

## The Synoptic Display Studio (SDS)

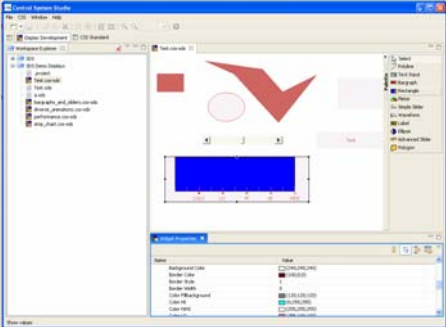
---

EPICS Collaboration Meeting  
23.04.-27.04.2007  
Sven Wende & Alexander Will

[www.c1-wps.com](http://www.c1-wps.com)

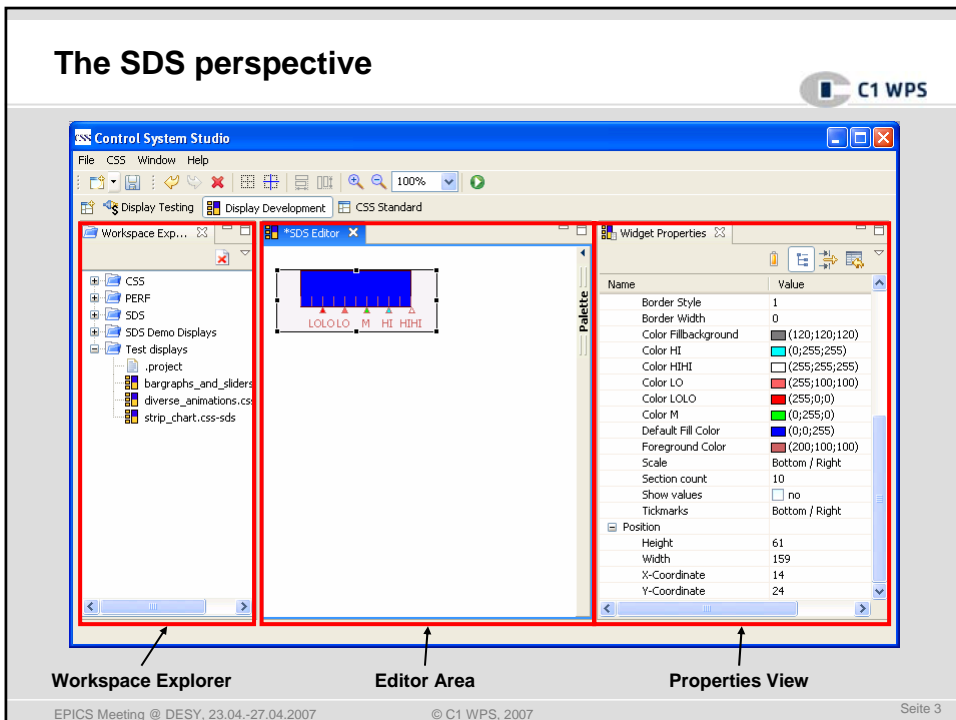
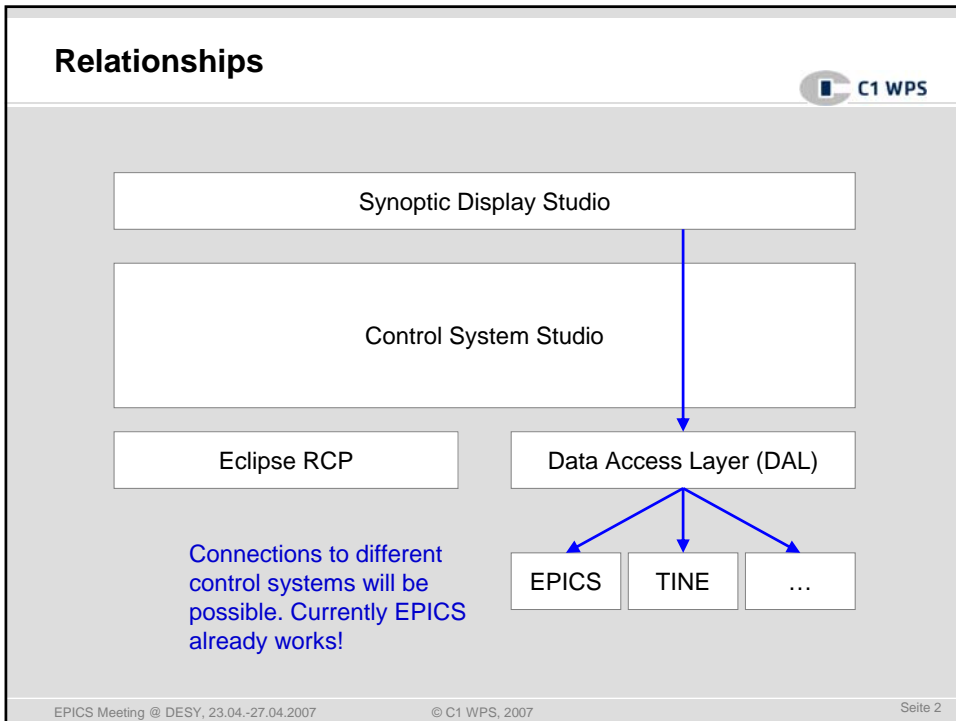
### What is it?

- Display Design + Runtime for the CSS
- Development started in October 2006
- Cooperation between DESY, C1 WPS and the University of Hamburg




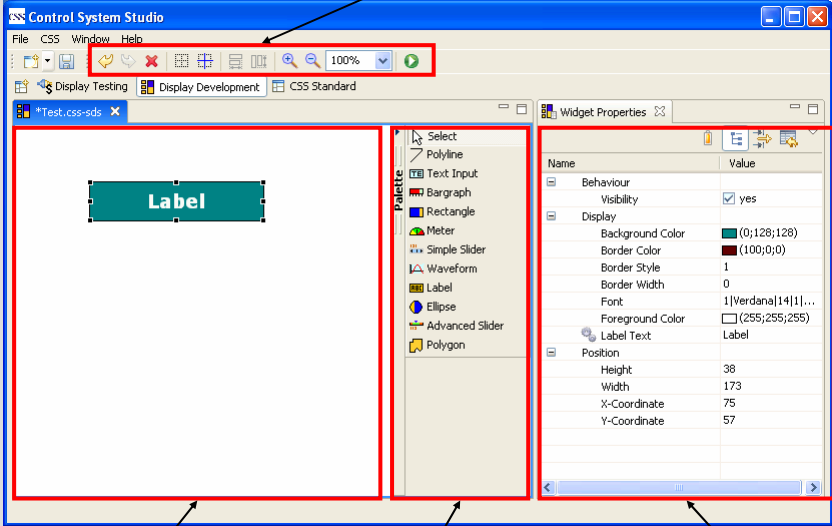
Property	Value
Background Color	Color: #FFFFFF
Stroke Color	Color: #FF0000
Stroke Width	1
Stroke Style	Solid
Fill Color	Color: #0000FF
Fill Style	Solid
Opacity	100%

EPICS Meeting @ DESY, 23.04.-27.04.2007 © C1 WPS, 2007 Seite 1



## Creating Displays






Useful helpers

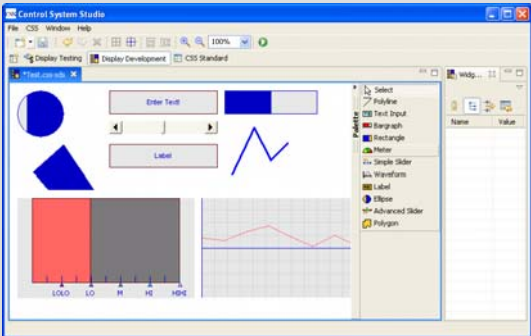
A display      Palette with widgets      Properties of the selected widget

EPICS Meeting @ DESY, 23.04.-27.04.2007      © C1 WPS, 2007      Seite 4

## Available Widgets




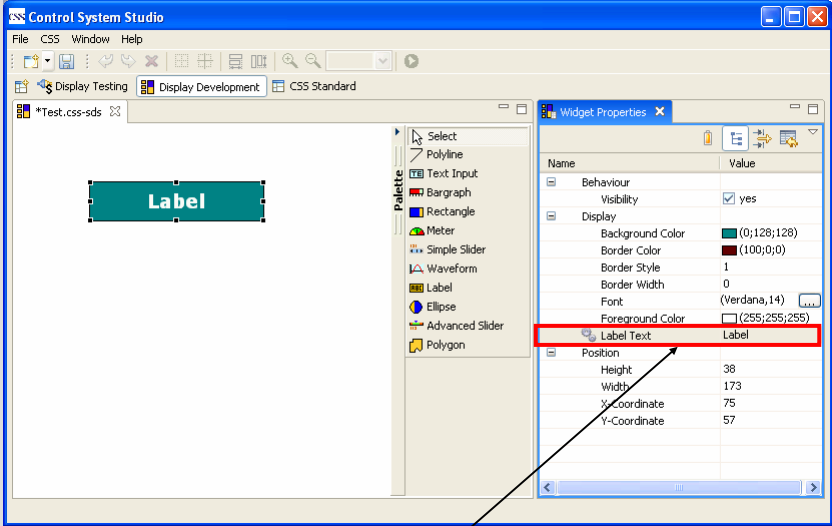
- **Simple base widgets**
  - Rectangle
  - Ellipse
  - Polyline
  - Polygon
  - Label
  - still growing ...
  
- **More complex widgets**
  - Bargraph
  - Waveform
  - still growing ...
  
- **Input widgets**
  - Textfield
  - Slider
  - still growing ...



EPICS Meeting @ DESY, 23.04.-27.04.2007      © C1 WPS, 2007      Seite 5

## Connect Widgets to a Control System




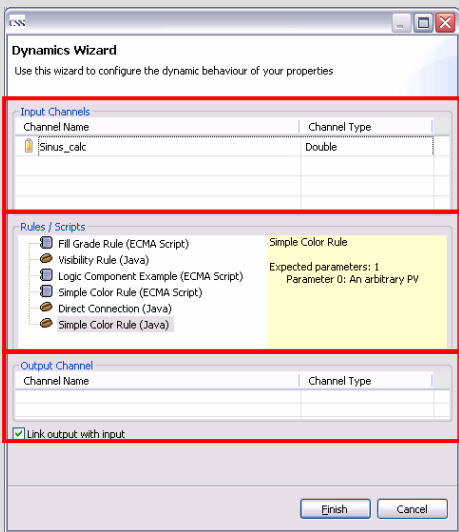


**All properties can be dynamized**

EPICS Meeting @ DESY, 23.04.-27.04.2007      © C1 WPS, 2007      Seite 6

## Connect Widgets to a Control System





**Define the input channels**

**Choose a processing rule (ECMA Script or plain Java)**

**Define the output channel**

EPICS Meeting @ DESY, 23.04.-27.04.2007      © C1 WPS, 2007      Seite 7

## Pre-Initialization of Widgets

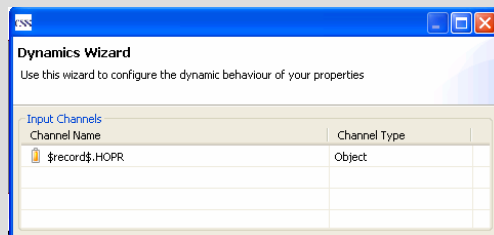


- The SDS supports Control System specific widget-initializations
- Even complex widgets can be initialized in one step - in most cases only one information (e. g. an EPICS record name) has to be entered
- This helps to speed up display development
- Initialization routines can easily be extended / added by developers and can be distributed as features
- → activate the initialization schema of “your” choice in the preferences (default = no schema)

## Widget Initialization (Example)



Behaviour	
Horizontal orientation	<input checked="" type="checkbox"/> yes
Level HI	0.8
Level HIHI	1.0
Level LO	0.4
Level LOLO	0.2
Level M	0.6
Maximum	1.0
Minimum	0.0
Value	0.4
visibility	<input checked="" type="checkbox"/> yes

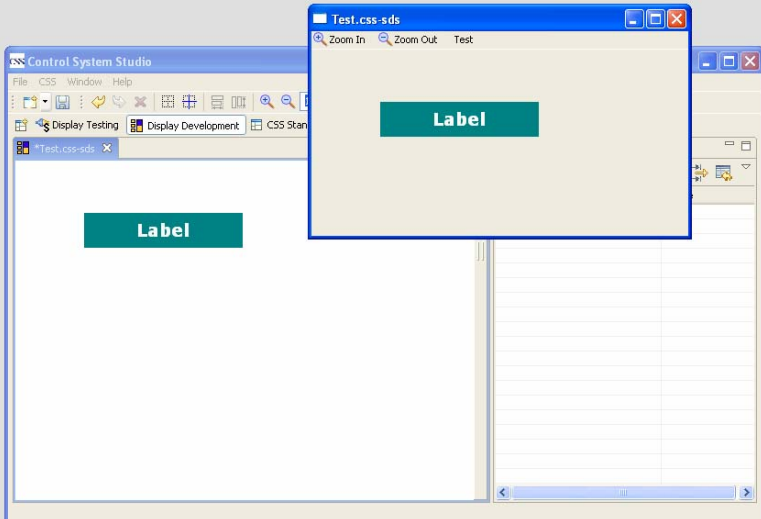


Widget properties are already dynamized with **fields** of the same EPICS **record**:

- Level HI → **\$record\$.HIGH**
- Level HIHI → **\$record\$.HIHI**
- Level LOL → **\$record\$.LOW**
- Level LOLO → **\$record\$.LOLO**
- Maximum → **\$record\$.HOPR**
- Minimum → **\$record\$.LOPR**
- Value → **\$record\$.VAL**

The **\$record\$** variable (or “macro”) is requested on widget creation.

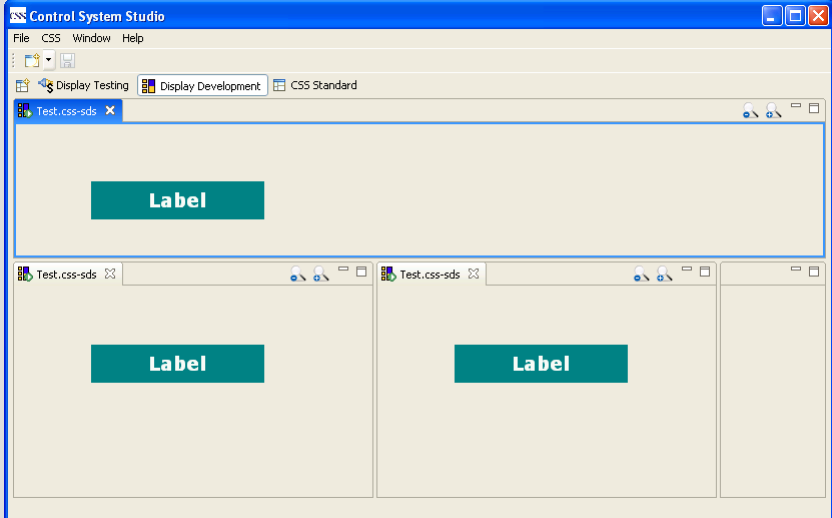
## Running Displays (in separate a window)



The screenshot shows the Control System Studio interface. A window titled "Test.css-sds" is open, displaying a green "Label" on a light background. This window is positioned over the main studio window, which also shows a "Label" and a toolbar with options like "Display Testing" and "Display Development". The C1 WPS logo is in the top right corner.

EPICS Meeting @ DESY, 23.04.-27.04.2007 © C1 WPS, 2007 Seite 10

## Running Displays (as a workbench view)



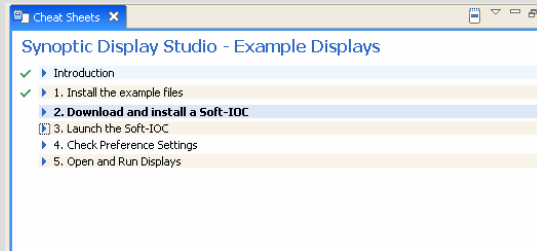
The screenshot shows the Control System Studio interface in a workbench view. The main window is titled "Control System Studio" and contains a toolbar with "Display Testing", "Display Development", and "CSS Standard". Below the toolbar, there are three separate windows, each titled "Test.css-sds", each displaying a green "Label". The C1 WPS logo is in the top right corner.

EPICS Meeting @ DESY, 23.04.-27.04.2007 © C1 WPS, 2007 Seite 11

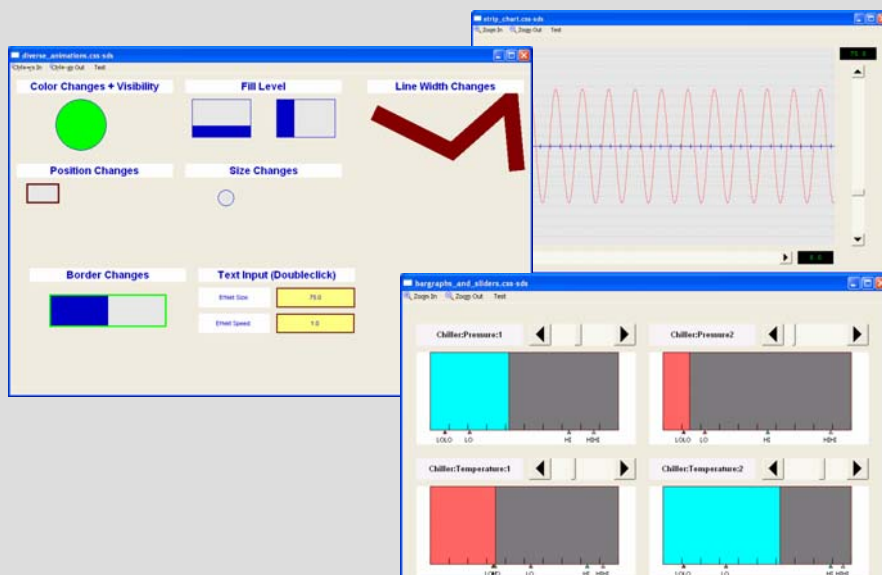
## Cheatsheet – try the examples!



- The SDS is distributed with a set of example displays
- A “cheat sheet” helps you with your first steps and lets you install these samples
- Go to “Help → Cheat Sheets → Synoptic Display Studio” to display the sheet



## Sample Displays



## Outlook: Currently on our work list

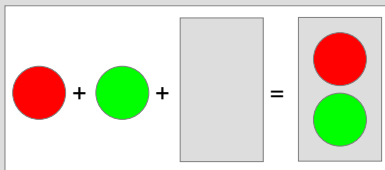


- **Develop new widgets**
  - action button for *opening other displays, processing scripts, setting values*
  - image widget
  - ...
- **Improve the graphical editor**
  - Layers
  - Copy & Paste
  - Drag & Drop
  - ...
- **Simultaneous connections to different Control Systems**
- **Visual creation of composite widgets, which are based on standard hard-coded widgets and ..**
- **...provide a widget library for those composites**

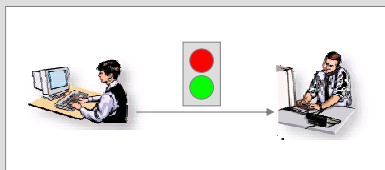
## Outlook: Widget library



- **Compose widgets visually**



- **Package and share composed widgets with other users**





## Finally



- **Test the SDS by yourself**
  - Version 1.0.2 is now available via the CSS Update Site
  - A pre-configured IOC can be downloaded at [css.desy.de](http://css.desy.de), too
- **Contact addresses for further questions and comments:**
  - [alexander.will@c1-wps.de](mailto:alexander.will@c1-wps.de)
  - [sven.wende@c1-wps.de](mailto:sven.wende@c1-wps.de)