TRD Gas System Control Software

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TRD Meeting – Rome, 19-20 oct 2005

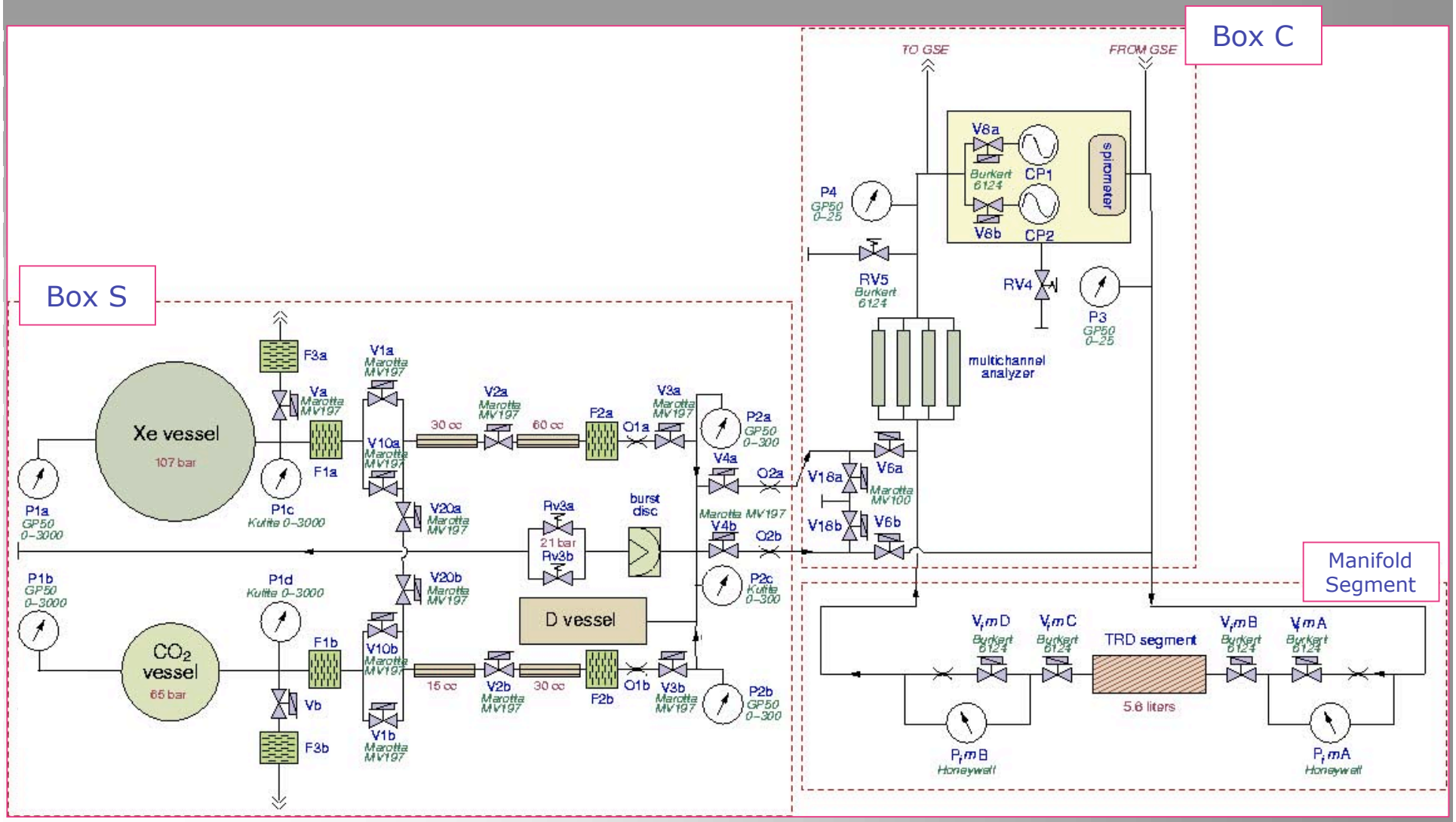
Outline

Description of:

***WINCAN**: Graphical User Interfaces to issue low-level commands to gas system components*

***SENSMON**: Root based program to display the system status during its operation*

The Gas System – Whole view



Gas System Control Interface

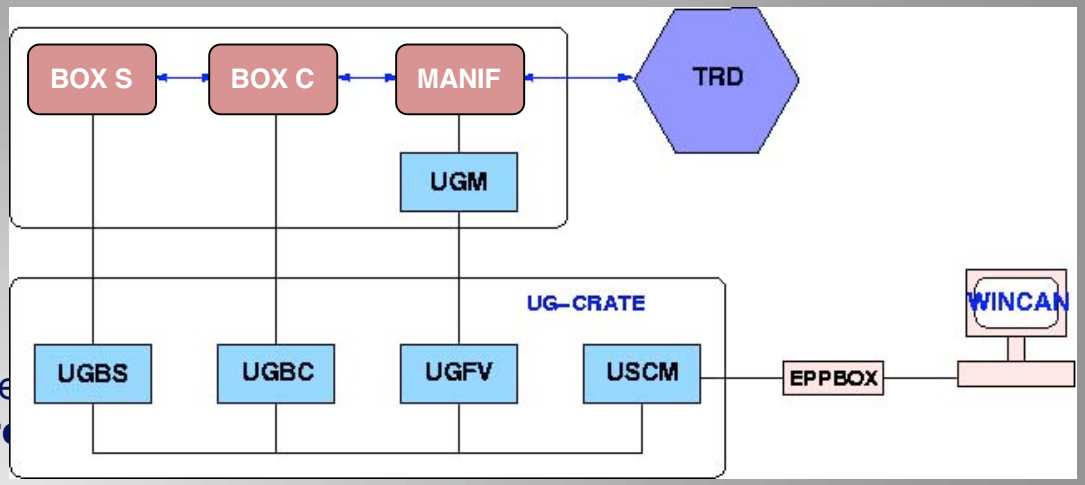
WINCAN

19/10/2005

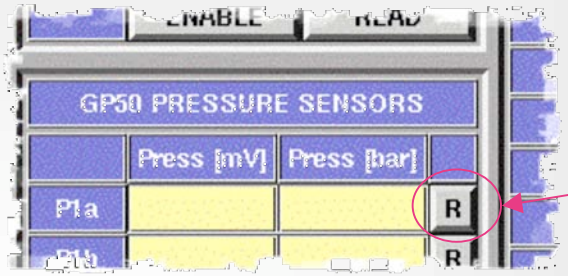
F.Spada

Gas Control Software - WINCAN

WINCAN is Linux-based
Communicates with the Universal Slow Control Module – USCM – via **CAN bus**
EPPCAN interface



Libraries from *A.Lebedev* are
to/from USCM with **LeCr**
Example:

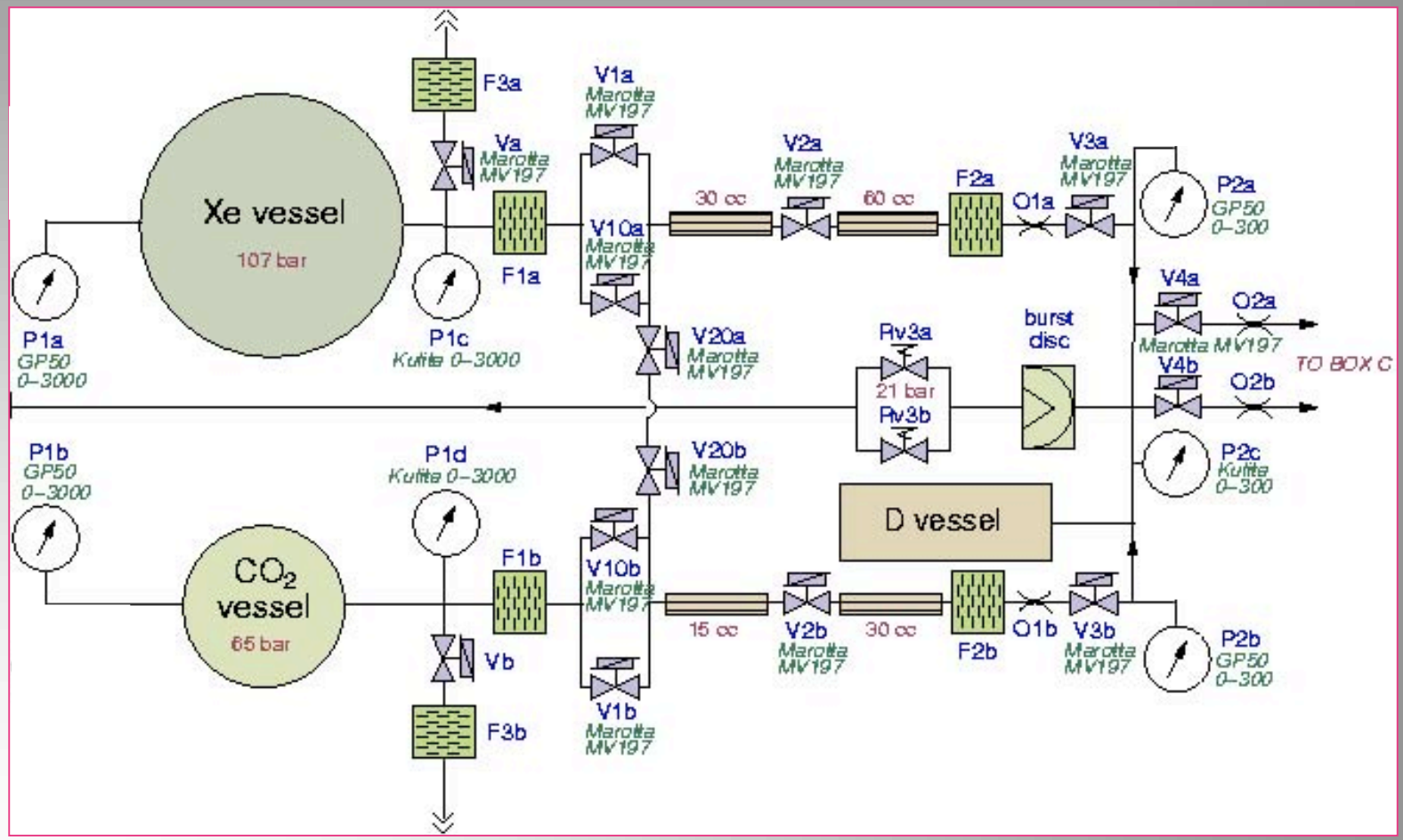


Pushing the READ button corresponds to command:

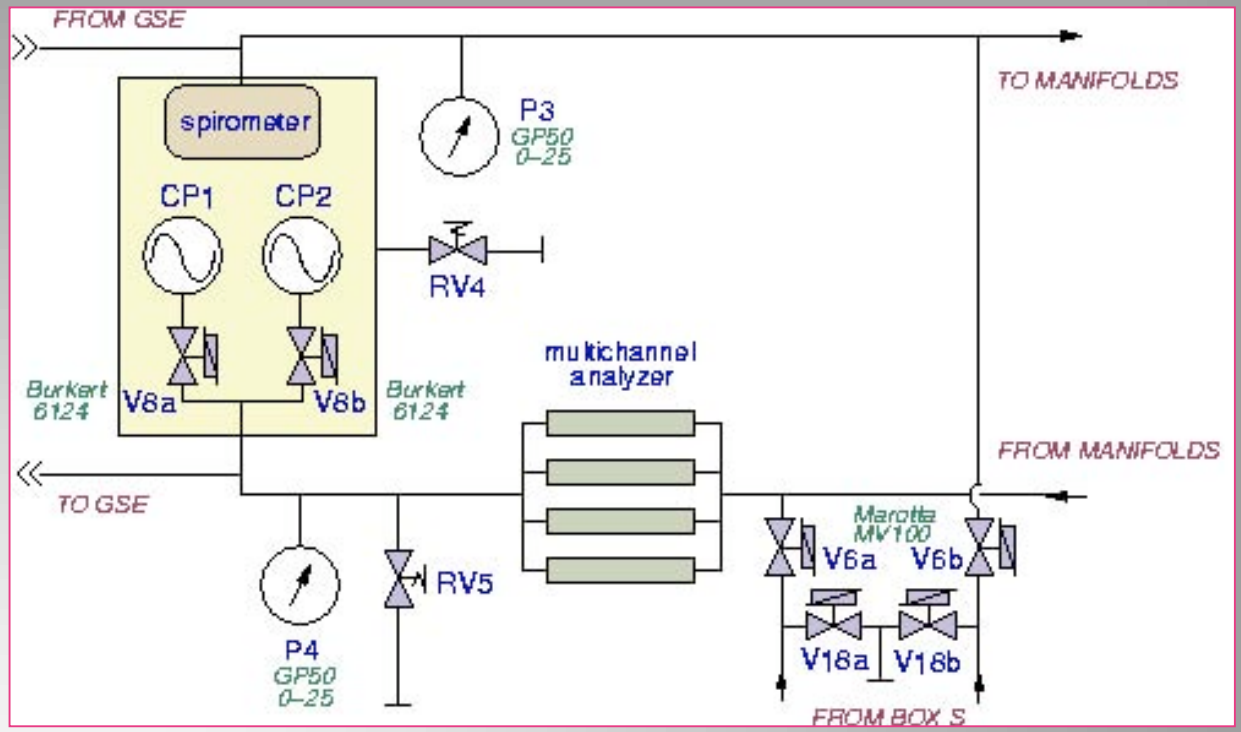
exec_LeCroy_command(n_comm, &bus, &wri, &rea, &chk, &err)
wri=0x86C00000
(A.Lebedev command library)

1000 0110 1100 0000 0000 0000 0000
(LeCroy command)

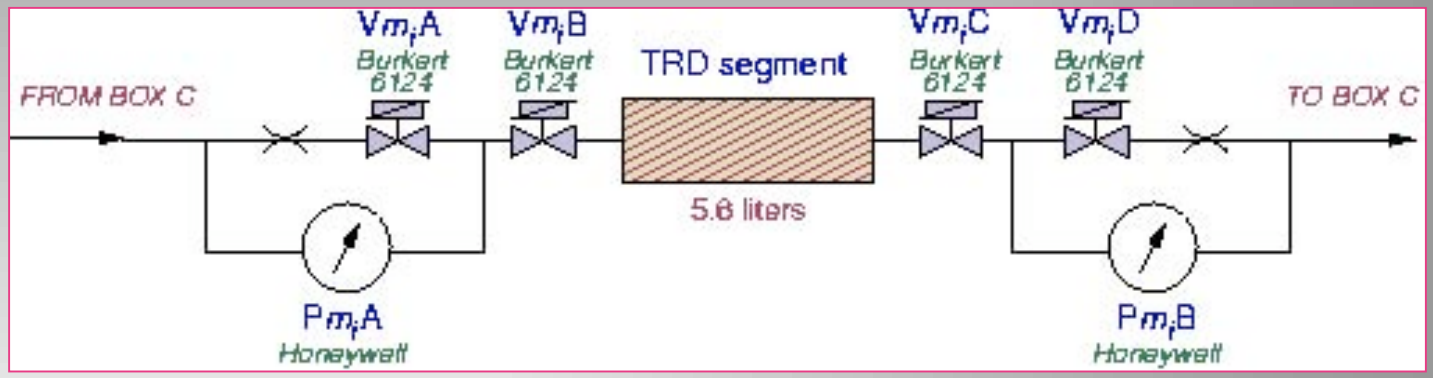
The Gas System – Box S

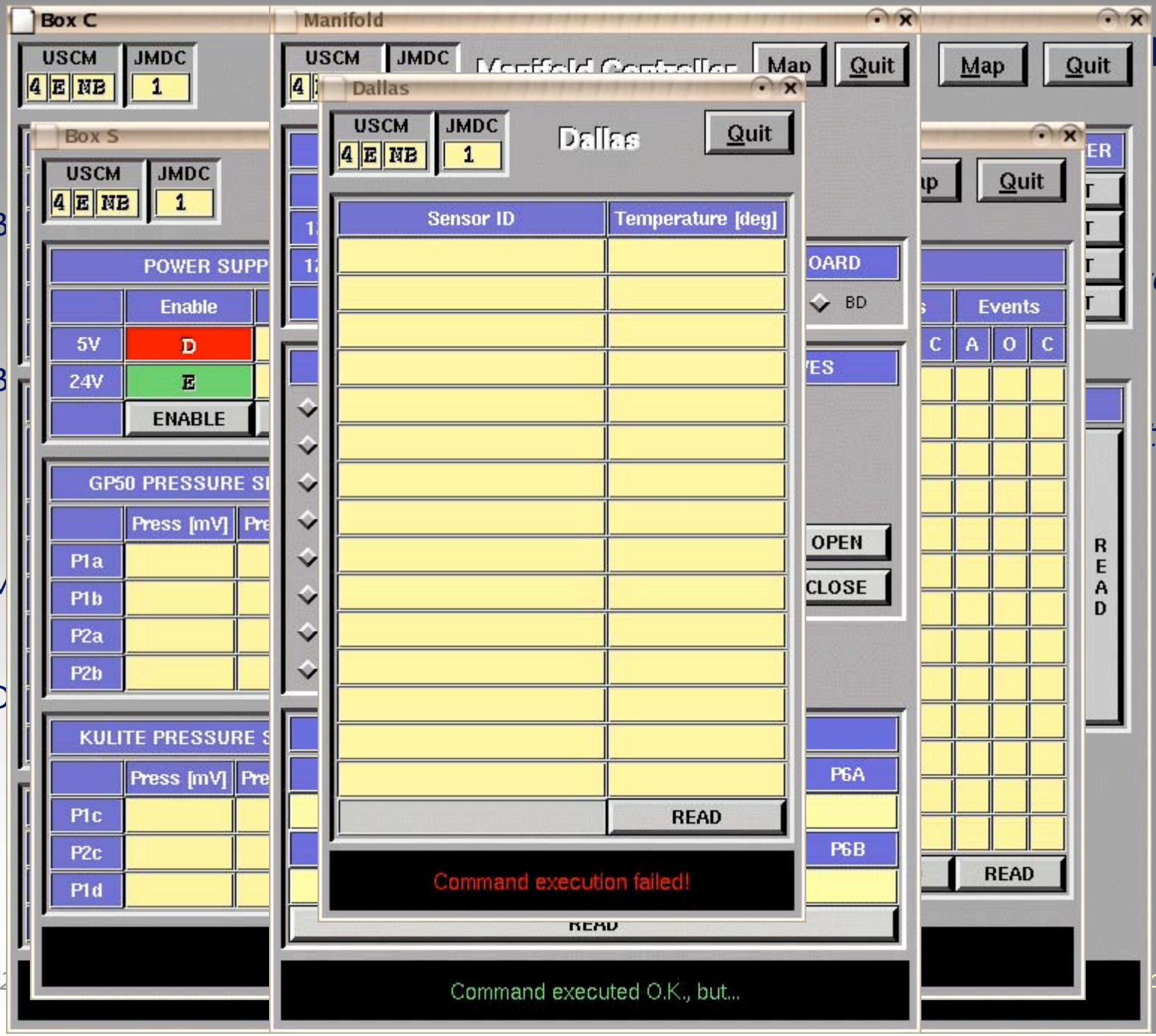


The Gas System – Box C



The Gas System – Manifolds




Box C
USCM
JMDC
4 E NB
1
Box S
POWER SUPP
Enable
5V
D
24V
E
ENABLE
GP50 PRESSURE SI
Press [mV]
P1a
P1b
P2a
P2b
KULITE PRESSURE S
P1c
P2c
P1d
Manifold
Map
Quit
Dallas
Sensor ID
Temperature [deg]
READ
Command execution failed!
OARD
BD
OPEN
CLOSE
P6A
P6B
Events
C A O C
READ
Command executed O.K., but...

Gas Control Software - WINCAN

Tested on a Box S + Box C + one manifold segment engineering model

Successful:

- *operation of Marotta and Burkert valves*
- *readout of pressure and temperature sensors*
- *operation of circulation pumps at half and full speed*
- *readout of spirometer*
  - *just got the correct output. no calibration available at that time.*

For the first time use of WINCAN for higher-level operations on the gas system

l Software - WINCAN

An example of a h ented:

Interface dec **ing Procedure** study

Special version ing model

User can cho ber of gas shots,

read press

Newly implemented:

Heaters control, *currently*

Spirometer with calibratic

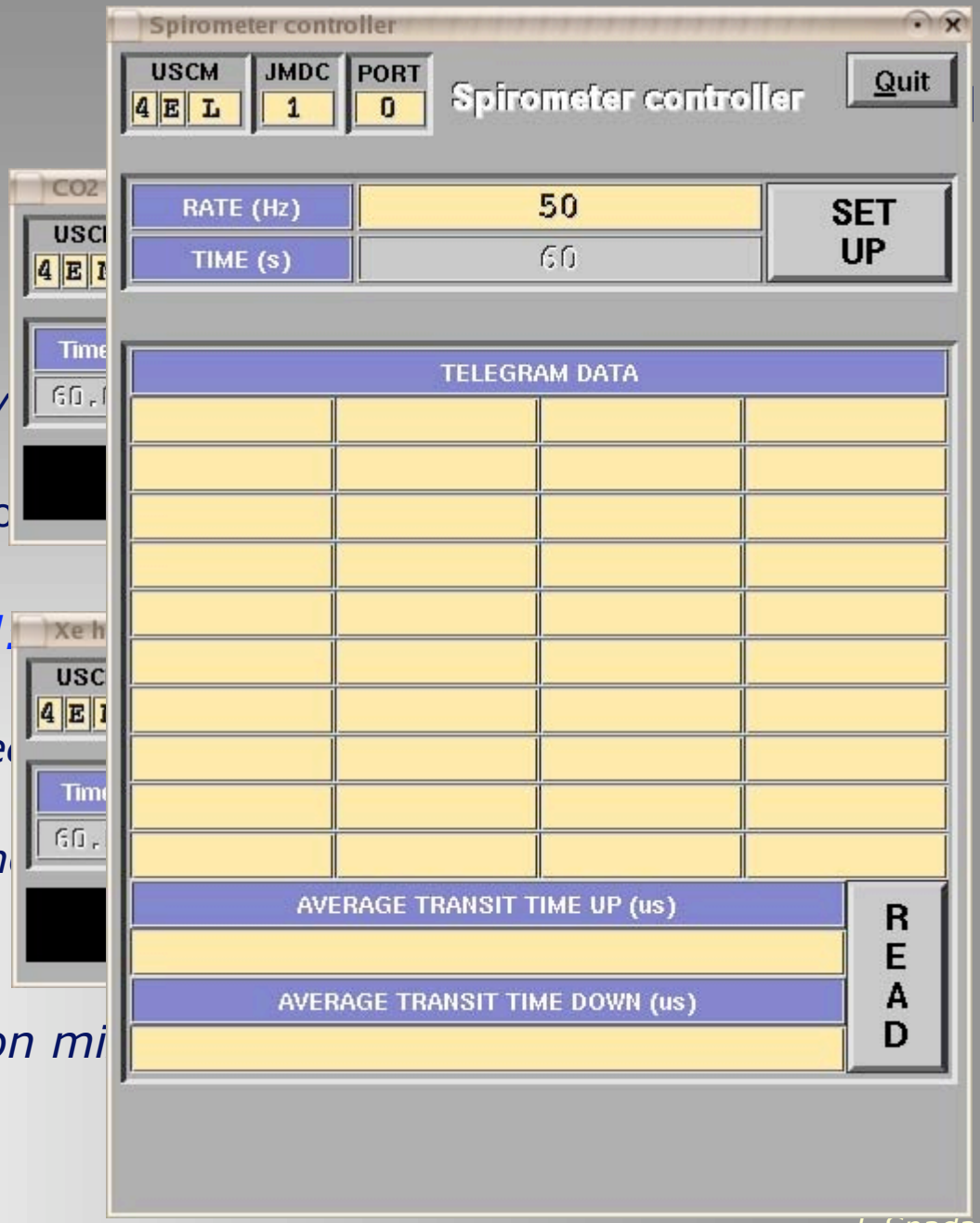
To be implemented/tested

Kulite sensors control, *ne*

Multi Channel Analyzer, *n*

Higher-level procedures,

expermentations on mi



Gas System Monitor

SENSMON

19/10/2005

F.Spada

Gas system Monitor - SENSMON

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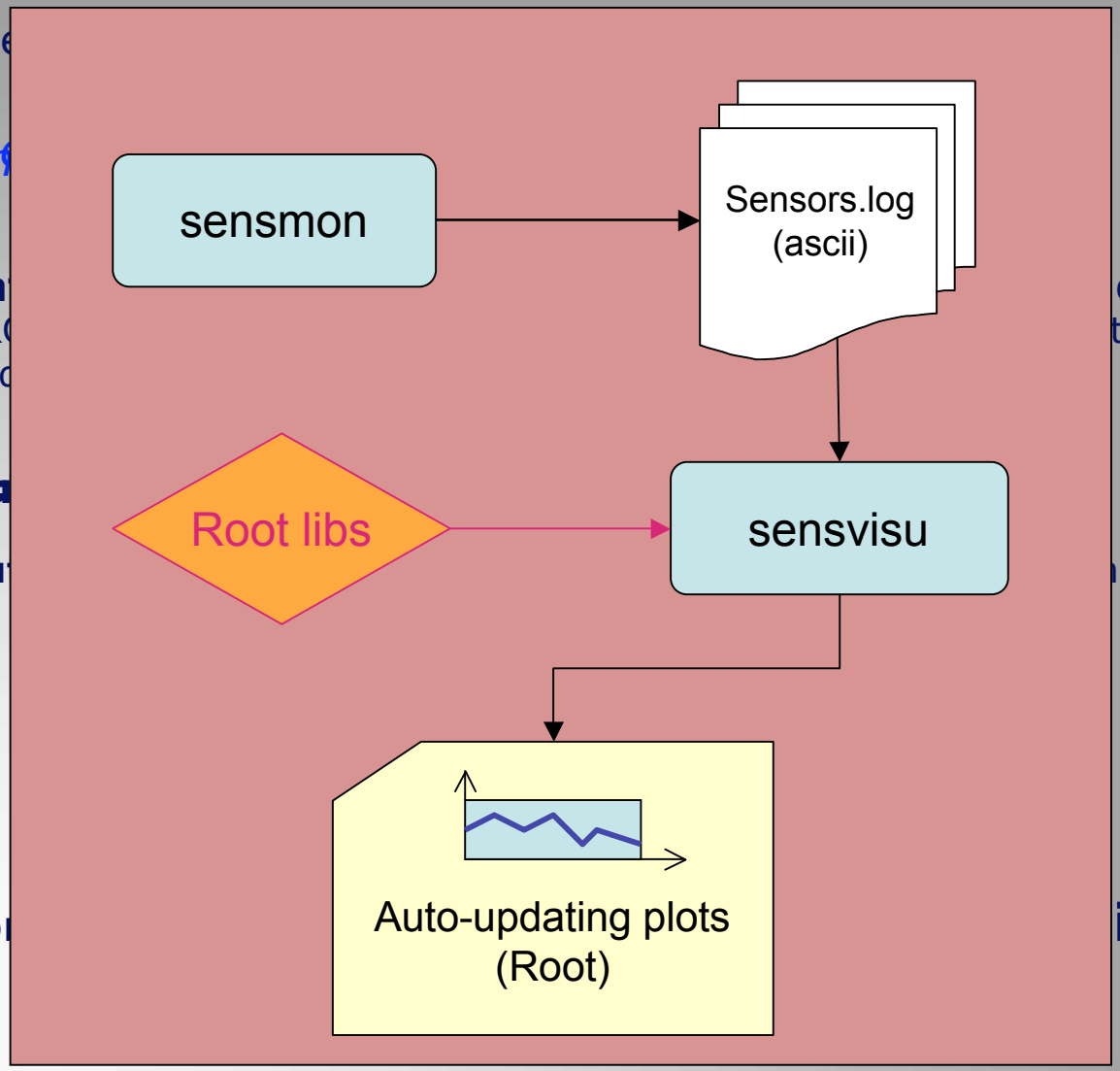
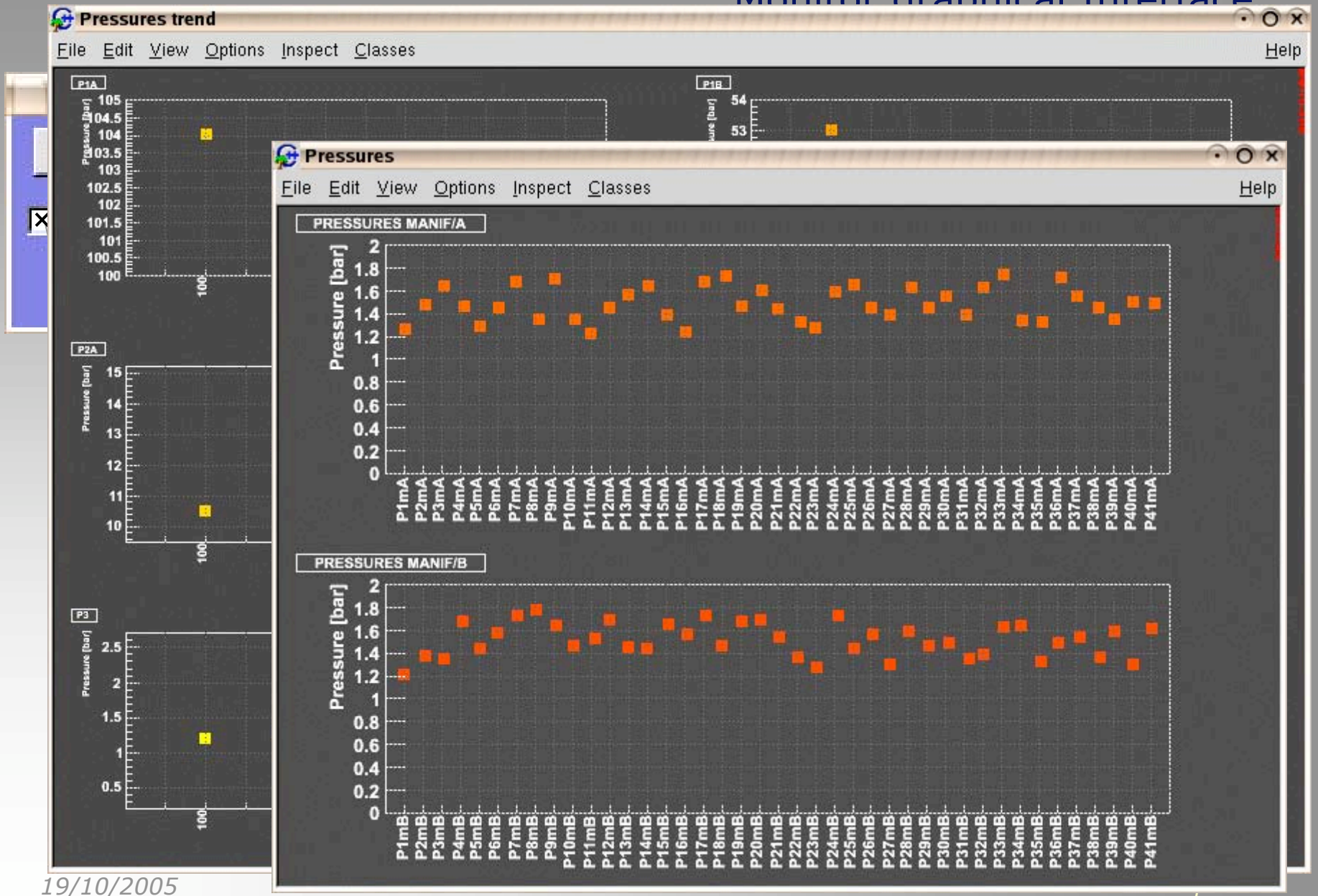
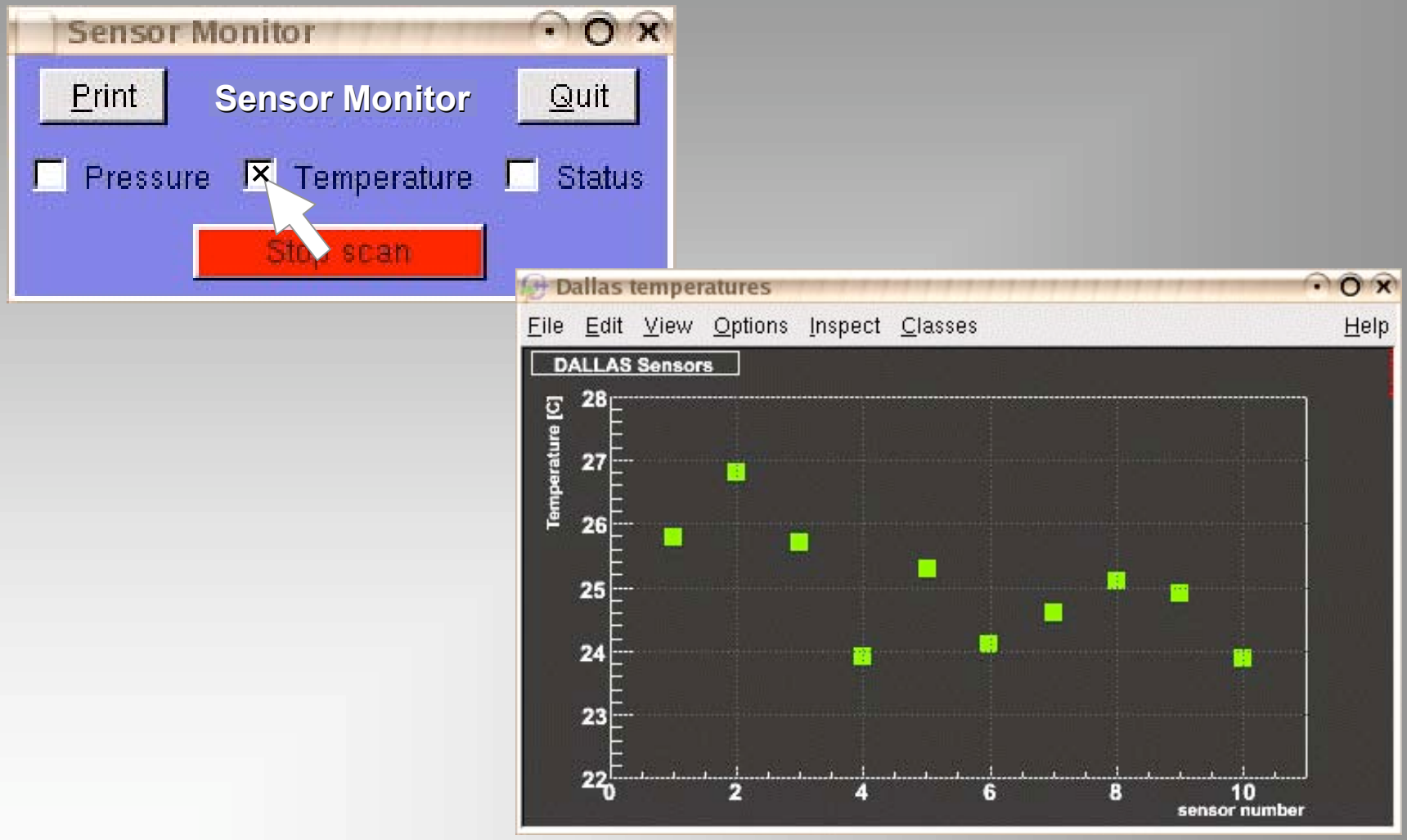


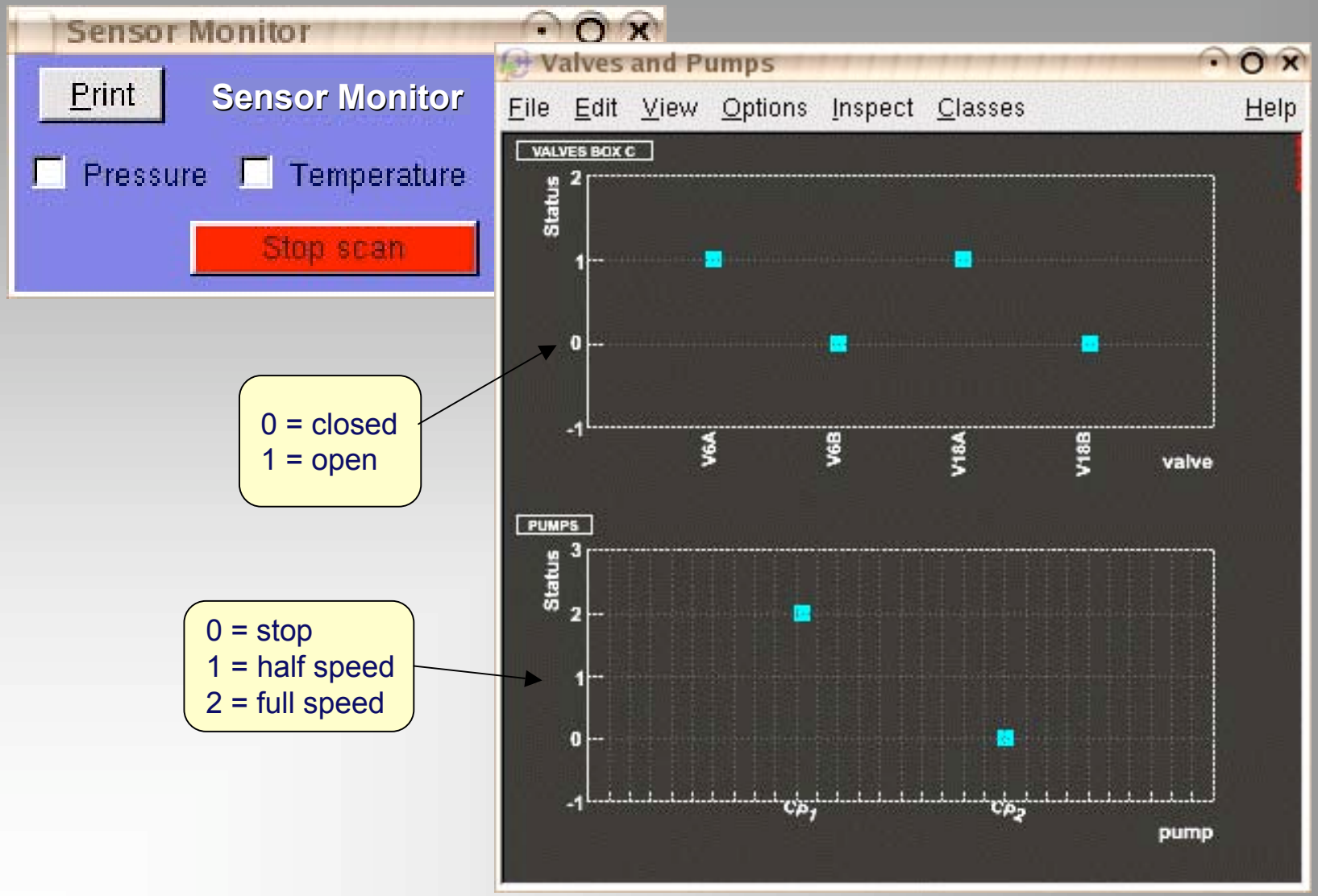
Monitor graphical Interface



Monitor graphical Interface



Monitor graphical Interface



System requirements

WINCAN and SENSMON are LINUX-based

Tested under Red-Hat 7.3 and Red-Hat 9B
with gcc 3.2.2 compiler

ROOT vers. 4.03 and later

The code is available at

www.cern.ch/spada/AMS/

Open issues

We (FB, FS) have started the developement of monitor-dignostic-automatic intervention program

Discussion/decision is needed in order to define:

- *Thresholds that define a critical situation*
- increase of diff. pressure in a segment
- increase/decrease of temperature in a part of the detector/gas system
- *What intervention is the most suitable for a given problem*

- Data transfer issues:
- What rate is allowed for monitor update
- What delay must be expected between the arise of a problem and its detection

The tests currently in progress on the hardware (gas sys) will provide indications

Needed test of gas sys + (at least some) manifolds/segments