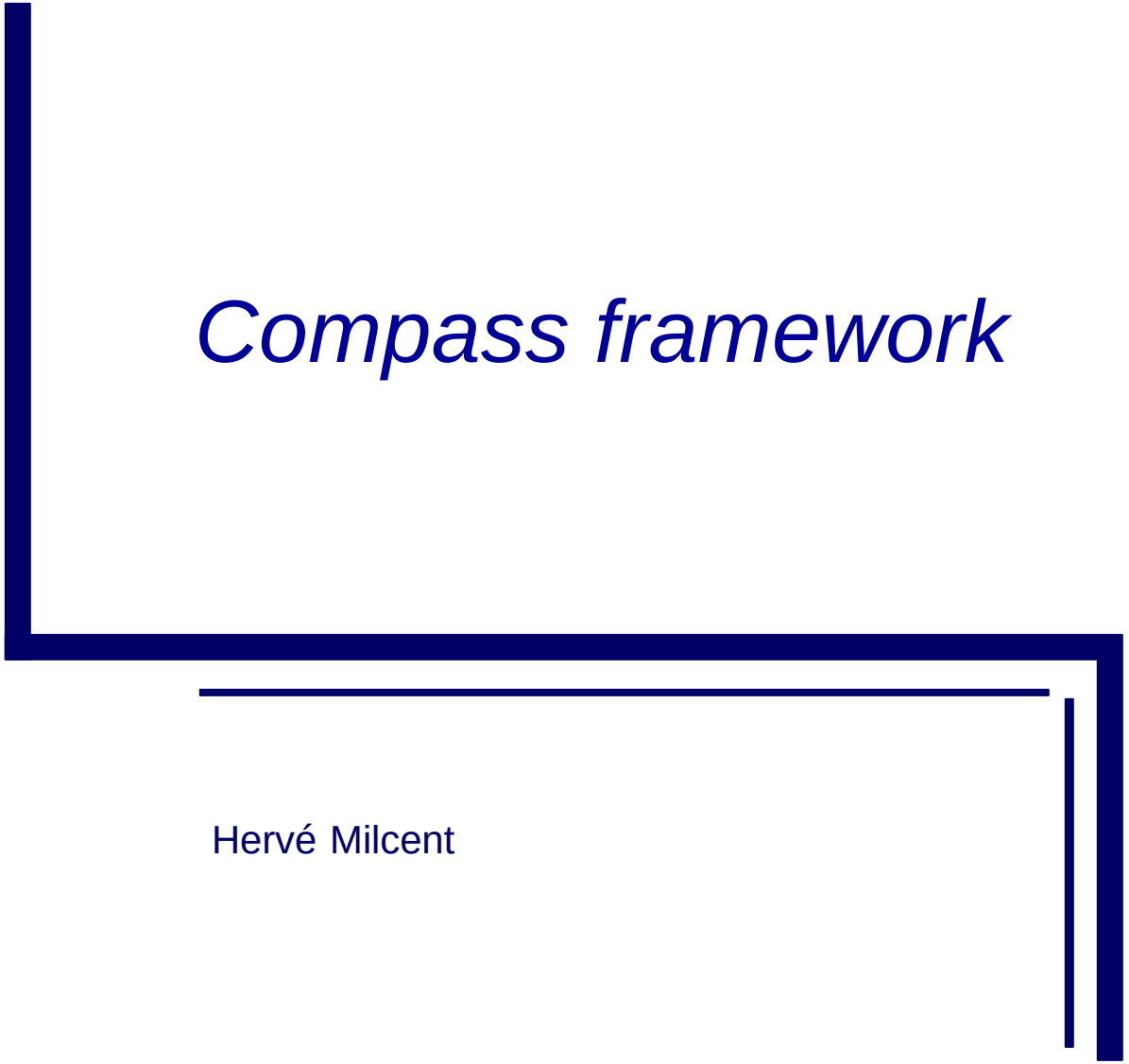


Compass framework

Hervé Milcent

Content

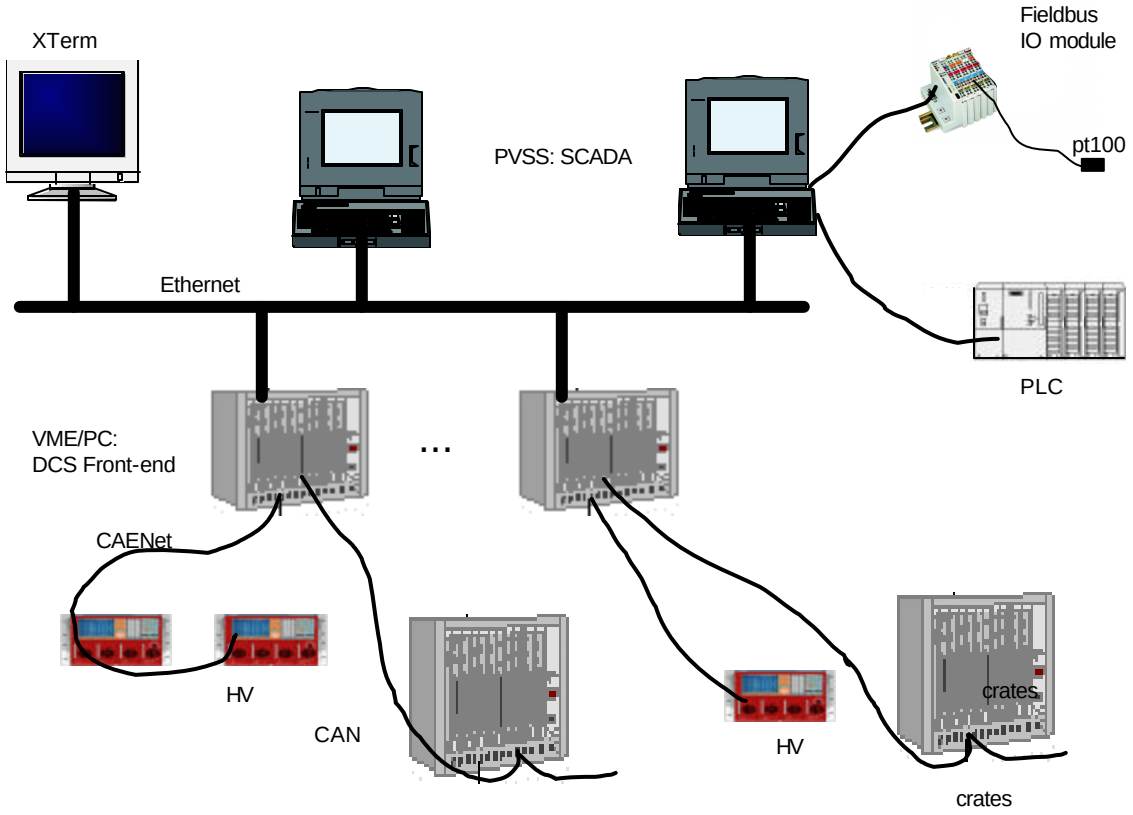
- History
- Architecture
- Framework concept
- Framework elements types
- Framework panels
- Conclusions

- One year
- Help and advise
- Questionnaire
- Interview
  - common elements: HV, WIENER fan tray, etc.
  - common needs: user access, archiving, etc.
  - detector with existing DCS.
- User requirement document
- Analysis, scenario (use case)

Constraints

- SCADA: for supervision
  - PVSS (Linux-NT)
- Commercial components
  - fieldbus: PROFIBUS, CAN
  - OPC
- Re-use running software
  - VME-NA48 front-end software
  - communication protocols: DIM
- 

Hardware/software architecture



Interviews results:

- Common hardware elements
- Common software requirements
  - access to the elements
  - user access, etc.
- Element classified in a hierarchical way

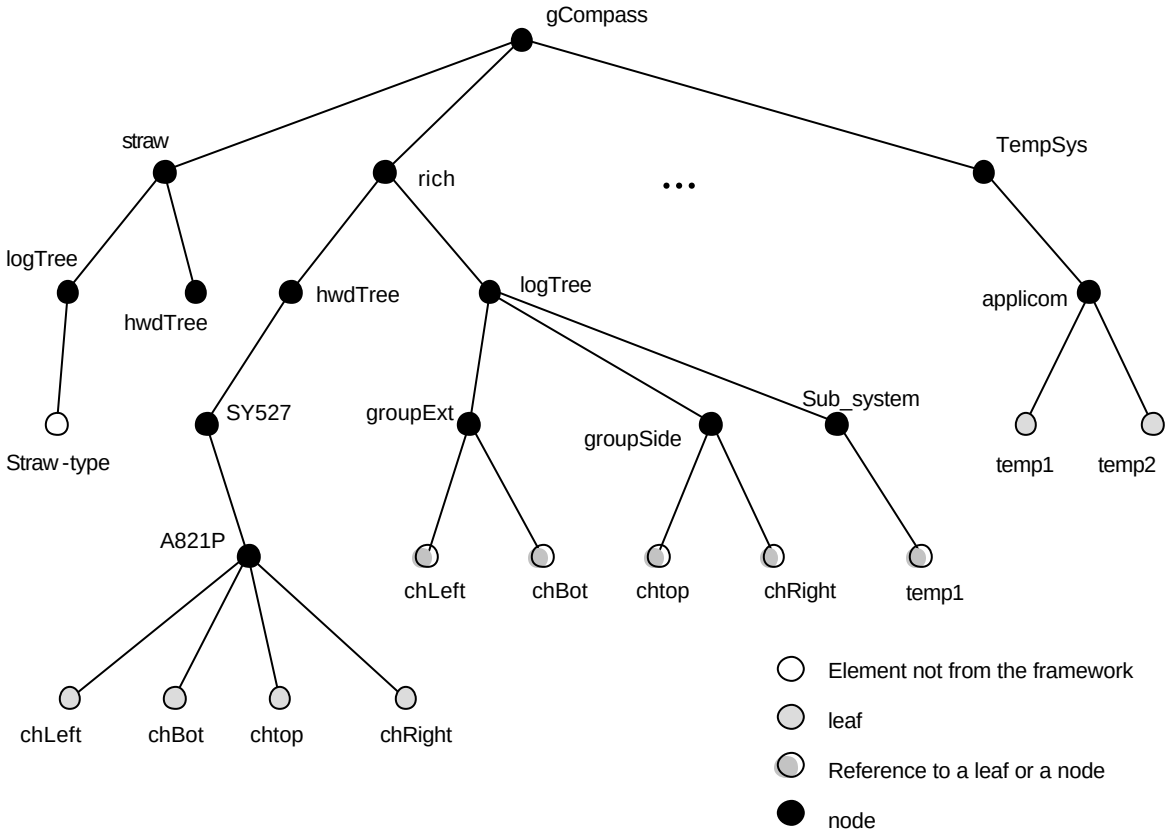
A Framework:

- Common representation
- Same behavior
- Ease the development of the DCS

The Framework

- Library of common elements types:
  - analogue input, digital input, HV, etc.
- Tree hierarchy
- Behavior
- SCADA implementation hidden from the developer
- Library of PVSS panels:
  - configuration
  - operation
- Integration of user-defined elements types
- Front-end software and its configuration tool

Tree hierarchy



- Alarms: anomaly on an element, a wrong state, diagnostic, etc.
  - categories: warning, fault, fatal
  - alarm on leaves, summary alarms on nodes
  - propagated to the top of the tree
  - mask/un-mask/acknowledge at leaf or node level
- Action: from top to bottom
  - enable/disable
  - mask/un-mask
  - acknowledge
  - HV action: HV groups, HV systems

Elements types

- DETECTOR element type
  - hardware tree, logical tree
- Input/output data: analogue, digital
  - OPC, DIM
- HV: Front-end software, DIM
  - SY127, SY403, SY527
  - HV channel
  - HV group, HV system
- SUB_SYSTEM
- SERVICE
- Fan-tray

HV

- Re-use JCOP HV configuration tools
  - defining the elements
  - importing the front-end configuration
- Add COMPASS specific requirements
  - alarms configuration
  - DIM, OPC connection
- Add HV behavior
  - automatic mask of the alarm during ramping time
  - alarm limits on the readout voltage automatically adjusted
  - pre-empted user action

Interfacing new elements

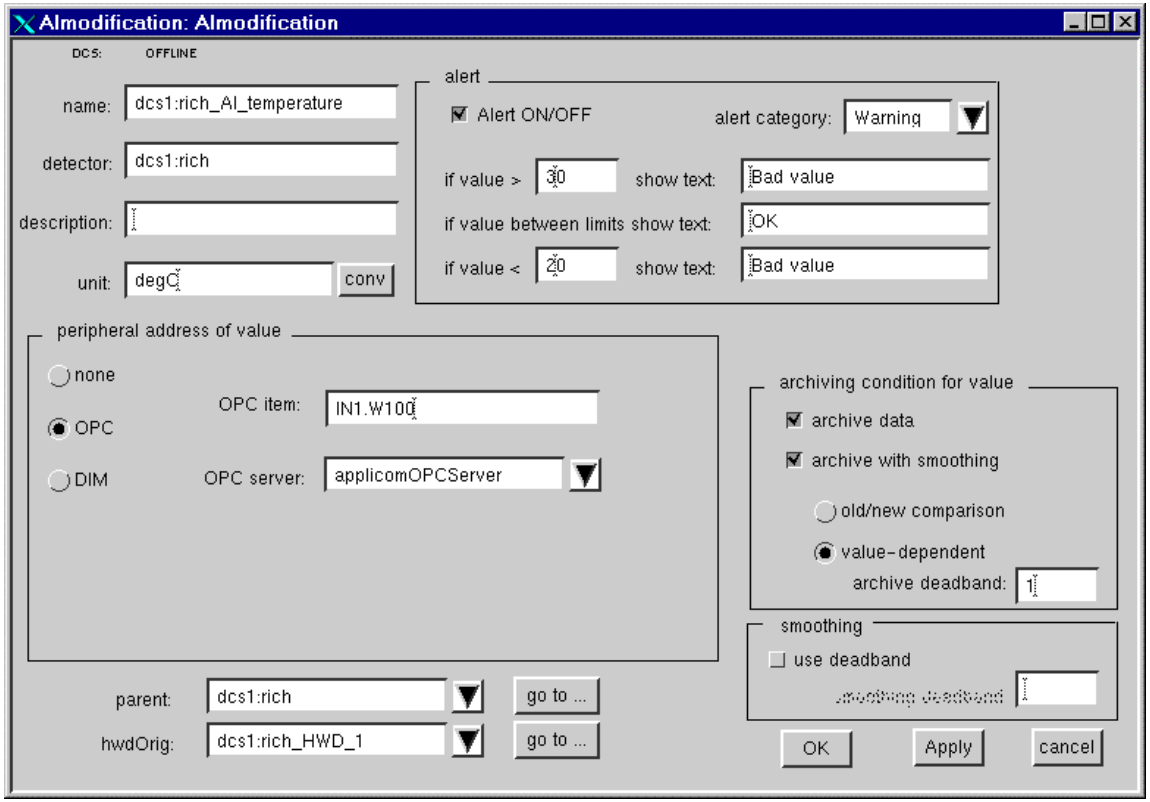
- User-defined elements
- At DETECTOR level: logical tree
- At SUB_SYSTEM level
- A standard interface has to be provided
- Up to the developer to configure and manipulate them

Framework Panels

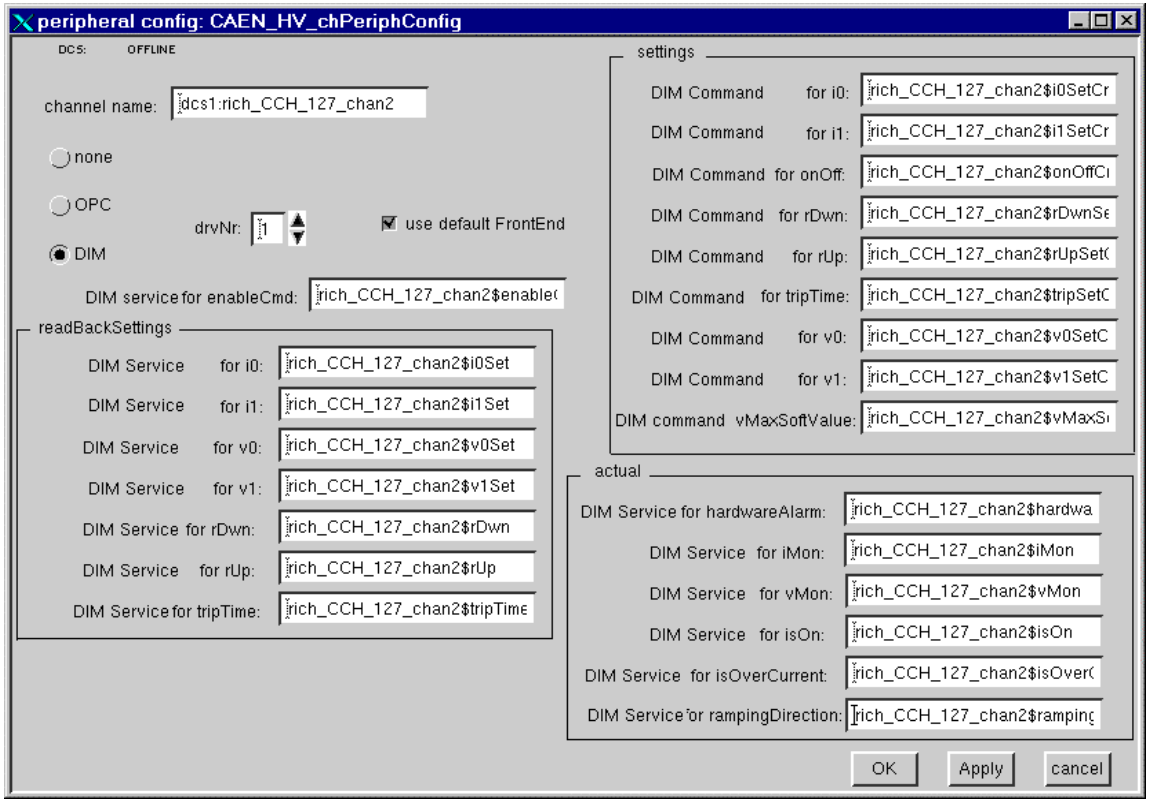
- Configuration panels
  - create/modify/add/delete configuration (alarms, archive, connection to hardware, etc.)
  - change the tree hierarchy
- Run-time:
  - to browse the tree hierarchy
  - to operate/view the elements
  - can be used in user defined panels
- Reference (symbol)
  - used in user defined panels to operate/view the elements
  - call run-time panels

Alarm color convention is implemented

E.g: Analogue input configuration



E.g: CAEN HV configuration (automatically imported)



Summary

- COMPASS is taking data

Framework is used for elements from:

- 2 PROFIBUS bus
  - APPLICOM OPC.
  - Common readout: temperature, analog, etc.
  - TrigHodoscope movement system
- PLC connection: gas systems
  - Schneider PLC-OPC: RS232 line
- HV SY527, SY403
- Detector developer

User-defined panels using the Framework panels

Relevant to JCOP

- Test bed for technology integration
  - PVSS, OPC, Fieldbus (PROFIBUS), PLC, DIM
- Prototype of a particular framework
- Development of standard device types
  - configuration, operation mechanism
- FSM test
- Convergence with the JCOP framework

Participants

- VME front-end
  - M. Beharell IT-CO
- PVSS
  - O. Holme, IT-CO (student)
  - H. Milcent, IT-CO
  - S. Sergueev, IT-CO
  - J. Rossi, IT-CO (student)
  - N. Karlsson, COMPASS (student)
  - C. Schuhegger, COMPASS (student)
  - N. Sergueeva, COMPASS
  - V. Sougoniaev, COMPASS