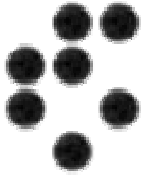

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Visual DCT – EPICS Databases Can Be Fun

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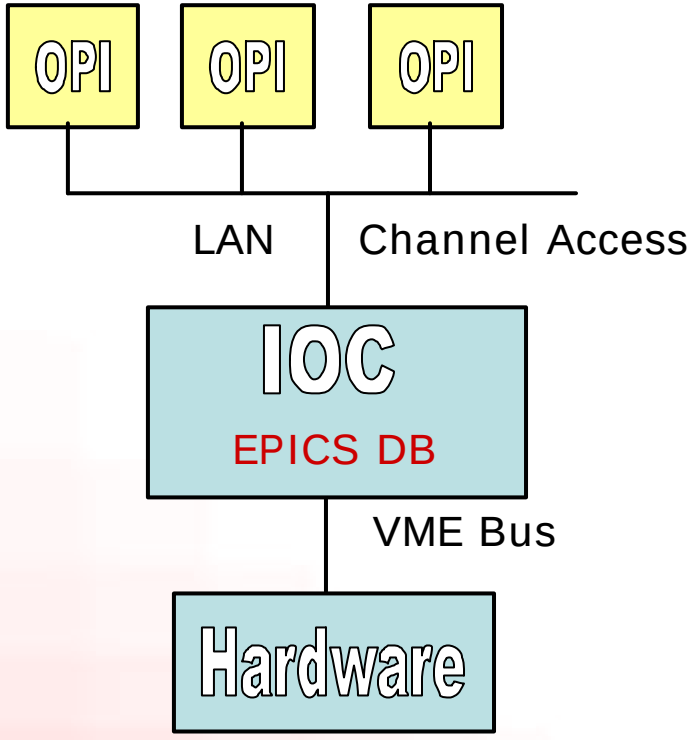
John Maclean, APS, Argonne National Laboratory

Contents

- EPICS is a popular PACS
- Why visual database composition?
- Current solutions
- Visual Database Configuration Tool – our response
- Conclusion

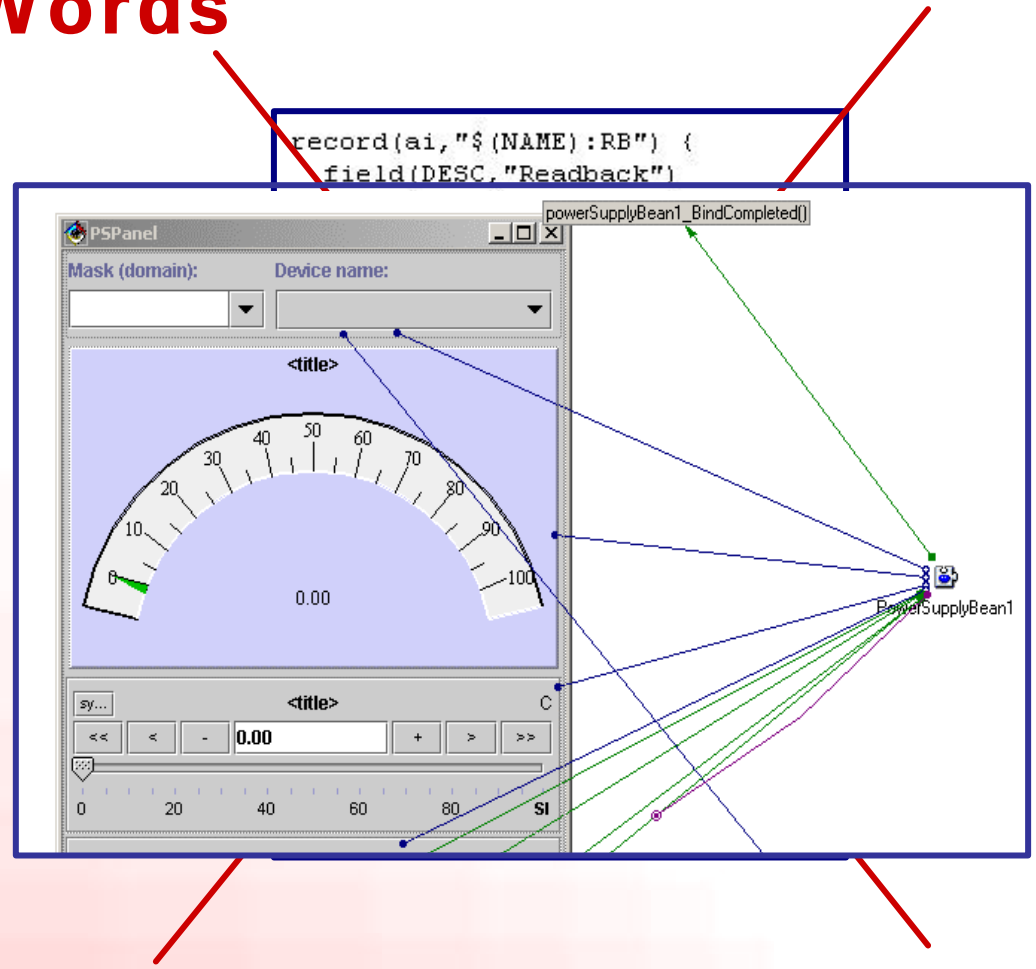
EPICS

- Most popular CS in particle accelerator community
- Trademark features
  - Record relations
  - 10 Hz guaranteed
  - State Notation Language
  - Distributed database and scalability
  - DB can work as a PLC



Where a Picture Says a Thousand Words

- EPICS Database is a text file
- OOP Communities have produced graphical IDEs
- Making control system without using the keyboard



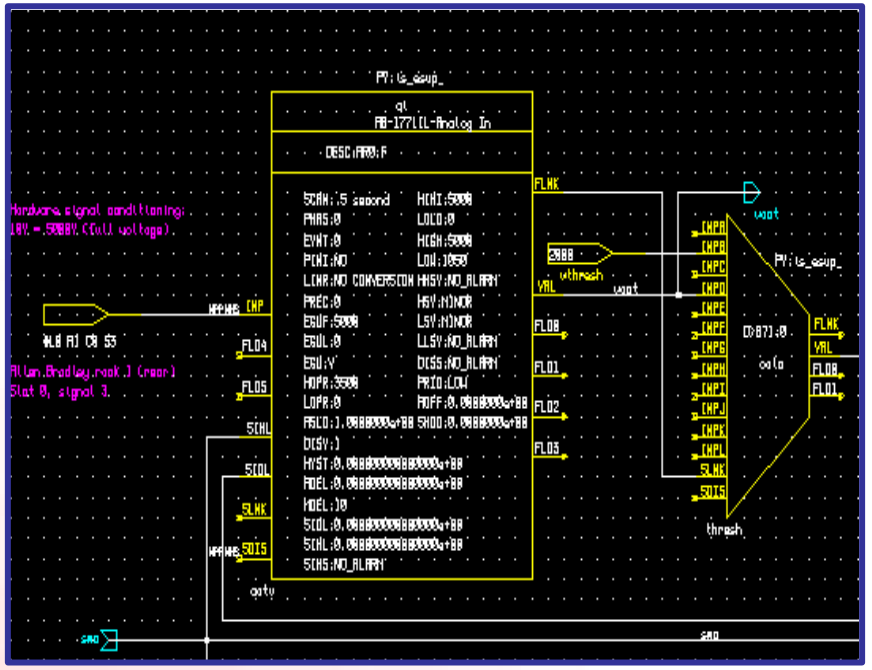
Text Editors or Graphical IDE?

- Large text files
- Lots of syntax errors
- No debugging tools
- Considerably longer development time

- Improve on database transparency
  - Better design
  - Easier maintenance
- No syntax errors
- Advanced features of an IDE
- Shorter development time

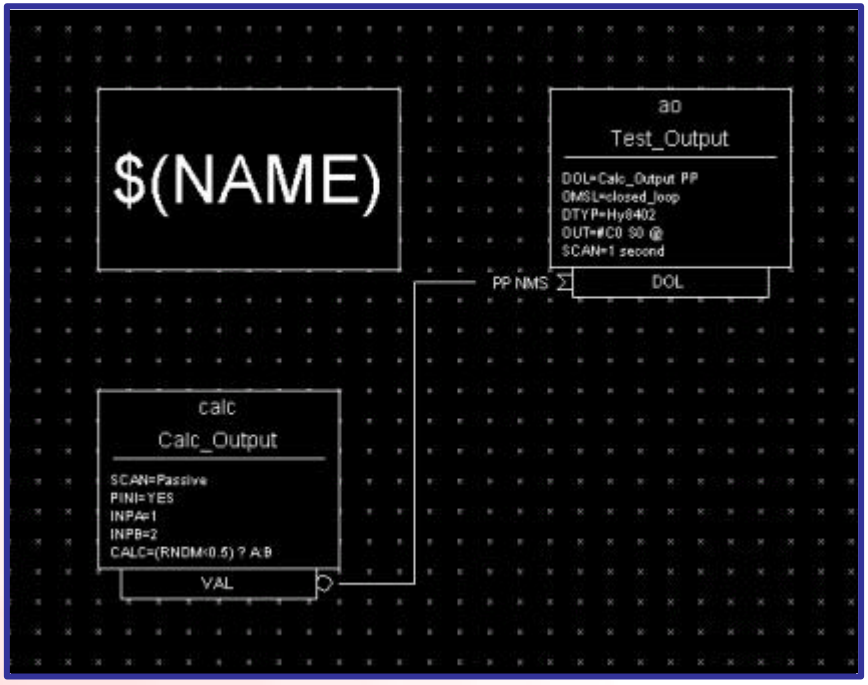
The Market Offers

- CapFast was the leading graphical database configuration tool
- Designed for electrical circuits drawings
  - Not optimized for EPICS
  - Only graphical tool (not IDE)
  - Translate to EPICS db
- Professional CAD tool
  - Paying several thousand dollars for tools you don't need



Visual DCT – The IDE

- VDCT talks 100% EPICS
  - Graphical data saved as comments
- Written in Java
  - Platform independence
- DB as transparent as with CapFast
- Plugins
  - Simulation
  - EPICS
  - ORACLE

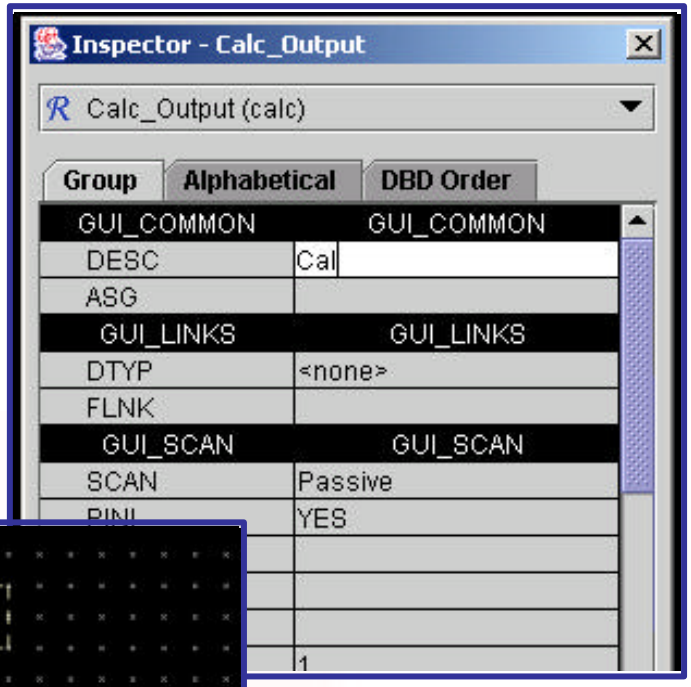


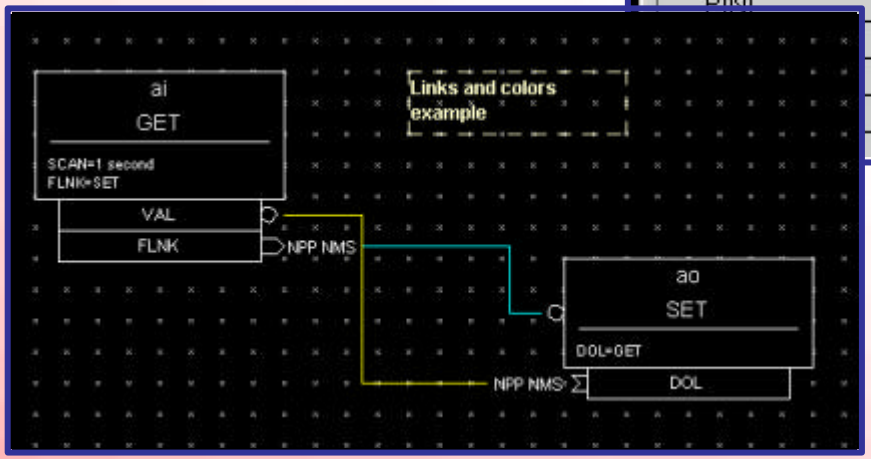
Engine

- Requires a DBD file
  - Can work with multiple DBD files
- Opens any EPICS DB (powerful DB parser)
  - Reverse engineering
  - Preserves record link order
  - Preserves DB comments
- DBs can still be edited manually
  - On the spot corrections possible

Advanced Graphical Features

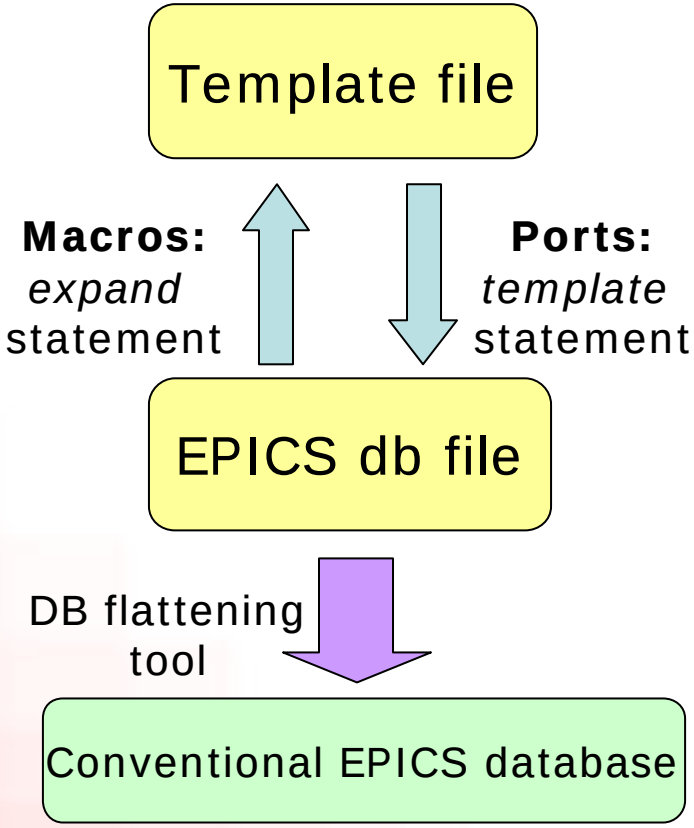
- Clipboard, undo, object inspector, visual linking
- Colorful links and illustrative comments
- Postscript printing

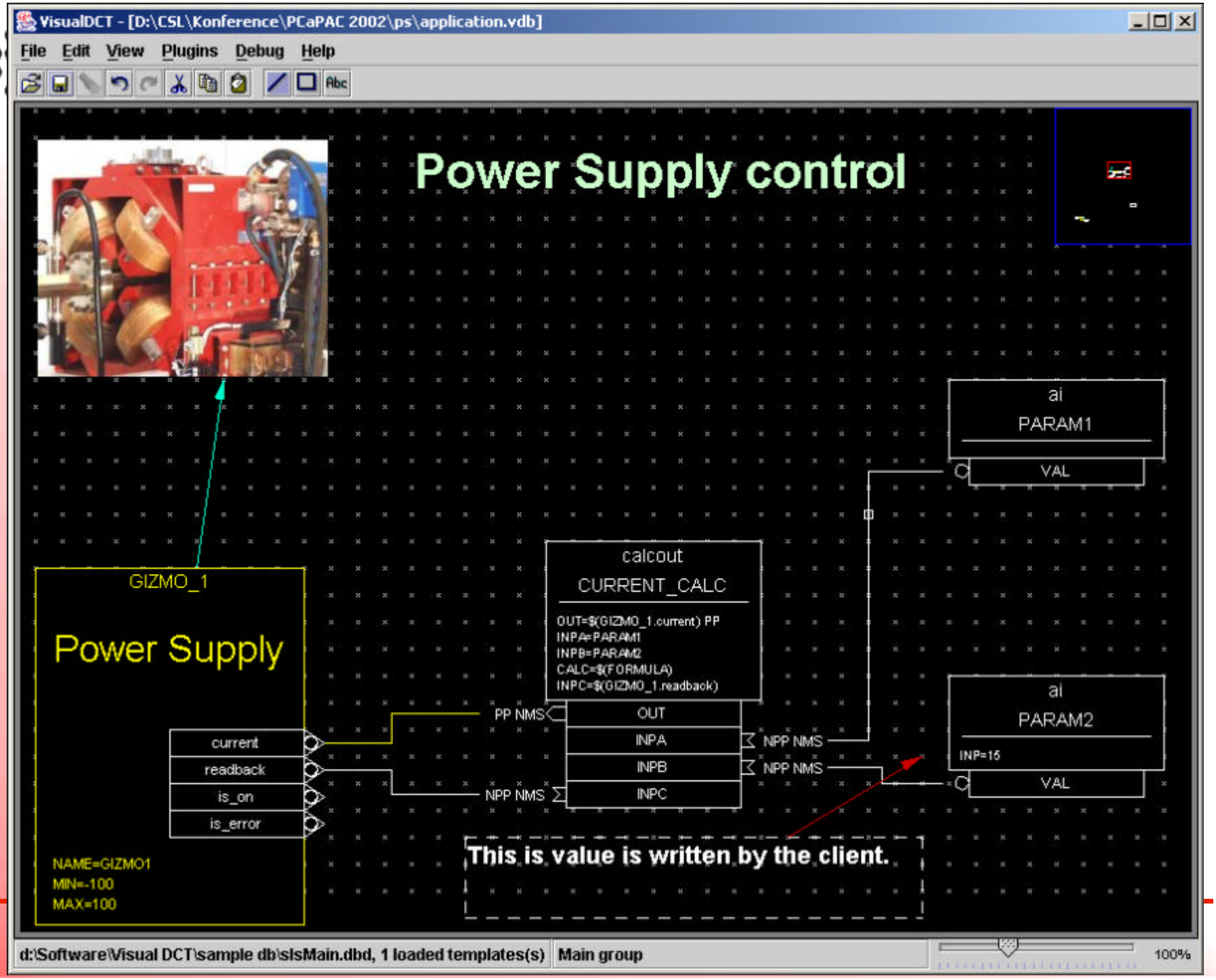




Hierarchies

- EPICS has flat databases
  - String macros are substituted at load-time
- Copying concepts from OOP
  - public fields (ports)
- Graphically fully supported
- Database flattening




VisualDCT - [D:\CSL\Konference\PCaPAC 2002\ps\application.vdb]
File Edit View Plugins Debug Help
Power Supply control
ai
PARAM1
VAL
GIZMO_1
Power Supply
current
readback
is_on
is_error
NAME=GIZMO1
MIN=-100
MAX=100
calcout
CURRENT_CALC
OUT=$(GIZMO_1.current) PP
INPA=PARAM1
INPB=PARAM2
CALC=$(FORMULA)
INPC=$(GIZMO_1.readback)
PP NMS
NPP NMS
NPP NMS
NPP NMS
OUT
INPA
INPB
INPC
ai
PARAM2
INP=15
VAL
This is value is written by the client.
d:\Software\Visual DCT\sample db\slsMain.dbd, 1 loaded templates(s)
Main group
100%

Conclusion

- VisualDCT is THE productivity tool for EPICS
- It improves EPICS on its strong points
- It has become the topic of the discussion in EPICS community
  - Strong collaboration through APS
- We have proved that we can work with other CS
- Check it out at http://visualdct.cosylab.com