

IMMS

- Infrastructure Machines Monitoring System
- Epics Based Application
- Application Overview
- Technical Design

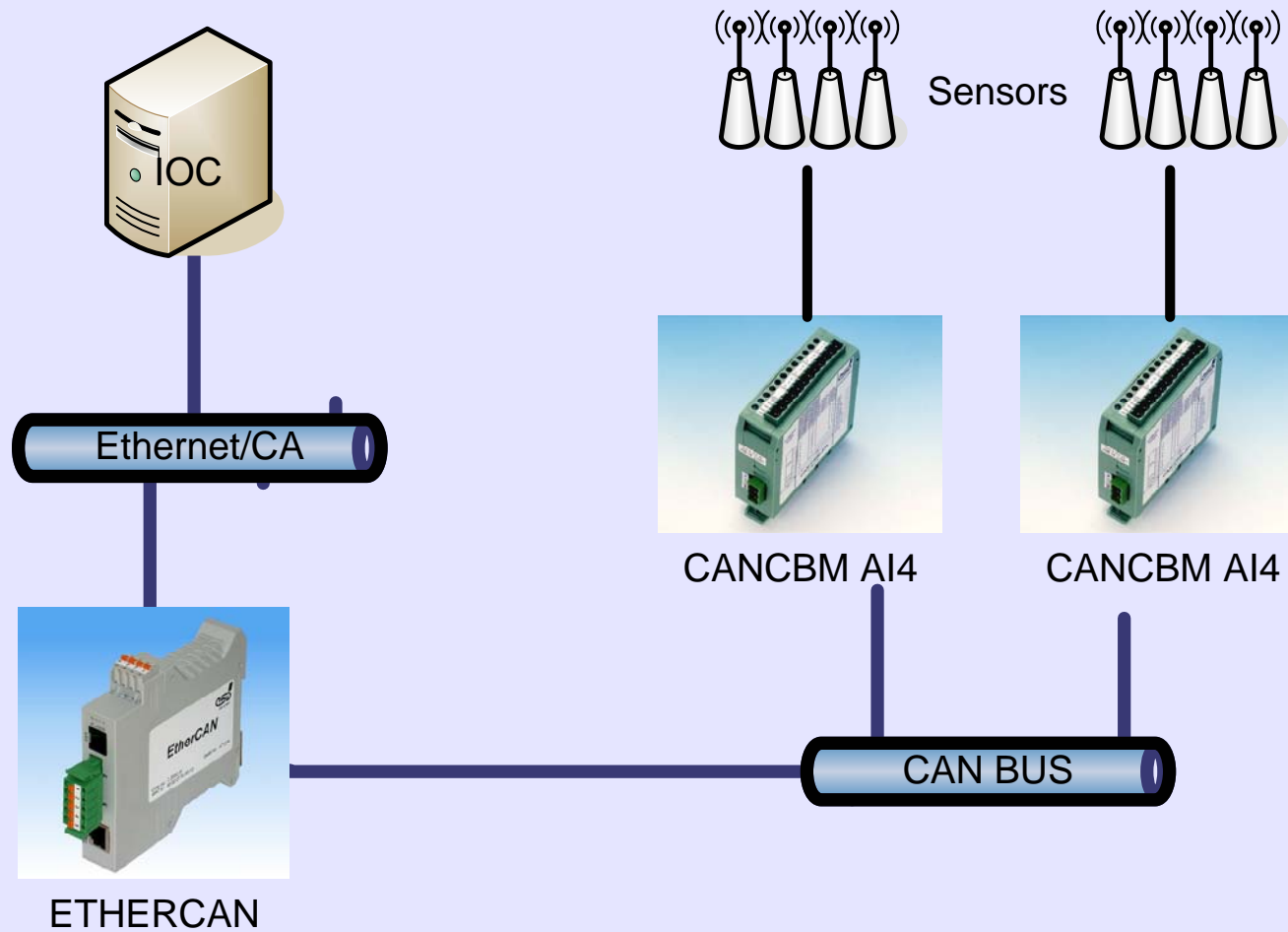
IMMS - Overview

- Air conditioning devices monitoring
 - Temperatures readout and storage
 - Web-based Value display
 - Web-based plot display
 - Alarm in case of threshold passing

IMMS – Virgo Site View



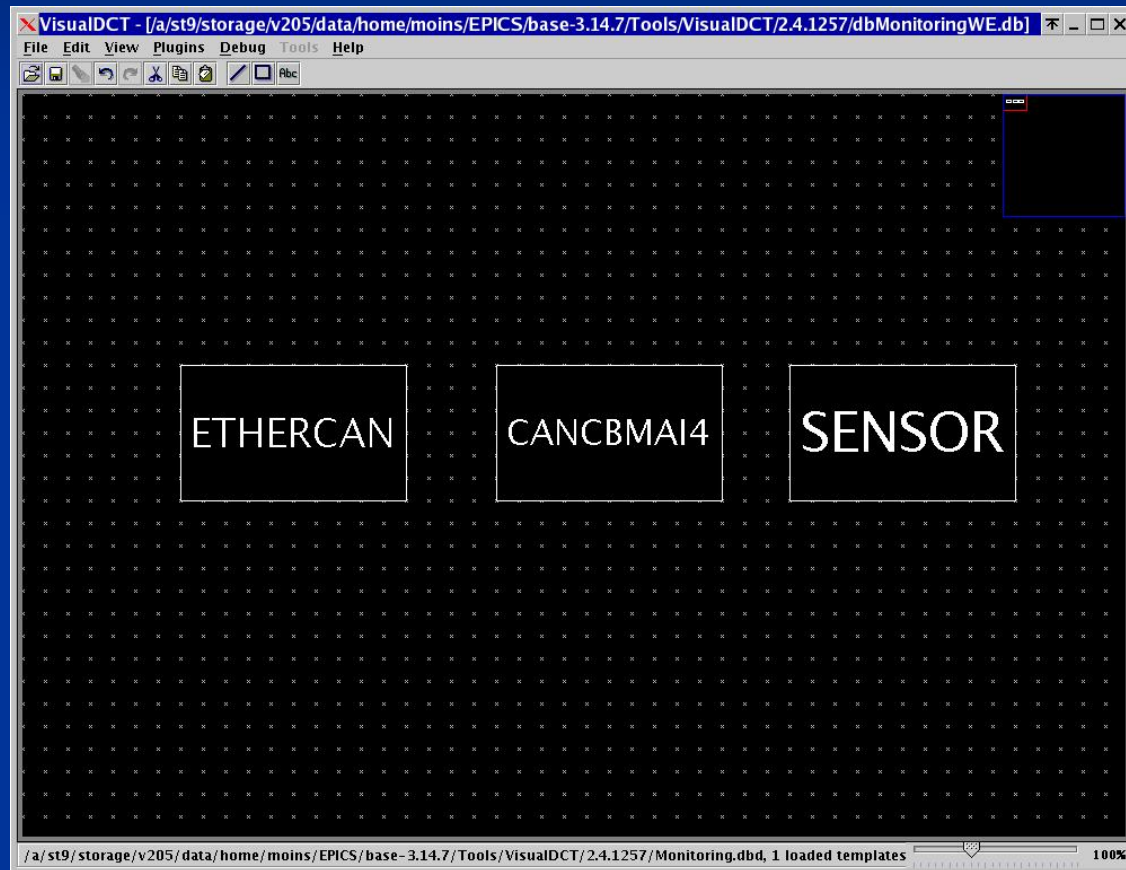
IMMS – Acquisition chain



IMMS – Data acquisition

- Temperatures readout
 - IOC implementation
 - Three configuration record types
 - ethercan
 - canCbmAi4
 - Sensor
 - CanOpen Synchronous communication
- Data storage using Channel Archiver

IMMS – Configuration Database



IMMS – Configuration Database

VisualDCT - [/a/st9/storage/v205/data/home/moins/EPICS/base-3.14.7/Tools/VisualDCT/2.4.1257/dbMonitoringWE.db]

File Edit View Plugins Debug Tools Help

ethercan
ETHERCAN □ WENet1

DTYP=myDevEthercanSoft
LOCATION=West End
ADDRESS=3
SPEED=2
DEVICE1HANDLE=CANCBMAI4 □
SCAN=10 second
MAILLIST=christophe-o.moins@l
SIML=0

DEVICE1HANDLE → PP NMS — □ CANCBMAI4 □ WENet1_TempAcqDev1.HANDLE
MAILLIST ○ — □ <more>
SIMM ○ — □ <more>

/a/st9/storage/v205/data/home/moins/EPICS/base-3.14.7/Tools/VisualDCT/2.4.1257/Monitoring.dbd, 1 loaded templates 160%

IMMS – Configuration Database

VisualDCT - [/a/st9/storage/v205/data/home/moins/EPICS/base-3.14.7/Tools/VisualDCT/2.4.1257/dbMonitoringWE.db]

File Edit View Plugins Debug Tools Help

The screenshot displays the VisualDCT configuration database interface. It shows two instances of the 'canCbmAi4' device configuration. Each instance is connected to a 'HANDLE' block, which in turn connects to various 'INPUT' blocks. These inputs are mapped to specific sensors and lists in the database.

canCbmAi4 (Left Instance):

```

CANCBMAI4 □ WENet1_TempAcqDev1
-----
DTYP=myDevCanCbmAi4Soft
ADDRESS=1
LSBVALUE=0.0006103515
INPUT1=SENSOR □ WENet1_TAD1
INPUT2=SENSOR □ WENet1_TAD1
INPUT3=SENSOR □ WENet1_TAD1
NEXTDEVICEHANDLE=CANCBMAI
SCAN=Passive
DISABLE=MAJOR
MAILLIST=ETHERCAN □ WENet1.
SIML=ETHERCAN □ WENet1.SIMM
    
```

canCbmAi4 (Right Instance):

```

canCbmAi4
-----
CANCBMAI4 □ WENet1_TempAcqDev2
-----
DTYP=myDevCanCbmAi4Soft
ADDRESS=2
LSBVALUE=0.0006103515
INPUT1=SENSOR □ WENet1_TAD2_
SCAN=Passive
DISABLE=MAJOR
MAILLIST=ETHERCAN □ WENet1.
SIML=ETHERCAN □ WENet1.SIMM
    
```

HANDLE and INPUT Connections:

- Left Instance HANDLE:**
 - INPUT1: PP NMS → SENSOR □ WENet1_TAD1_TeMACWET.RAW
 - INPUT2: PP NMS → SENSOR □ WENet1_TAD1_TeRICWET.RAW
 - INPUT3: PP NMS → SENSOR □ WENet1_TAD1_TeMAFWET.RAW
 - NEXTDEVICEHANDLE: PP NMS → CANCBMAI4 □ WENet1_TempAcqDev1.HANDLE
 - MAILLIST: NPP NMS → ETHERCAN □ WENet1.MAILLIST
 - SIML: NPP NMS → ETHERCAN □ WENet1.SIMM
- Right Instance HANDLE:**
 - INPUT1: PP NMS → SENSOR □ WENet1_TAD2_TeFRGF1.RAW
 - MAILLIST: NPP NMS → ETHERCAN □ WENet1.MAILLIST
 - SIML: NPP NMS → ETHERCAN □ WENet1.SIMM

/a/st9/storage/v205/data/home/moins/EPICS/base-3.14.7/Tools/VisualDCT/2.4.1257/Monitoring.dbd, 1 loaded templates(s) CANCBMAI4 Edit Mode 160%

IMMS – Configuration Database

The screenshot shows the VisualDCT application window with the following details:

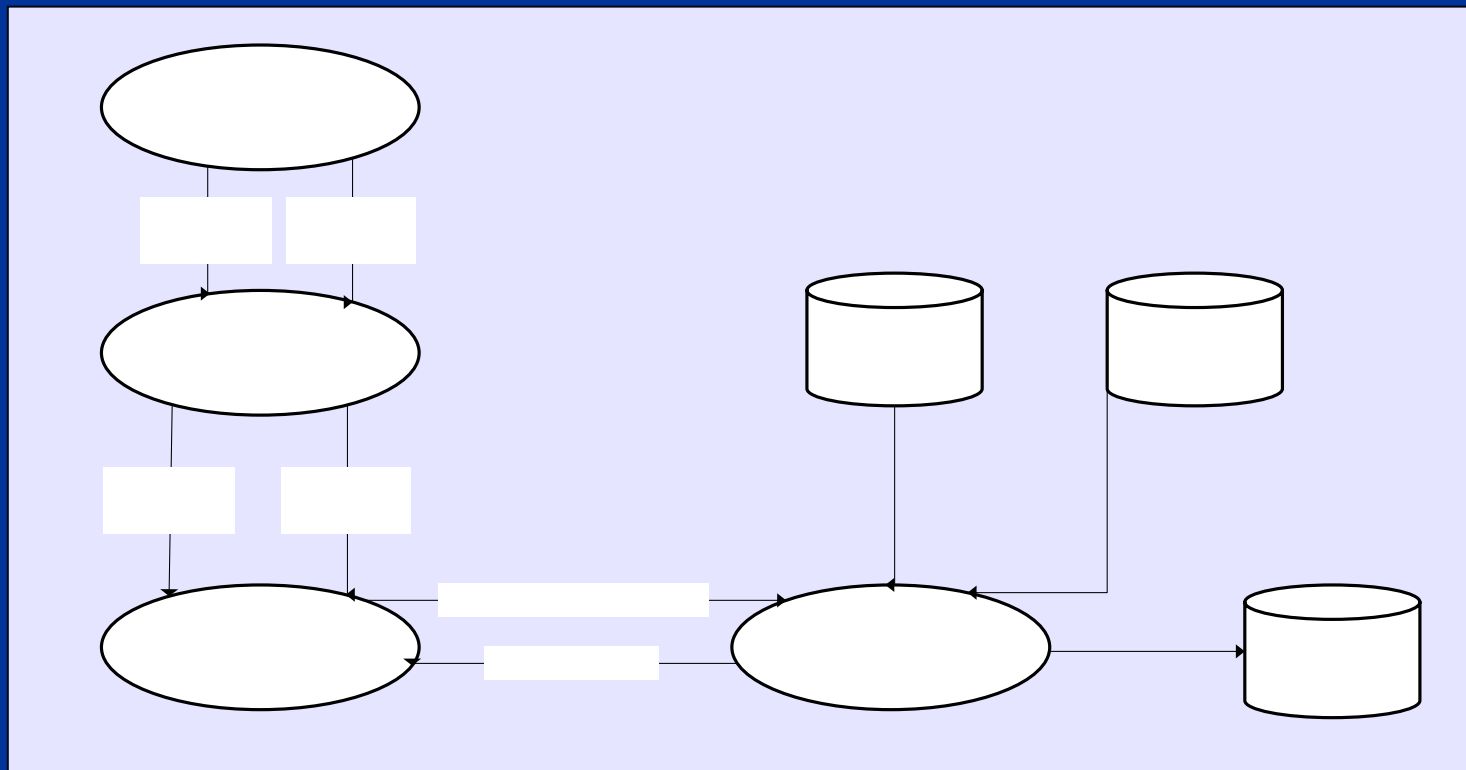
- Title Bar:** VisualDCT - [/a/st9/storage/v205/data/home/moins/EPICS/base-3.14.7/Tools/VisualDCT/2.4.1257/dbMonitoringWE.db]
- Menu Bar:** File Edit View Plugins Debug Tools Help
- Toolbar:** Standard icons for file operations and editing.
- Main Content:** A configuration window for a sensor with the following parameters:
 - sensor**
 - SENSOR=WENet1_TAD1_TeMACWET
 - SLOPE=6.25
 - OFFSET=-25
 - SCAN=Passive
 - PREC=5
 - SMOOTH=0.2
 - MDEL=0.00001
 - ADEL=0.00001
 - HIHI=73.0
 - LOLO=64.0
 - HHSV=MAJOR
 - LLSV=MAJOR
 - HYST=0.0001
 - MAILLIST=ETHERCAN_WENet1.
 - SIML=ETHERCAN_WENet1.SIMM
- Legend:** A table defining the symbols used in the configuration:

| | | |
|----------|---|---------------------------------|
| RAW | ○ | SENSOR_WENet1_TAD1_TeMACWET.RAW |
| MAILLIST | ◁ | ETHERCAN_WENet1.MAILLIST |
| SIML | ◁ | ETHERCAN_WENet1.SIMM |

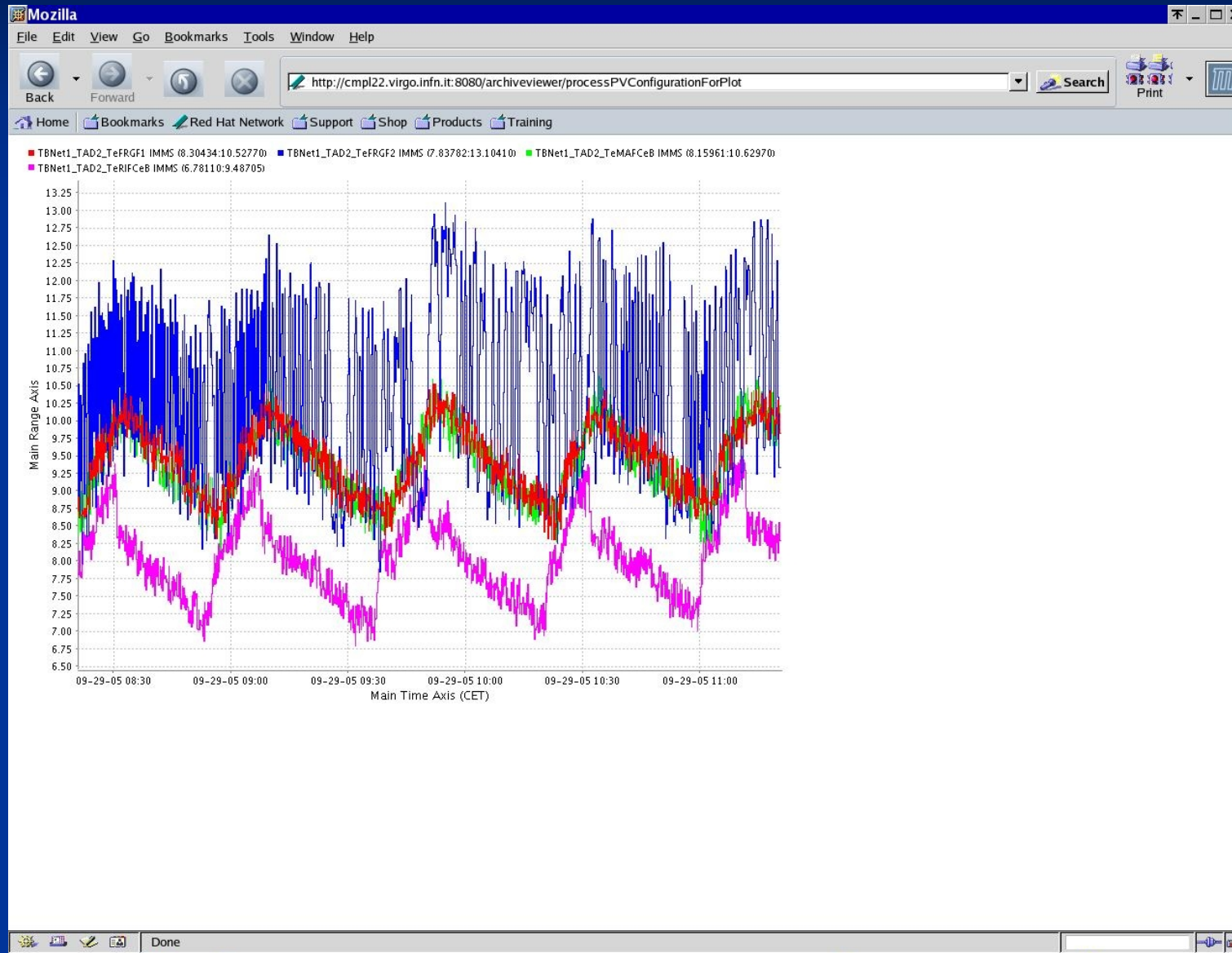
The status bar at the bottom indicates: /a/st9/storage/v205/data/home/moins/EPICS/base-3.14.7/Tools/VisualDCT/2.4.1257/Monitoring.dbd, 1 loaded templates(180%

IMMS – Data Display

- Web based display
 - Archive Viewer in JSP mode
 - Data Server CGI script



IMMS – Data Display



IMMS – Alarm Handling

■ Alarm Display : Alarm Handler

Execution Status: Local Active
Mask <CDATL>: <Cancel,Disable,noAck,noackT,noLog> H=noAck 1hr timer
Group Alarm Counts: (ERROR,INVALID,MAJOR,MINOR,NOALARM)
Channel Alarm Data: <Status,Severity>,<Unack Severity>
Filename: /users/noins/home/EPICS/base-3.14.7/IMMS/AlarmTest/IMMSConfig.alhConfig

SilenceOneHour
 SilenceCurrent
Silence Forever: Off
ALH Beep Severity: MINOR

IMMS - Conclusion

- EPICS tools fit IMMS needs
- Remaining tasks
 - EPICS framework stability assessment
 - Online threshold changes storage
 - Upgrade
 - inner piping sensors
 - electrical values readout (Powermeter, Modbus)
 - interfacing with an electrical system