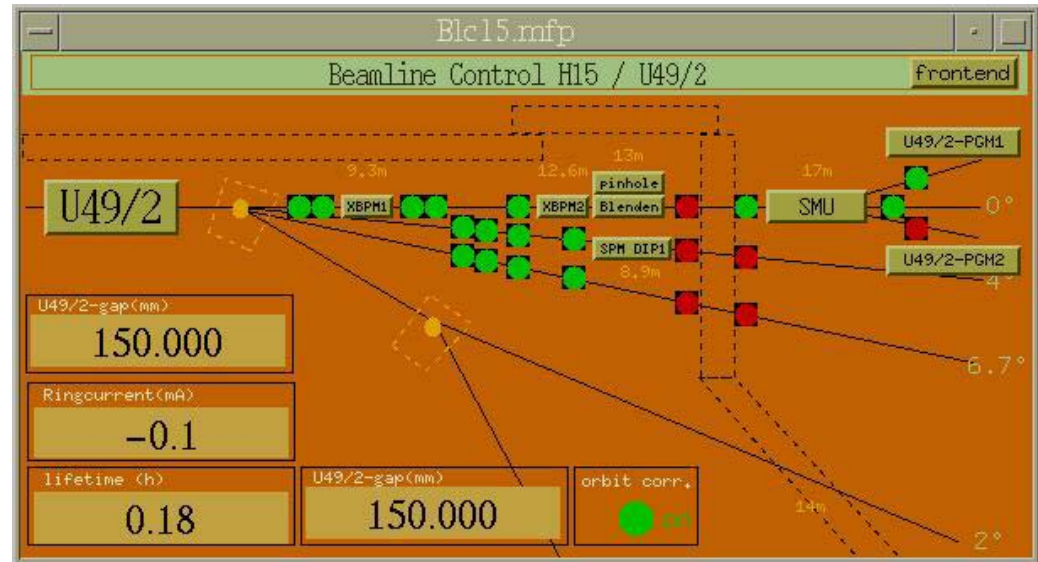


# frontend control at BESSY

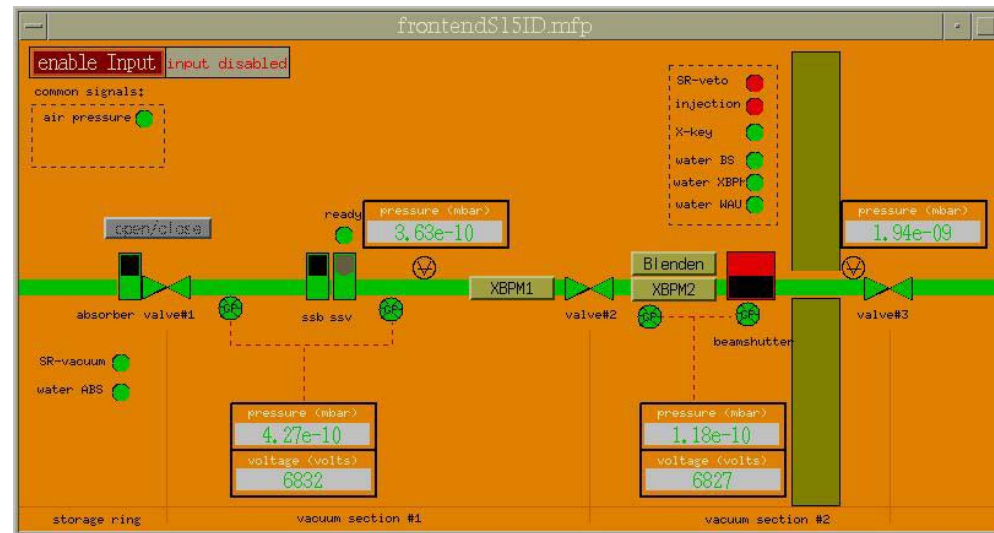


applications at BESSY:

overview of a segment  
(1/16 of storage ring)



frontend detail view,







# frontend control at BESSY



applications at BESSY:

fast-closing-unit control panel (perl)

The screenshot shows a graphical user interface for the SSV control system, titled "SSV control system - S09ID -". The interface is organized into several control panels for different units:

- Control Unit:** Features a "File Options" menu, a "Help" button, and a "ready" status indicator with a green square icon.
- Power Supply (Storage Ring):** Includes "local", "locked", and "remote" radio buttons. It shows "ready" and "trigger" status indicators, a "sensor off" indicator, and a "sensor on/off" button. The "vacuum ok" indicator is highlighted in green.
- Power Supply (Split Mirror Unit):** Shows "ready" and "trigger" status indicators, a "sensor off" indicator, and a "sensor on/off" button. The "vacuum ok" indicator is highlighted in green.
- Power Supply (BESSY SGM):** Shows "ready" and "trigger" status indicators, a "sensor off" indicator, and a "sensor on/off" button. The "vacuum ok" indicator is highlighted in green.
- Power Supply (CRG PGM):** Shows "ready" and "trigger" status indicators, a "sensor off" indicator, and a "sensor on/off" button. The "vacuum ok" indicator is highlighted in green.
- Control Unit:** Shows "ready" and "ext. trigger" status indicators, a "sensor off" indicator, and a "sensor on/off" button. A "system reset" button is present.
- Valve Unit:** Shows "ready" status indicator, "open" and "close" buttons, "open interlock" and "close interlock" indicators, and "open" and "close" buttons.





# frontend control at BESSY



applications at BESSY:

time plots,  
data archiving

