



**4D SYSTEMS**  
*MAKING HUMAN INTELLIGENCE SMARTER*

# 4D Systems

Display Interfaces for Smart Buildings

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GLOBAL PRODUCTS AND BUSINESS DEV MANAGER

**Europe**

SEPTEMBER, 2021

- Introduction to 4D Systems
- 4D Systems Solutions for Building Automation Display Interfaces
  - Hardware
  - Software
- Knowledge Resources
- Q&A



# 4D SYSTEMS

TURNING TECHNOLOGY INTO ART

*4D Systems designs and manufactures compact and cost-effective Intelligent Display Modules using the latest state of the art OLED and LCD technology with an embedded custom graphics processor.*

## **Mission:**

*We empower forward-thinking engineers, designers, and organisations with the ability to achieve their objectives using our intelligent display solutions.*



## Complete Hardware & Software Solution

- Quickly Develop and Integrate a GUI with Touch functionality to virtually any application.
- Reduce Development time to days or weeks instead of months or years.
- Extremely fast time to market vs. traditional approach to display and touch screen integration.



**Intelligent Display Modules & Bare Displays**



**Graphics Controllers**



**Software Development Tools**

# Replacing Buttons with GUI and Touch



# About 4D Systems

- HQ Australia
  - R&D
  - Manufacturing ISO 9001 Certified
- Regional Offices in
  - Austria
  - Malaysia
  - New Zealand
  - Philippines
  - Turkey
  - United Kingdom





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# Smart Building / Home

Monitoring

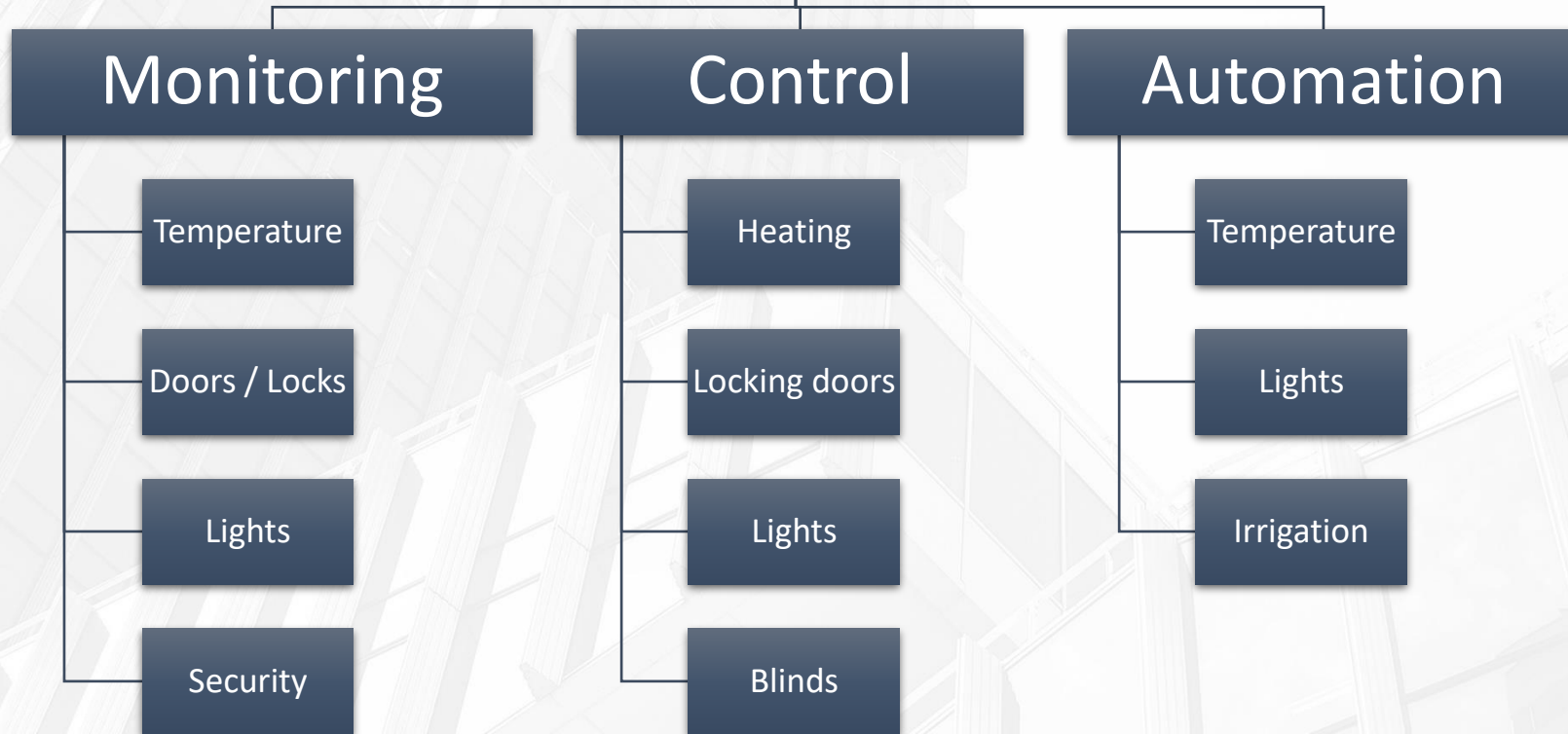
Control

Automation



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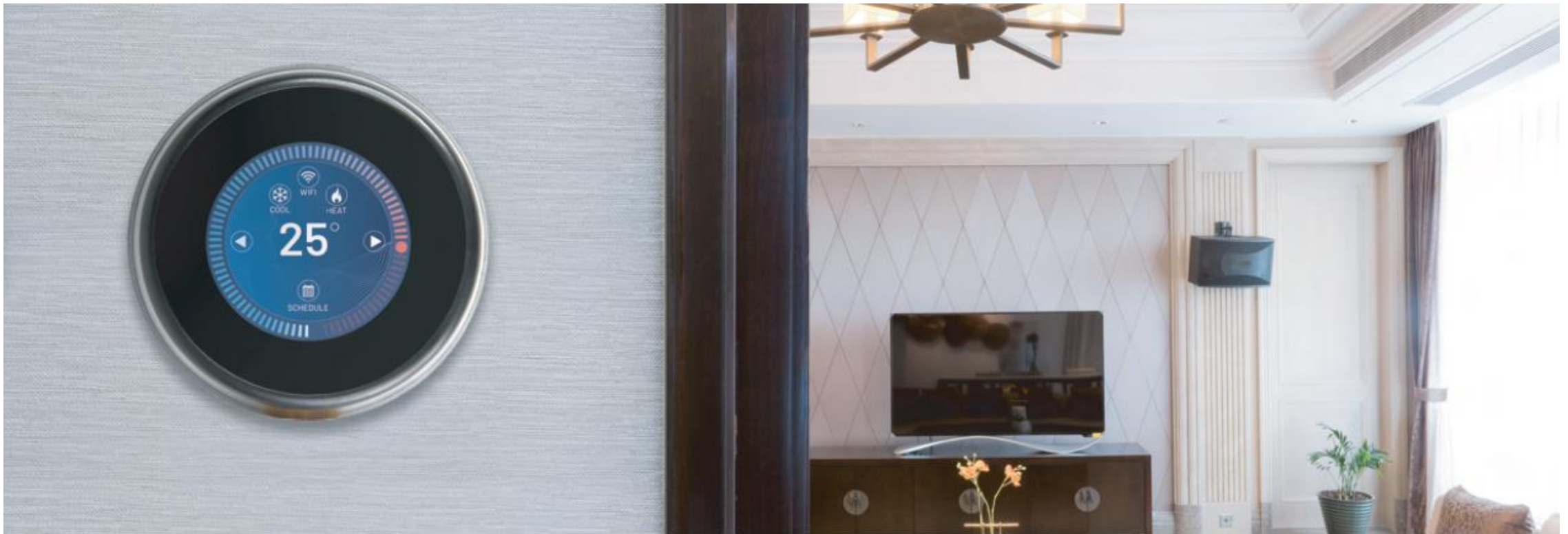
## Smart Building / Home



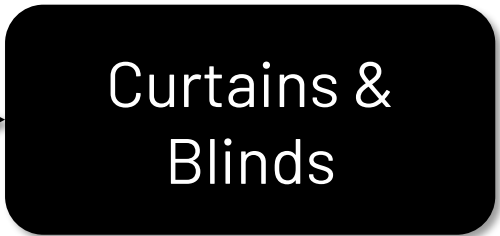
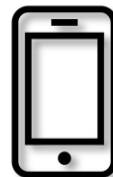


# Local control – important & convenient

- Many systems rely on the Internet or cloud services
- Only mobile phone or tablet control can be inconvenient
- Dedicated local control adds convenience and stability



## Local Control





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# 4D Systems Solutions for local control and monitoring

# 4Discovery Line

## Building Automation and Machine Control

- 4Discovery-35
- 4Discovery-50
- 4Discovery-13 (coming soon)



- 3.5" TFT LCD with Resistive Touch
- DIABLO16 Processor
- RJ45 Interface with RS485 Communications (PoE ready)
- Wall or Panel Mountable
- Programmed with Workshop4 IDE



# 4Discovery-50

- 5.0" High Resolution IPS Display with 480x854 pixels.
- Capacitive Touch Screen
- Enclosure included
- 2 x RJ45 jacks with RS485. Can be used to daisy-chain if / when needed. Not necessary to use both jacks.
- Integrated Proximity Sensor to wake the device up from sleep mode
- Easy access to microSD card for media updates
- GUI Design and Programming done in 4D Workshop4 IDE
- Low power requirements
- Daughter board design allows for customisation for specific requirements
- Optional
  - Integrated WiFi and WiFi Antenna
  - Integrated Bluetooth



# 4Discovery-13 – coming soon

- 1.3" Round High Resolution IPS Display with 240 x 240 pixels.
- Capacitive Touch Screen
- Enclosure included – black or white
- RS485 Interface or UART Interface
- 32MB Flash for graphics elements
- GUI Design and Programming done in 4D Workshop4 IDE
- Optional
  - Integrated WiFi and WiFi Antenna
  - Integrated Bluetooth



# Odyssey<sup>®</sup>

Every day's a breeze.  
Live comfortably & save energy  
all year round.



Visit [odyssey.com.au](http://odyssey.com.au) or call 1800 332 332





# Easy-to-use touch screen control panel



New display screen  
with added features  
and benefits.



## Set and forget

Simply set your desired temperature settings in your living or roof areas, and Odyssey will automatically provide all the comfort you need throughout your home. There's a BOOST setting, that is manually controlled, to provide an extra burst of fresh air and get rid of odours.

## All year round comfort and protection

In summer, set your system to remove stifling hot air and freshen your home. In winter, draw in warmer, outside air to improve those cold, damp living areas. In addition, moisture and potentially damaging condensation can be controlled all year round. Relative humidity is displayed for the living area, roof space and external environment.

## Simple operation

Temperature data can be logged and viewed in 24 hour periods, going back six months, and the settings screen displays easy to understand tiles for simple operation.



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## NX SimpleTouch™ Graphic Wall Station

[Contact Us](#)

by Hubbell Control Solutions

Collection Name: NX Distributed Intelligence



The NX SimpleTouch™ graphic wall station is an attractive and capable user interface for a NX controlled space. The 3.5" high resolution touch screen is highly visible from any angle and is simple to use. NX SimpleTouch provides users with a flexible and intuitive lighting control solution for switching, dimming, SpectraSync™ color temperature (CCT) control and preset activation. The NX SimpleTouch display is designed to be mounted to a standard single-gang rectangular wall box using the provided trim. Alternately it can be mounted into an enclosure or panel, enabling a wide range of customer applications NX SimpleTouch is a low-

[Read More](#)

Product Details

Resources / Downloads

Stocked Items

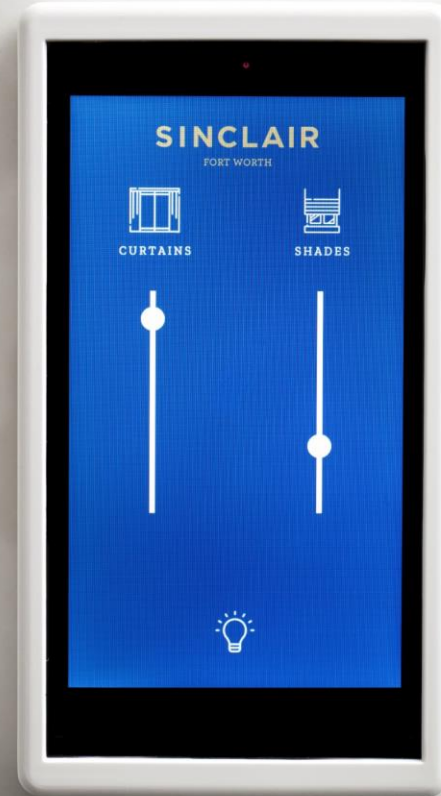
# Sinclair Hotel – Fort Worth Texas



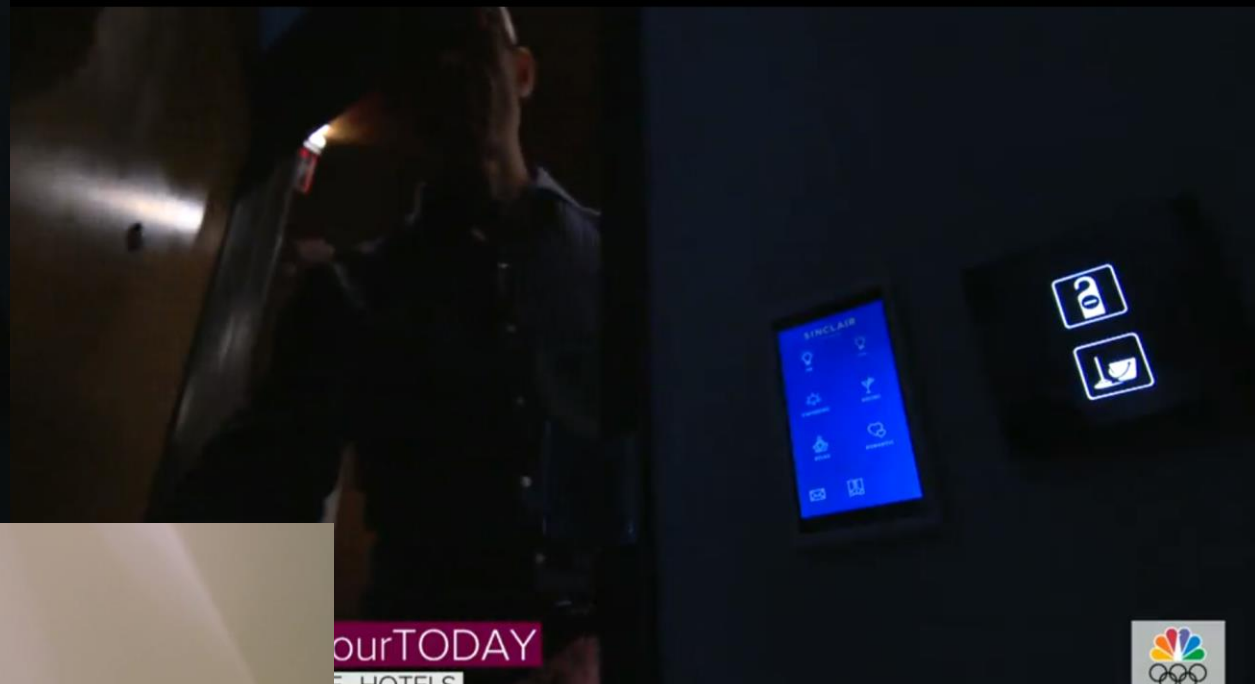
# Sinclair Hotel – Fort Worth Texas



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INTEL CORPORATION



3RD HOUR TODAY @3rdHourTODAY FUTURE OF...HOTELS

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# Software Tools – 4D Workshop4 IDE

- Combines
  - **Editor**
  - **Compiler**
  - **Linker**
  - **Downloader**
  - to develop complete 4DGL application code.
- All user application code is developed within the Workshop4 IDE.
- Available as a free download.
- Includes multiple development environments, to cater for different user requirements and skill level.



# Four Design Environments



## Designer

This environment enables the user to write 4DGL code in its natural form to program the display module.



## Serial

For transforming the module into a slave device and control it from any host microcontroller with a serial port.



**ViSi**  
A Visual programming experience, suitably called ViSi, enables drag and drop type placement of objects to assist with 4DGL code generation and allows the user to visualise how the display will look while being developed.



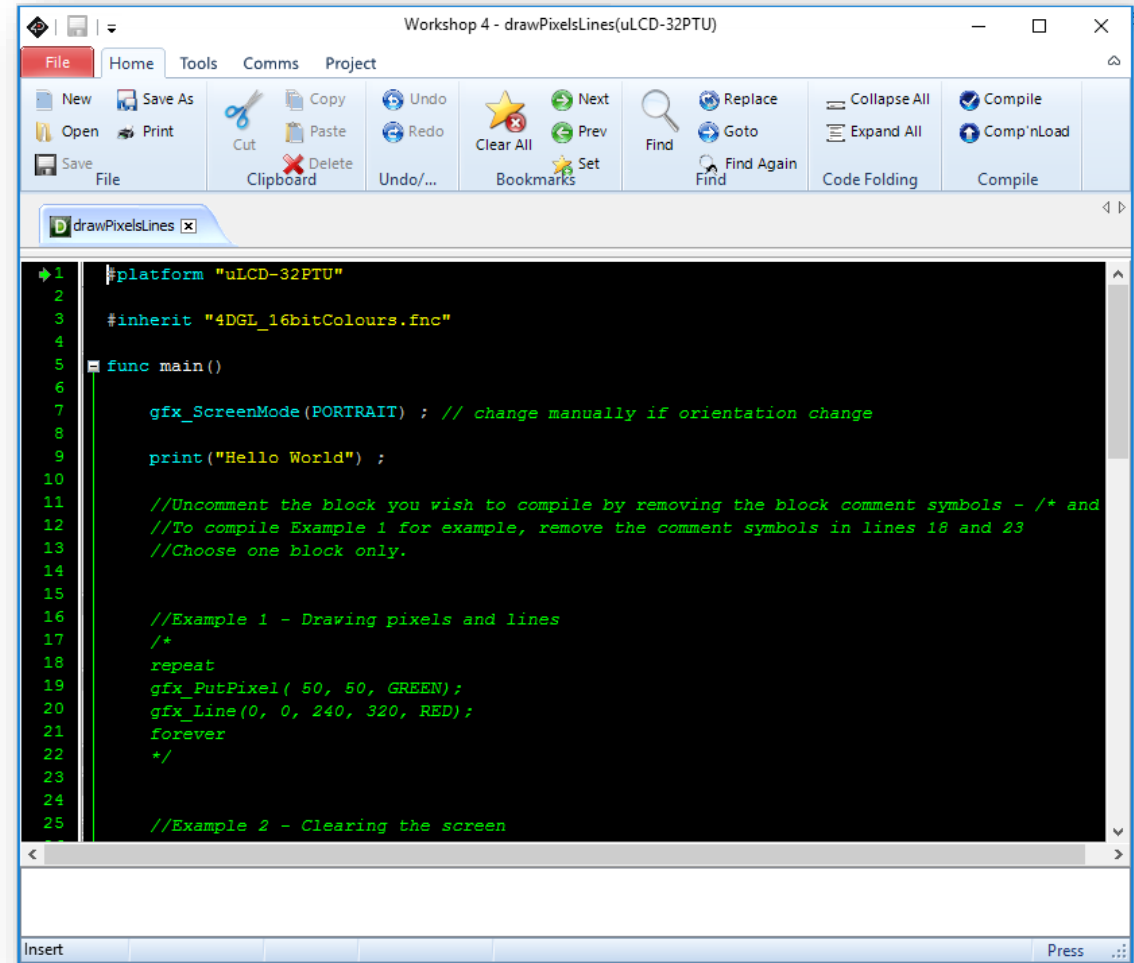
**Visi-Genie**  
An advanced environment that doesn't require any 4DGL coding. Everything is automated. Simply lay the display out with the objects you want, set the events to drive them and the code is written automatically.



# Designer Environment



- Enables user to write 4DGL code in its natural form to program the display module.
- 4DGL is optimized for GOLDELOX, PICASO and DIABLO Controllers.
- 4DGL Syntax is very similar to C. No real need to learn a new language.



```
Workshop 4 - drawPixelsLines(uLCD-32PTU)
File Home Tools Comms Project
New Save As Cut Copy Paste Undo Redo Clear All Next Prev Find Replace Collapse All Compile
Open Print Clipboard Delete Undo... Bookmarks Set Find Again Find Expand All Comp'nLoad
Save File

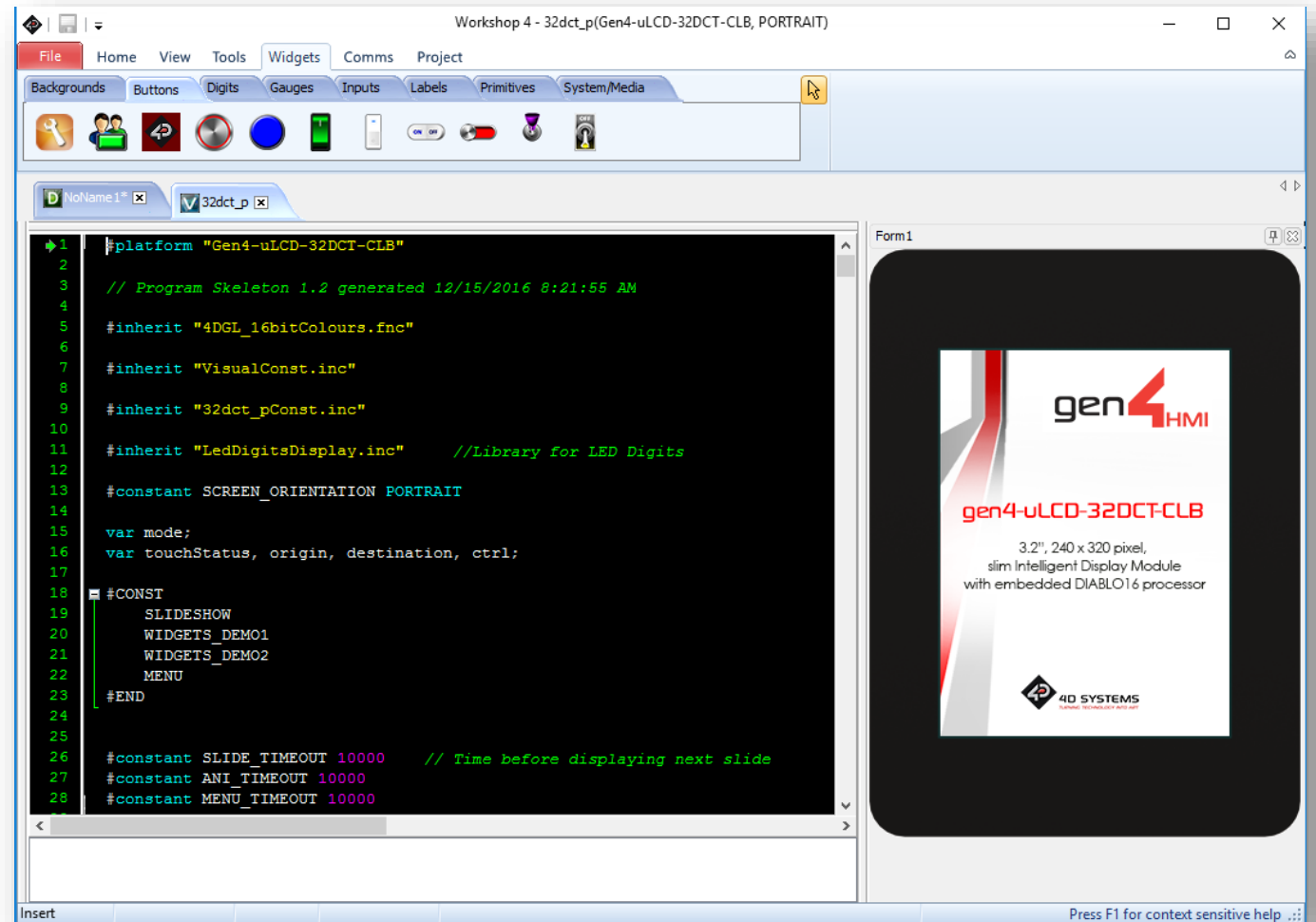
drawPixelsLines [x]
1 platform "uLCD-32PTU"
2
3 #inherit "4DGL_16bitColours.fnc"
4
5 func main()
6
7     gfx_ScreenMode(PORTAIT) ; // change manually if orientation change
8
9     print("Hello World") ;
10
11     //Uncomment the block you wish to compile by removing the block comment symbols - /* and
12     //To compile Example 1 for example, remove the comment symbols in lines 18 and 23
13     //Choose one block only.
14
15
16     //Example 1 - Drawing pixels and lines
17     /*
18     repeat
19     gfx_PutPixel( 50, 50, GREEN);
20     gfx_Line(0, 0, 240, 320, RED);
21     forever
22     */
23
24
25     //Example 2 - Clearing the screen
```



# ViSi Environment



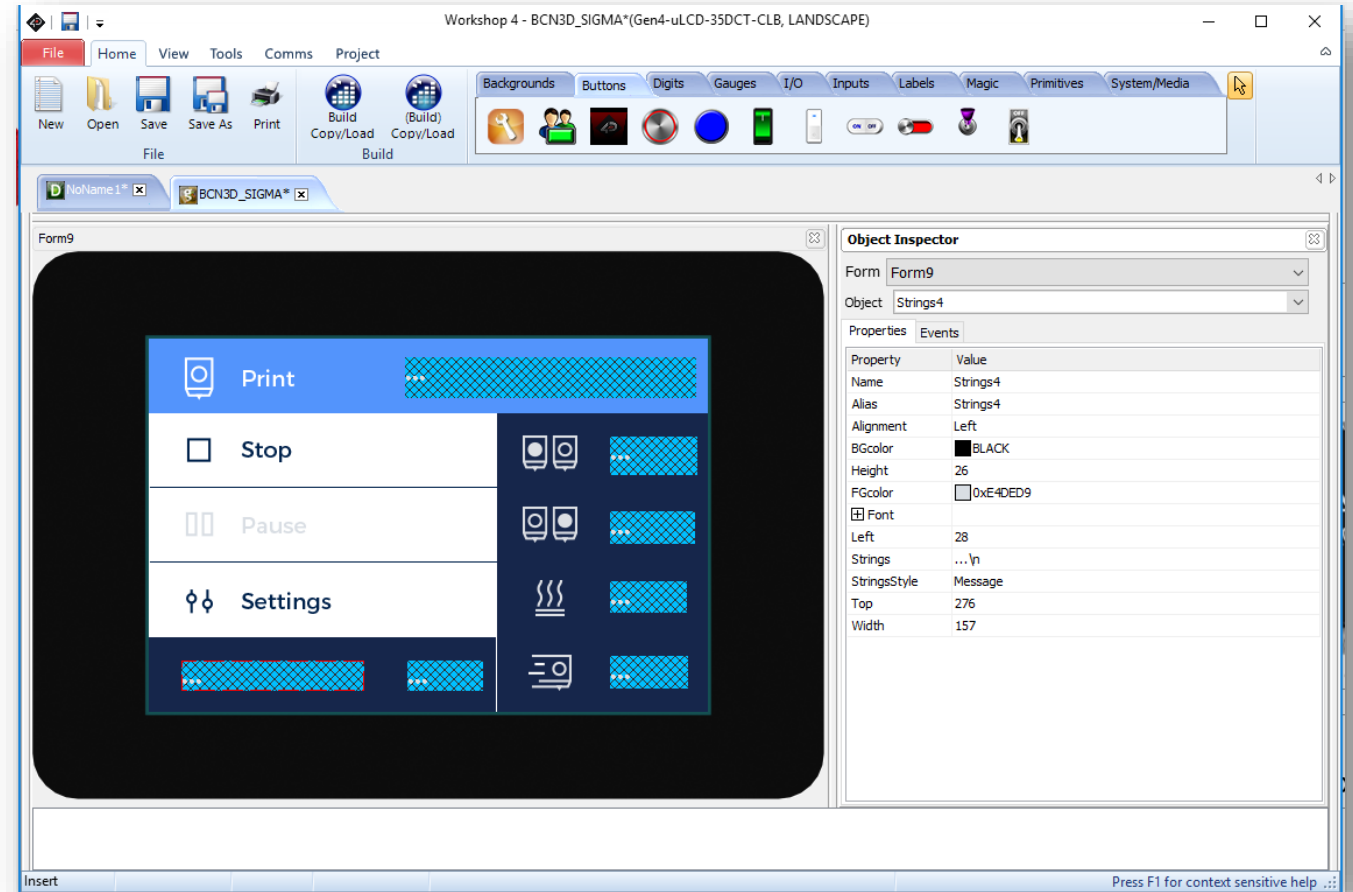
- A Visual programming experience
- Enables drag and drop of objects in a WYSIWYG editor
- Software generates 4DGL code for the graphics



# ViSi Genie Environment



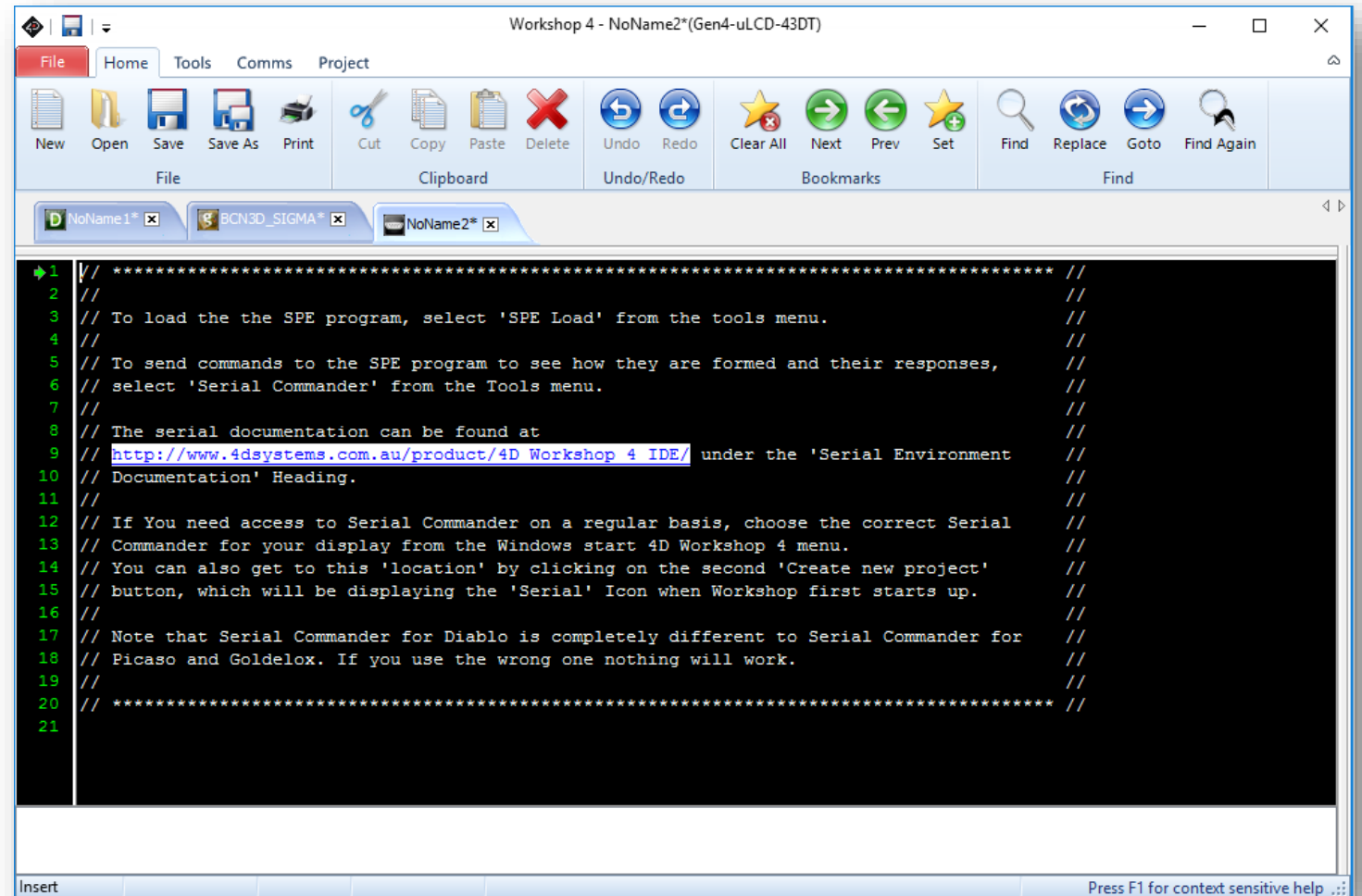
- No Coding Required
- Everything is automated
- Drag and drop objects on the display and define the events
- Code written automatically



# Serial Environment



- Transforms the module into a serial slave
- Control the module from any host micro with a serial port
- All serial protocols and documentation are provided



Workshop 4 - NoName2\*(Gen4-uLCD-43DT)

File Home Tools Comms Project

New Open Save Save As Print Cut Copy Paste Delete Undo Redo Clear All Next Prev Set Find Replace Goto Find Again

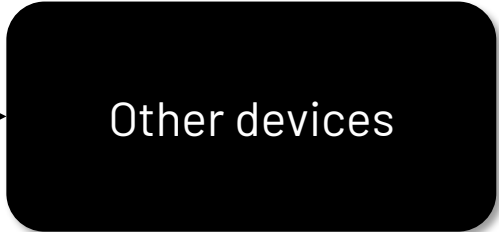
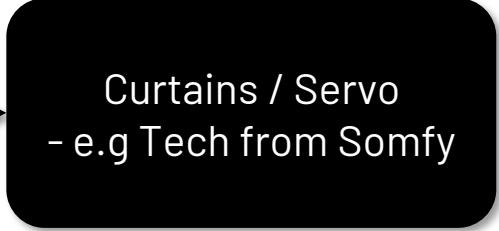
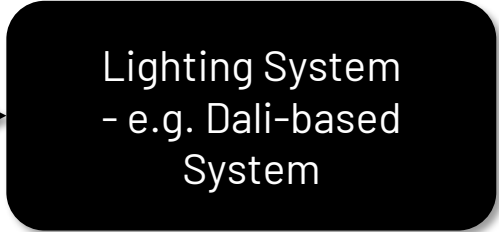
NoName1\* BCN3D\_SIGMA\* NoName2\*

```
1 // ***** //
2 //
3 // To load the the SPE program, select 'SPE Load' from the tools menu. //
4 //
5 // To send commands to the SPE program to see how they are formed and their responses, //
6 // select 'Serial Commander' from the Tools menu. //
7 //
8 // The serial documentation can be found at //
9 // http://www.4dsystems.com.au/product/4D Workshop 4 IDE/ under the 'Serial Environment //
10 // Documentation' Heading. //
11 //
12 // If You need access to Serial Commander on a regular basis, choose the correct Serial //
13 // Commander for your display from the Windows start 4D Workshop 4 menu. //
14 // You can also get to this 'location' by clicking on the second 'Create new project' //
15 // button, which will be displaying the 'Serial' Icon when Workshop first starts up. //
16 //
17 // Note that Serial Commander for Diablo is completely different to Serial Commander for //
18 // Picaso and Goldelox. If you use the wrong one nothing will work. //
19 //
20 // ***** //
21 //
```

Insert Press F1 for context sensitive help



RS485  
(Serial Protocol)



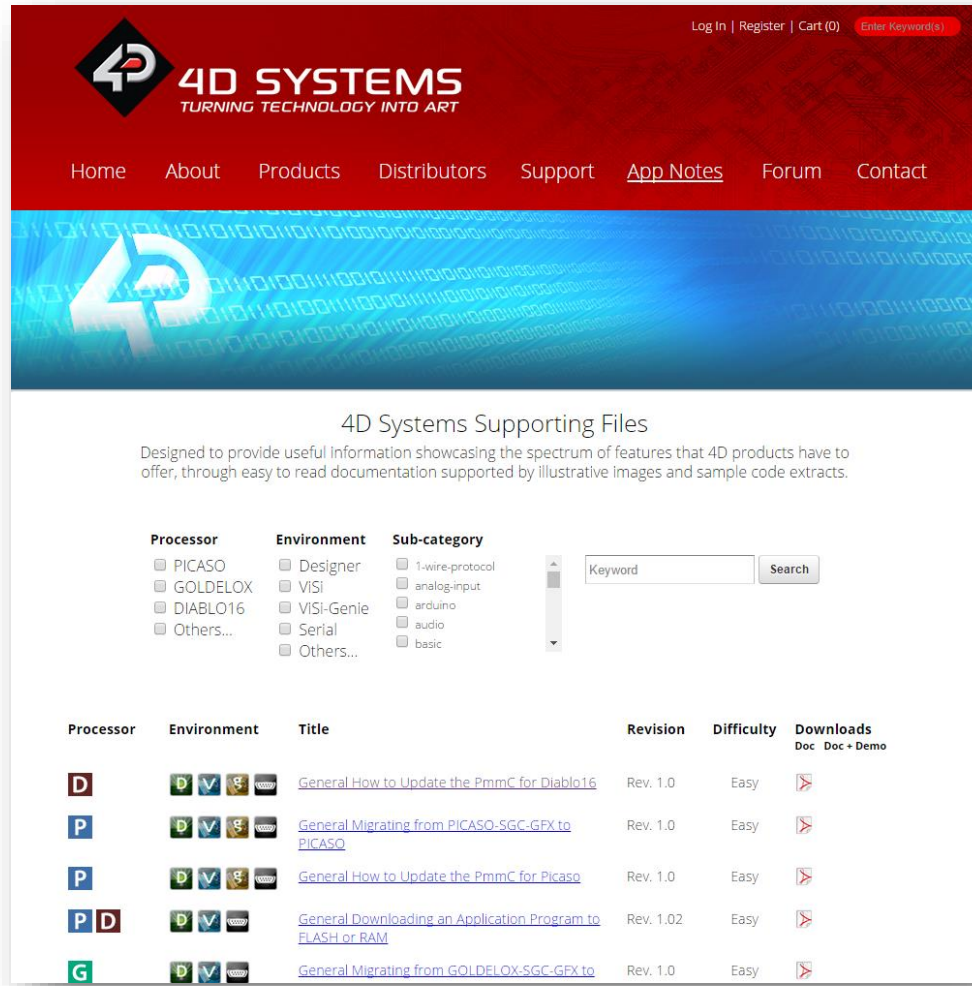
4DGL can be  
programmed to send and  
understand Interpreter  
Language



Interpreter needs to be  
programmed to  
understand 4D Serial  
Protocol

# Benefits of Smart Displays

- Everything is included in a convenient single package
  - Easy and reliable to source
- Easily build your own local control GUI for your systems
- No low-level design required – get started out of the box
- Fast Development time – fast time to market
- Little specialized expertise required
- Customizable to your needs
- Easy to use free software tools



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### 4D Systems Supporting Files

Designed to provide useful Information showcasing the spectrum of features that 4D products have to offer, through easy to read documentation supported by illustrative images and sample code extracts.

**Processor**  
 PICASO  
 GOLDELOX  
 DIABLO16  
 Others...

**Environment**  
 Designer  
 VISI  
 VISI-Genie  
 Serial  
 Others...

**Sub-category**  
 1-wire-protocol  
 analog-input  
 arduino  
 audio  
 basic

Processor	Environment	Title	Revision	Difficulty	Downloads Doc Doc + Demo
D		<a href="#">General How to Update the PmmC for Diablo16</a>	Rev. 1.0	Easy	
P		<a href="#">General Migrating from PICASO-SGC-GFX to PICASO</a>	Rev. 1.0	Easy	
P		<a href="#">General How to Update the PmmC for Picaso</a>	Rev. 1.0	Easy	
P D		<a href="#">General Downloading an Application Program to FLASH or RAM</a>	Rev. 1.02	Easy	
G		<a href="#">General Migrating from GOLDELOX-SGC-GFX to</a>	Rev. 1.0	Easy	

- Datasheets
  - [www.4dsystems.com.au](http://www.4dsystems.com.au)
- Hundreds of application notes for beginners and advanced users.
  - <https://docs.4dsystems.com.au/app-notes>
- YouTube Videos
  - <https://www.youtube.com/user/4DSystems>
- User Forum
  - <http://forum.4dsystems.com.au/>
- Technical Support
  - <http://www.4dsystems.com.au/support>
- Sales Support
  - E-mail: [markku@4dsystems.com.au](mailto:markku@4dsystems.com.au)
  - Skype: markku4d
  - Tel: +43 660 753 0499



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# Thank You

Q&A