cosylab
CONTROL SYSTEM LABORATORY

Visual DCT / Upgrade

Ivo List, Matej Sekoranja, Rok Sabjan

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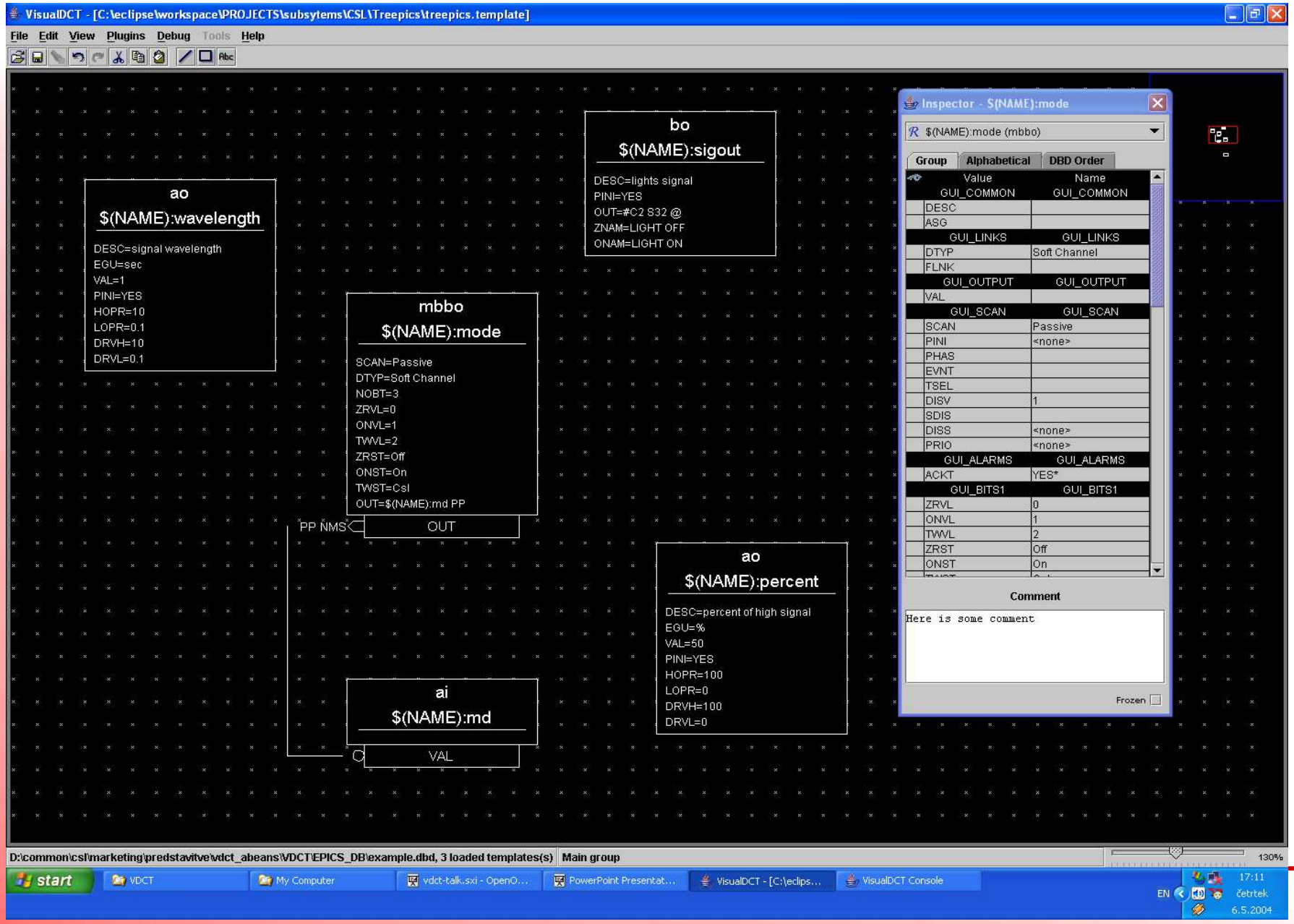
Outline

- History & Functionality
- Hierarchies
- JCA Debug Plugin - Live Mode
- VDCT Package D
- Future plans
- Conclusion

Visual DCT - Overview

- Very popular visual database configuration tool written by Cosylab.
- Original idea by Steve Hunt (SLS)
- Open source
- Funding by many labs: SLS, APS, DLS, SNS, JLAB
- Main features:
  - Written in Java
  - Extendable - plugins
  - Stores graphical information as comments
  - Reads also databases without graphical info
  - Easy to learn

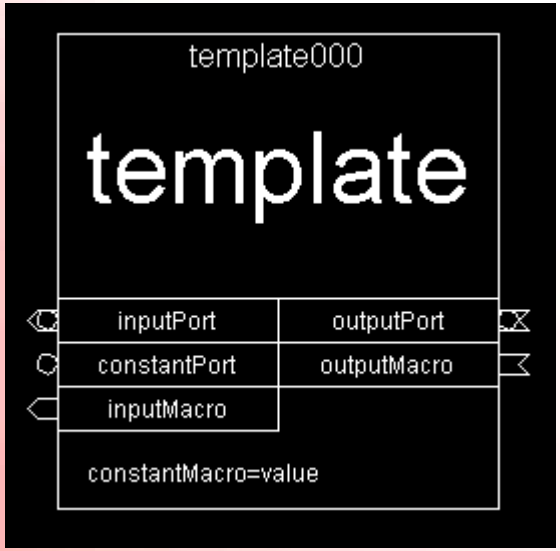

VisualDCT - [C:\eclipse\workspace\PROJECTS\subsytems\CSL\Treepics\treepics.template]
File Edit View Plugins Debug Tools Help
ao
$(NAME):wavelength
DESC=signal wavelength
EGU=sec
VAL=1
PINI=YES
HOPR=10
LOPR=0.1
DRVH=10
DRVL=0.1
bo
$(NAME):sigout
DESC=lights signal
PINI=YES
OUT=#C2 S32 @
ZNAM=LIGHT OFF
ONAM=LIGHT ON
mbbo
$(NAME):mode
SCAN=Passive
DTYP=Soft Channel
NOBT=3
ZRVL=0
ONVL=1
TWVL=2
ZRST=Off
ONST=On
TWST=Csl
OUT=$(NAME):md PP
PP NMS
OUT
ao
$(NAME):percent
DESC=percent of high signal
EGU=%
VAL=50
PINI=YES
HOPR=100
LOPR=0
DRVH=100
DRVL=0
ai
$(NAME):md
C
VAL
Inspector - $(NAME):mode
$(NAME):mode (mbbo)
Group
Alphabetical
DBD Order
Value
Name
GUI_COMMON
GUI_COMMON
DESC
ASG
GUI_LINKS
GUI_LINKS
DTYP
Soft Channel
FLNK
GUI_OUTPUT
GUI_OUTPUT
VAL
GUI_SCAN
GUI_SCAN
SCAN
Passive
PINI
<none>
PHAS
EVNT
TSEL
DISV
1
SDIS
DISS
<none>
PRIO
<none>
GUI_ALARMS
GUI_ALARMS
ACKT
YES*
GUI_BITS1
GUI_BITS1
ZRVL
0
ONVL
1
TWVL
2
ZRST
Off
ONST
On
Comment
Here is some comment
Frozen
D:\common\csl\marketing\predstavitve\vdct_abeans\VDCT\EPICS_DB\example.dbd, 3 loaded templates(s)
Main group
130%
start
VDCT
My Computer
vdct-talk.sxi - OpenO...
PowerPoint Presentat...
VisualDCT - [C:\eclips...
VisualDCT Console
EN
17:11
četrtek
6.5.2004

EPICS Hierarchies

- 2 types of files
  - templates
  - substitution files
- Macros passed only downwards
  - connection between different templates done in .subs files
  - no graphical editor for substitution files

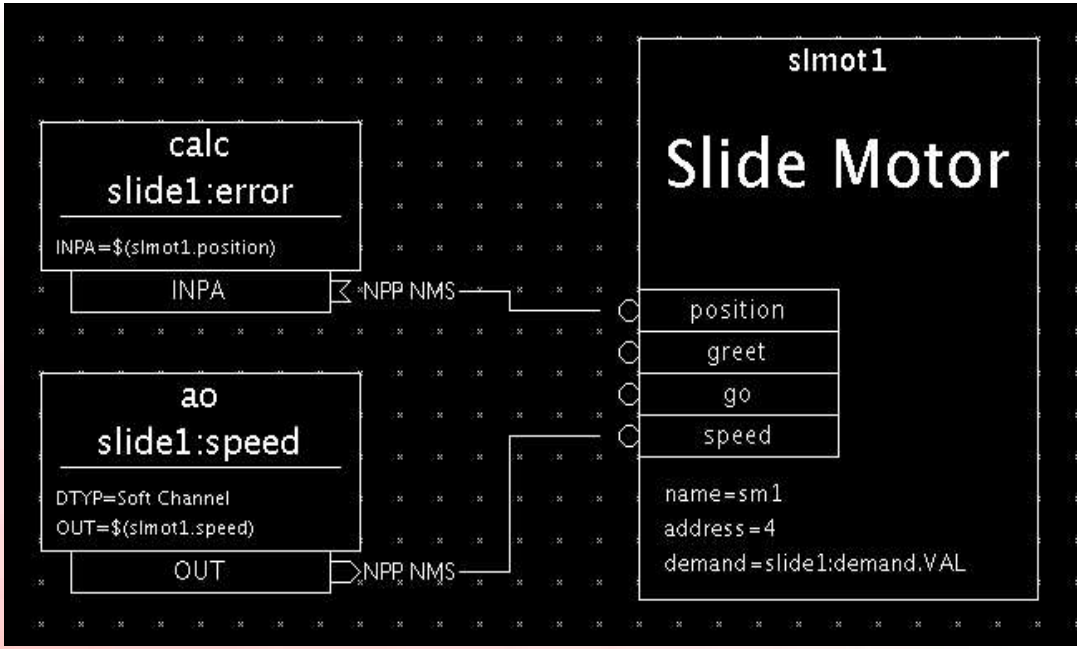
- Will probably be made in one of the next EPICS core releases (maybe 3.15)
- Allowing two-way communication among templates of different hierarchical order
- “Data Encapsulation”
- Similar to OOP
- Current EPICS versions are unable to load these databases – database flattening

Everything already works with Visual DCT!

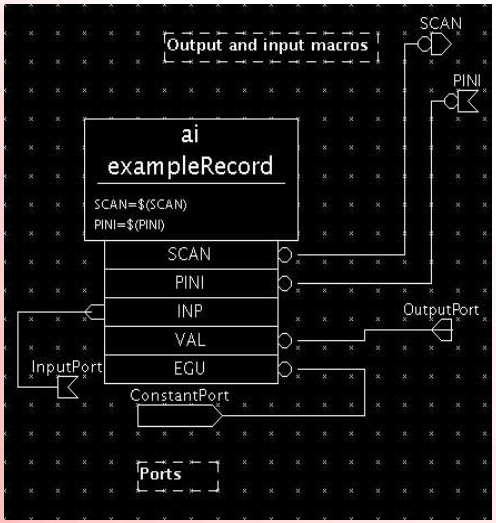


- One template block hides a database of arbitrary complexity!
- All that is seen are the ports and macros (input/output parameters)

- Connect the template into your database!
- Enter the instantiated template by SHIFT+click

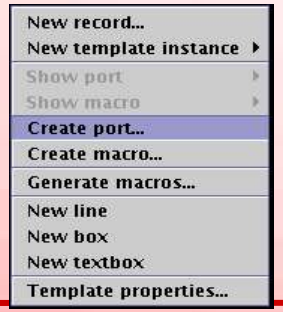


Lower level file



- All macros and ports can be created with a mouse click
- Input/Output/Constant attributes serve for better readability

Macros can be generated from all different occurrences of **$()**

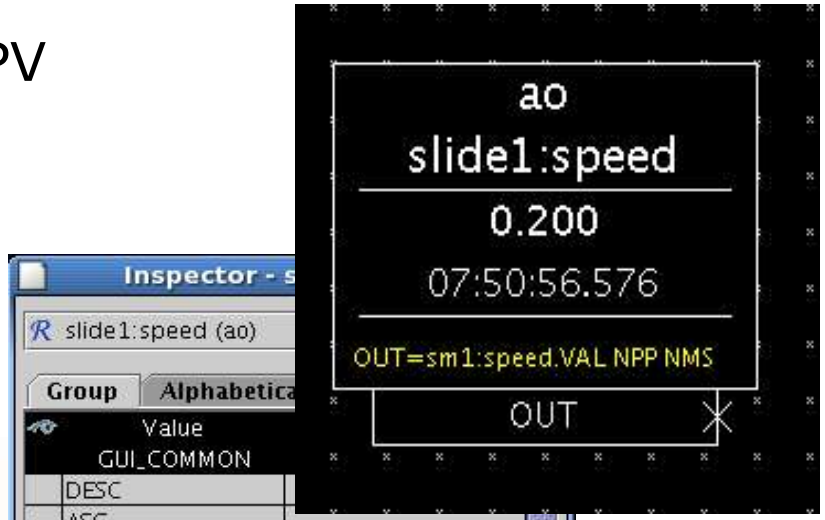


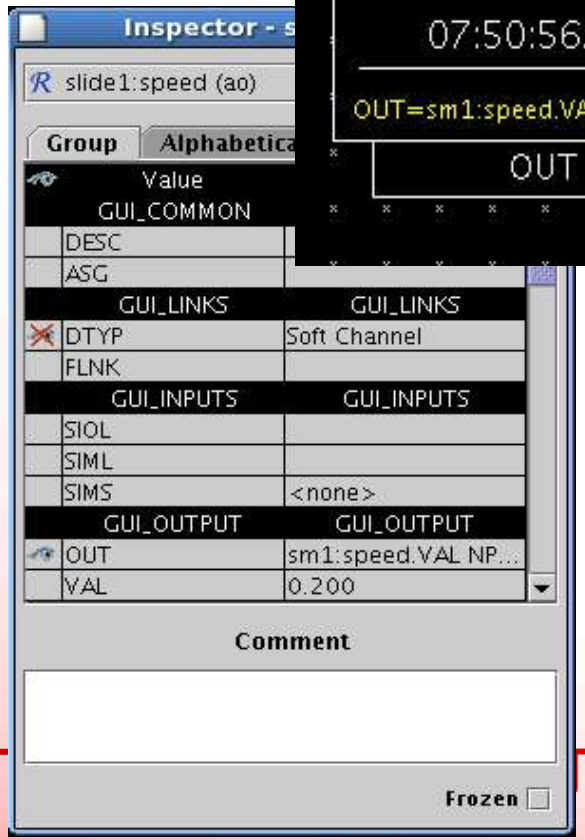
Database Flattening Tool

- Integral part of Visual DCT
- Product is a flat EPICS db file.
- All flattening tools should use comments that would refer blocks of code to the original files.
- Two passes (port names may be used before they are defined in the database).

JCA Debug Plugin (1 / 2)

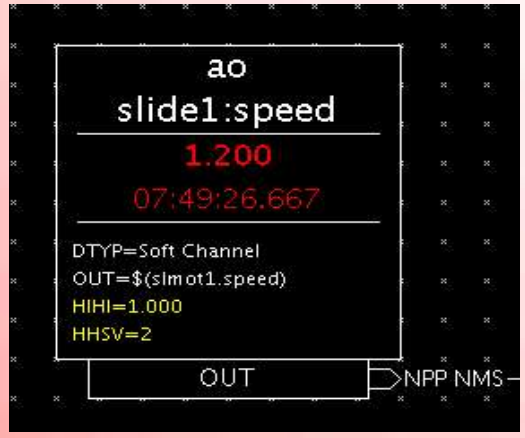
- Enable “live mode” - view real PV values in your template
- Macros are obtained when a substitution file is provided
- Value is displayed inside the template instance symbol together with its timestamp
- Fields to be displayed are selected with the inspector
- Uses JCA 1.0
  - Needs also the native CA lib
  - Plan to migrate to pure Java CA implementation

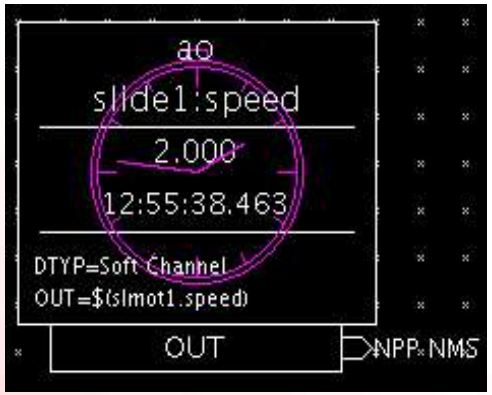




JCA Debug Plugin (2 / 2)

- Alarms are displayed with different colors
- Timeouts are indicated with a clock over the template instance symbol
- Change to another template instance (other substitution file line) on the fly





Conversion Tools

- Thousands of DBs created using CapFast or GDCT are still used at various labs.
- There is a need for conversion tool that would convert also the graphical information (db layout)
- GDCT -> VDCT Converter was implemented by APS.
- CapFast -> VDCT Converter was implemented by Cosylab (sponsored by JLab), pay attention to the next presentation.

Package D – Looking for Sponsor

- Some new nice features and bug fixes (only few are listed):
  - Morphing of record types
  - Meaningful template names (e.g. template000)
  - Macros do not work on template names
  - Local/global macro property
  - Command line DB flattening tool
  - Include statement
  - Links starting with digits are not constant link by default

Coordinator for Visual DCT

- John Maclean (APS) has done a great job, but unfortunatelly no longer has time.
- SNS has offered to take the responsibility, to what we strongly applaude.
- There are quite some plans for future work:
  - Connection with other EPICS applications (Alarm Handler, Archiver...)
  - Use for EPICS IDE in combination with EPICS Express and JoiMint
  - Starting soft IOCs directly from Visual DCT
  - Installation of database from Visual DCT
  - Cosmetic changes and bug fixes

Conclusion

- Visual DCT has become the most useful tool for database configuration and is widely used.
  - Hierarchies offer OOP like database configuration.
  - Use JCA Debug Plugin for live mode.
- Now is the time to reach for interoperability with other EPICS tools (IDE style).
- Download the latest build (2.4.1249) from http://visualdct.cosylab.com
- Test new feature of Visual DCT and report feedback (bug reports, wishlist):
  - Register at VDCT mailing list at http://lists.cosylab.com
  - Directly email main developer: matej.sekoranja@cosylab.com