

Jožef Stefan
Institute

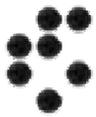
cosylab 
CONTROL SYSTEM LABORATORY

Abeans and CosyBeans

Application and User Interface Frameworks
for EPICS

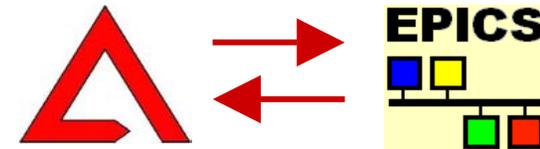
Igor Verstovsek (igor.verstovsek@cosylab.com), et al.

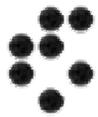
Cosylab (the company that brought you Visual DCT :-)



Application Frameworks and EPICS

- What are they?
 - Abeans
 - Modeling, data exchange
 - CosyBeans
 - Visual representation
 - High quality of code and documentation
 - 6 years of continuous development
 - Used at: ANKA, ESO, DESY (work in progress), SNS (work in progress), RIKEN (testing), GSI (testing),...



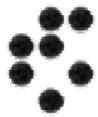


Abeans

1/2

Modeling of control systems

- Models
 - Logical containment of CS Objects
 - EPICS records map to Abeans Channel Object
- Plugs
 - Connection to remote modeling layer
 - ACS CORBA, UFC, TINE and **EPICS (jca)**

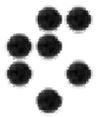


Abeans

2/2

- Services
 - Error reporting, Logging, Resource loading, Configuration management...
 - Easy to replace, register at runtime
- Therefore Abeans are used by
 - Visualization libraries (e.g. CosyBeans)
 - Calculation packages (XAL by SNS, Orbit Correction in ANKA)
- Abeans *prepare* the data for visualization
 - Java Beans



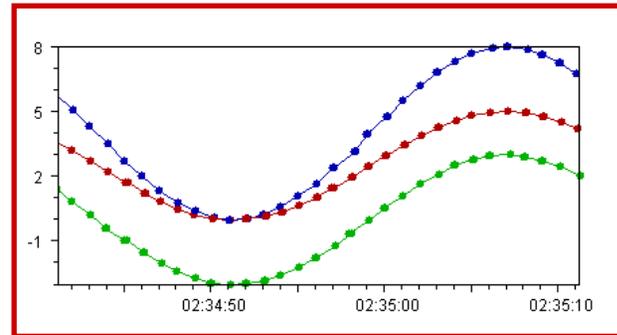


CosyBeans

1/4

Graphical components

- Optimized for
 - Functionality
 - Performance
 - Good looks :-)
- Use standard Java visual building tools
- Point & click vs. programming ?
 - Combine both !



Lightbulb icon LedderPanel

On	Leak	Receive
Error	Danger	Transmit

cosylab logo
CONTROL SYSTEM LABORATORY

web page : <http://www.cosylab.com>
web page : <http://www.cosylab.com>

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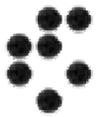
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abeans-Simulator://PSBEND_M.01/readback

1,73 A

+ 2 . 7 3 E + 0 2 K

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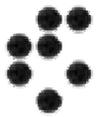


CosyBeans

2/4

- Displayers (controls)
 - gauger, slider, ledger, wheelswitch, chart – trend and profile, date displayer, auto-resizable label, number field, object table, active tree,...
- Application support
 - smart drag and drop, report area, standard actions (e.g. print, help), logging panel, window closer,...
 - provided on demand

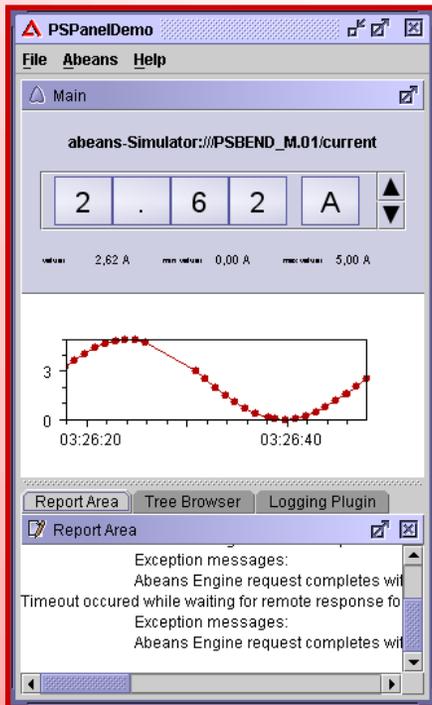




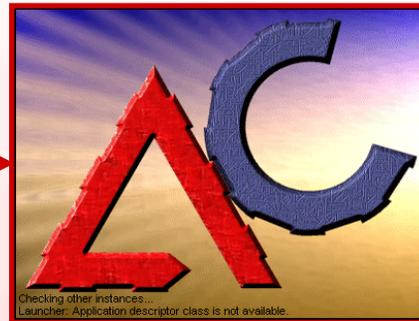
CosyBeans

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- Launching the Application



JVM Sharing



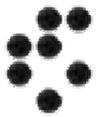
Application

Applet

Internal Frame

Webstart

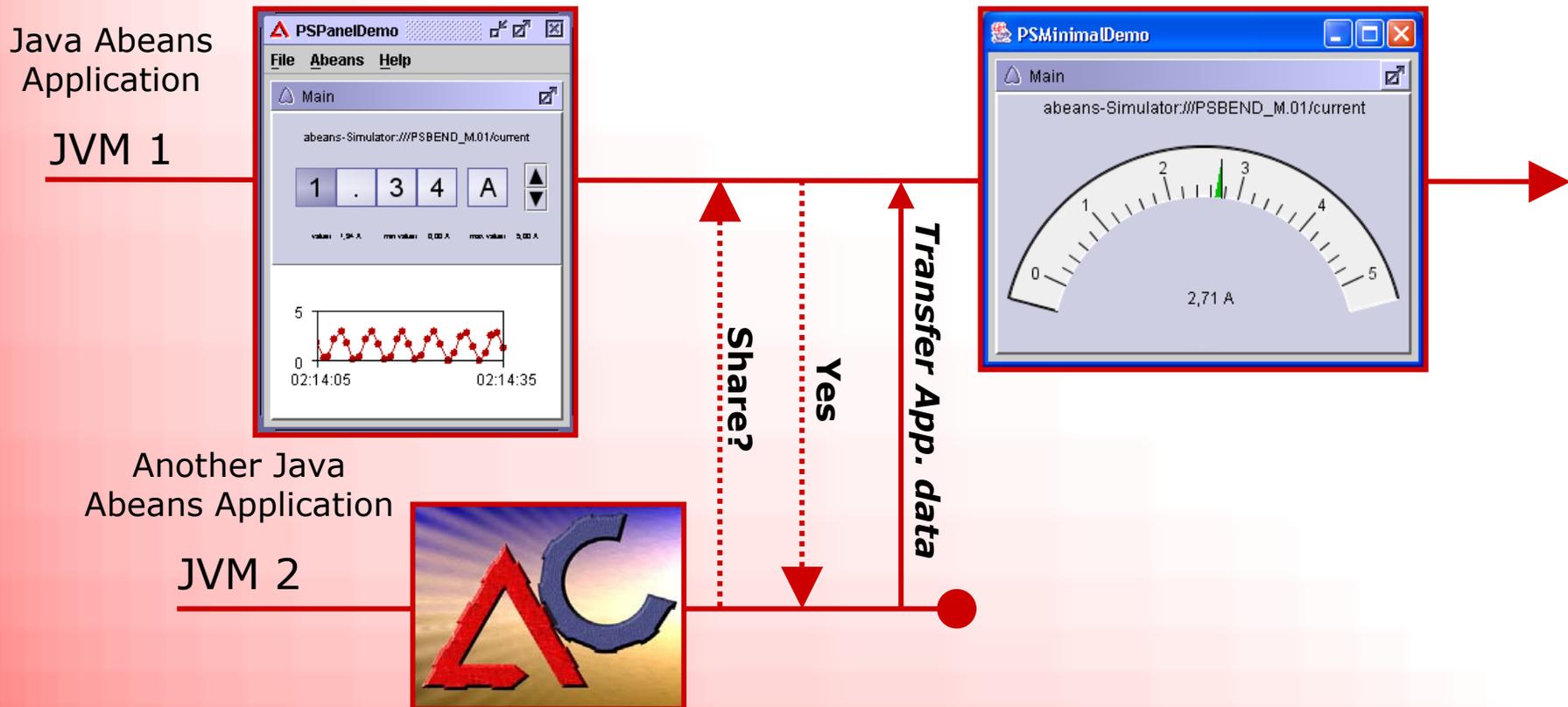


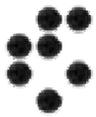


CosyBeans

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- Java Virtual Machine Sharing

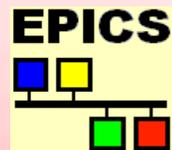
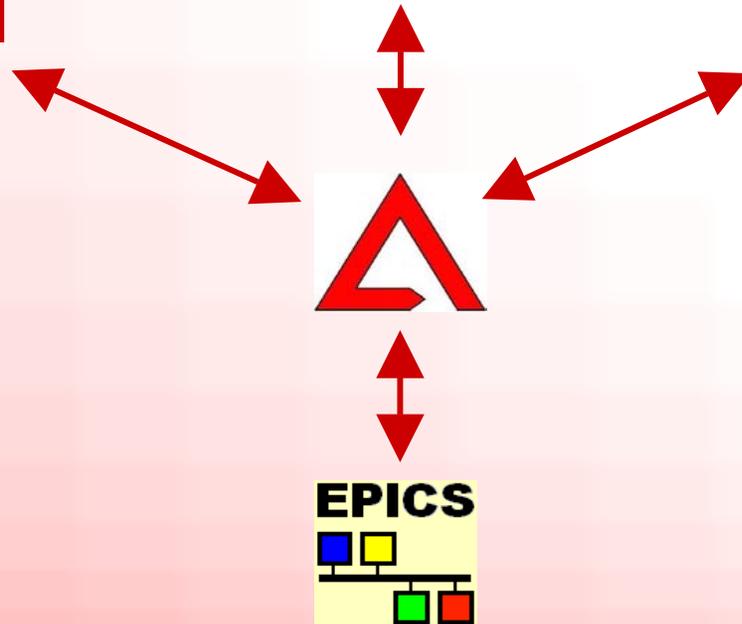
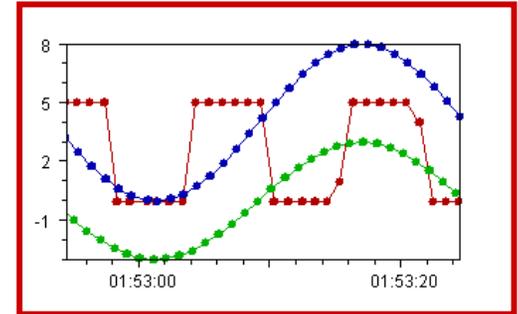


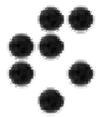


Example: Power Supply Table

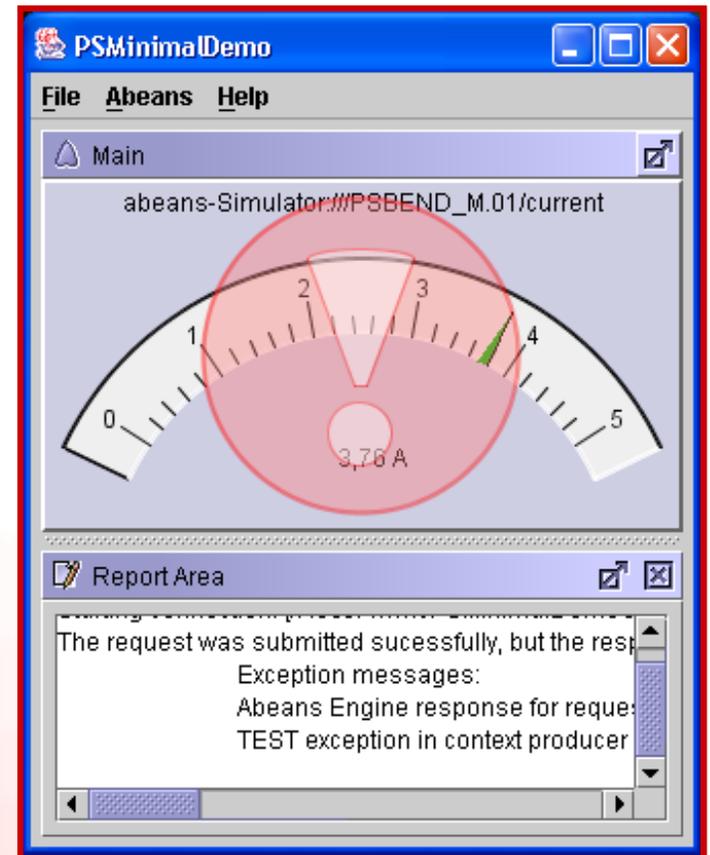
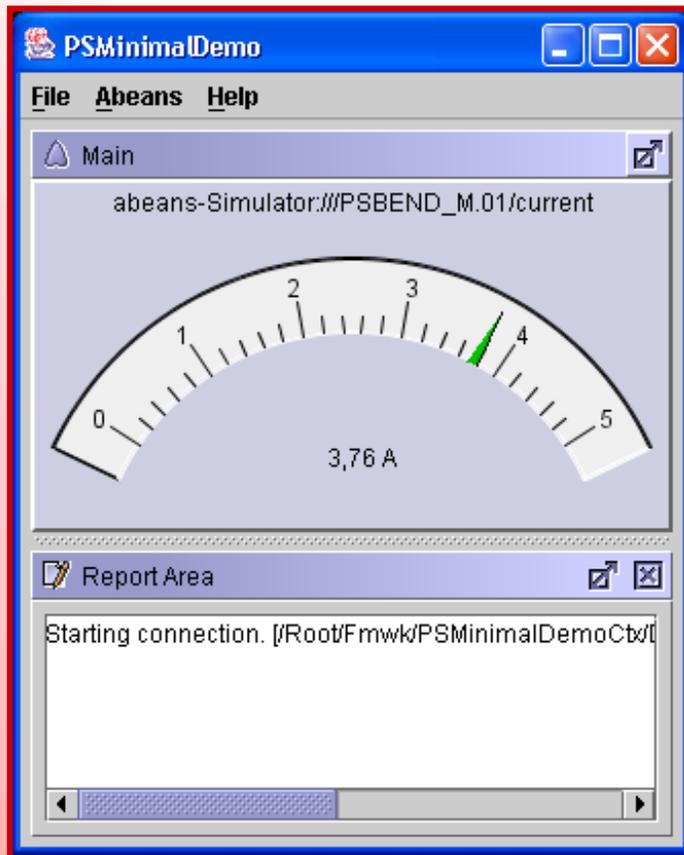
	s [m]	Corrector	angle
<input checked="" type="checkbox"/>	1.7	MCH_S1.01	0.40340
<input checked="" type="checkbox"/>	6.7	MCH_S1.02	0.91500
<input type="checkbox"/>	8.5	MCH_S1.03	0.00012
<input type="checkbox"/>	12.9	MCH_S1.04	-0.01284
<input checked="" type="checkbox"/>	18.9	MCH_S1.06	-0.75959
<input type="checkbox"/>	20.7	MCH_S1.07	0.00006
<input type="checkbox"/>	25.0	MCH_S1.08	0.00084

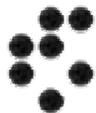
Device name:





Display of Data Quality





Archive Reader for DESY

ArchiveReader Abeans Help

Archive Directory - TINE

- PeERFKlyHVR
- PeERFKlyIL
- PeERFKlyIR
- PeERFPOutL
- PeERFPOutR
- PeERFStempel1L
- PeERFStempel1R
- PeERFStempel2L
- #0
- #1
- #2
- #3
- #4
- #5
- #6
- #7

Petra ERF-L Cavity Stempel-2 Pos

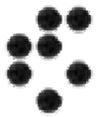
Add	Remove	Remove All				
August 2002						
m	t	w	t	f	s	s
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8

Name	Selected Value	Type	Min	Max	Units	Scale Type
PeERFAbsL	1.50e+01	double	0.00e+00	1.00e+02	kW	linear
PeERFAbsL#2	1.90e+00	double	0.00e+00	1.00e+02	kW	linear
PeERFStempel2...	2.10e+00	double	0.00e+00	2.00e+02	mm	linear
PeERFStempel2...	-1.29e+00	double	0.00e+00	2.00e+02	mm	linear

Abeans and CosyBeans "Live"

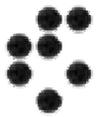
The screenshot displays the Cosylab Demo Application interface. At the top, there is a navigation pane with a tree view showing the application structure, including 'Cosylab Root Demo', 'Demo Applications', and 'Abeans-CosyBeans'. The main window is titled 'PSMultipleDemo' and contains several sub-panels:

- Control Panels:** Three panels for 'axis_x', 'axis_y', and 'axis_z'. Each panel has a numeric input field, a unit selector (A), and status indicators for 'value', 'min value', and 'max value'.
 - axis_x: Value 3.90 A, min 0.00 A, max 5.00 A.
 - axis_y: Value 5.85 A, min 0.00 A, max 3.00 A.
 - axis_z: Value 1.51 A, min -3.00 A, max 3.00 A.
- Graphs:**
 - A main graph showing three oscillating curves (green, blue, yellow) over time, with a timestamp of 04:15:20.
 - A 'Relative' graph showing a single oscillating curve (magenta) over time, with a timestamp of 16:14:50 to 16:15:10, labeled 'From 60.0 s ago to present'.
- Report Area:** A text area at the bottom right showing log messages: 'Starting connection. [/Root/Fmwk/PSMultipleDemoCtb/Database/De...', 'Starting connection. [/Root/Fmwk/PSMultipleDemoCtb/Defmly/ROE...', 'Starting connection. [/Root/Fmwk/PSMultipleDemoCtb/Defmly/ROE...', and 'Starting connection. [/Root/Fmwk/PSMultipleDemoCtb/Defmly/ROE...'.



Quality Assurance

- The libraries are very well documented
- Same core code is used everywhere
 - Fix once, enjoy everywhere
- Automatic *JUnit* tests are used
 - Run with every build
- Automatic ANT build process
 - The same as Visual DCT
- *Request Tracker* bug management tool



Conclusion

- Bring experience from other CS to EPICS
 - 20 man-years of development
- Everything is open source
- EPICS – Abeans: Collaboration with SNS

Abeans and CosyBeans are ready for EPICS

Thank you!

www.cosylab.com