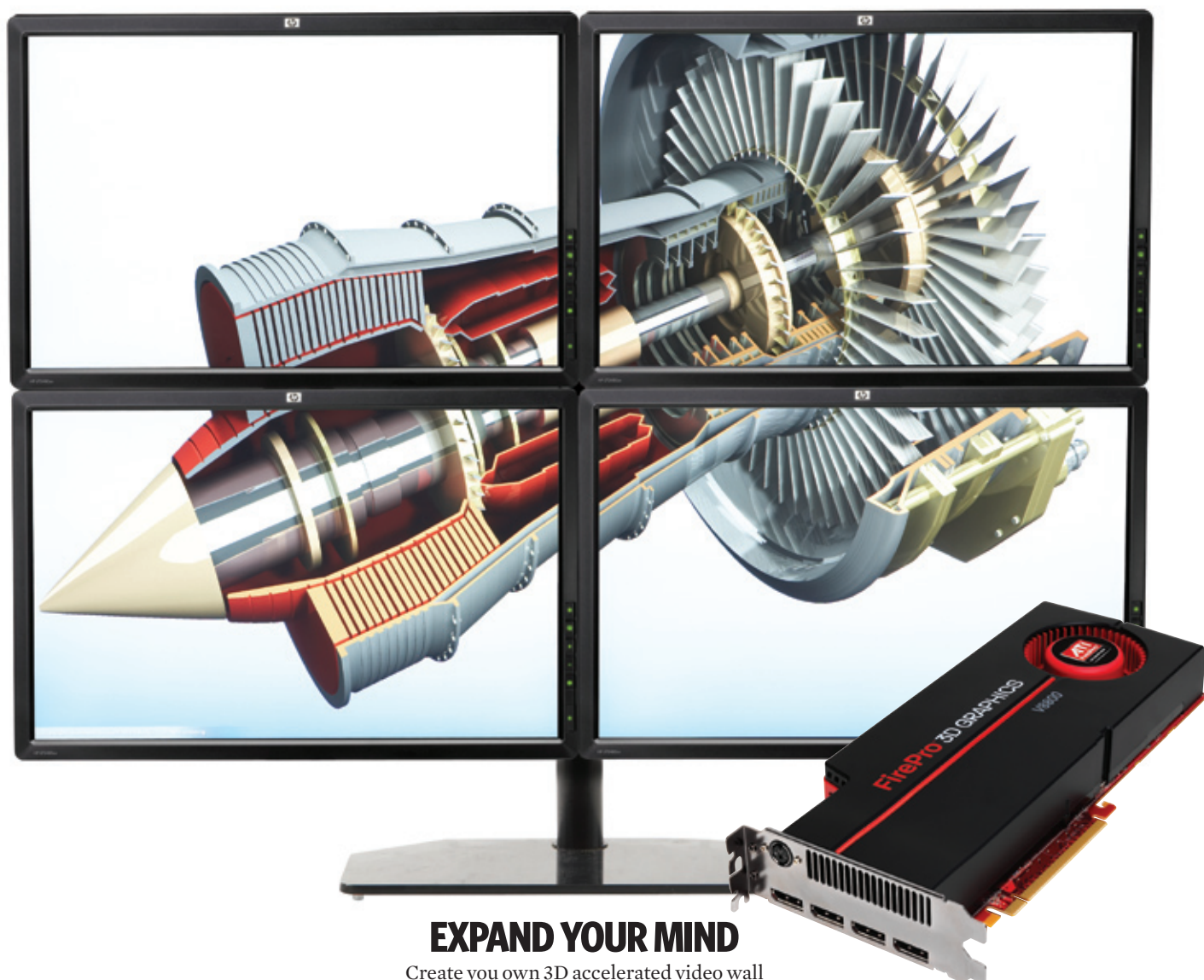


ATI EYEFINITY™

Advanced multiple-display technology with AMD ATI FirePro graphics

In association with
DEVELOP3D
www.develop3d.com



EXPAND YOUR MIND

Create your own 3D accelerated video wall
or a giant extended desktop with the
latest professional ATI FirePro graphics
cards from AMD

Advertisement feature sponsored by AMD



WHAT IS ATI EYEFINITY?

AMD's brand new multi-monitor technology accelerates massive extended desktops from a single GPU



ATI Eyefinity is a brand new multi-monitor graphics technology from AMD, which enables users to run up to four high-resolution displays from a single graphics card. Monitors can sit side by side on a desk or with the help of a stand, be organised in an array to create a massive visual workspace.

Multi monitor technology is nothing new, and many CAD/CAM/CAE users already deploy two displays side by side. However, in order to have accelerated 3D on more than two monitors, two graphics cards are typically required. This often leads to heat dissipation problems and configuration challenges within the Operating System, and also adds to the overall cost of the workstation. Eyefinity overcomes these issues by providing an easy to configure multi-monitor solution from a single graphics card. It also offers a much more

cost-effective way to increase the pixel count on the desktop. For example, it is often less expensive to buy four 24-inch HD (1,920 x 1,080) monitors, than it is to invest in one 30-inch (2,560 x 1,600) display.

Eyefinity also helps customers make the most of their existing investments, meaning they don't have to go out and buy new monitors. Legacy displays of all types and resolutions are supported, from 800 x 600 right up to 2,560 x 1,600. Even an old 15-inch CRT monitor could be used to display email, freeing up a larger LCD display for CAD work. With the flexibility to use different combinations of monitors and resolutions, users can expand their investment in Eyefinity at their own pace.

EXPANDING YOUR VIEW OF THE WORLD

For engineers and designers, Eyefinity offers two primary usage scenarios. The first is where individual applications are given

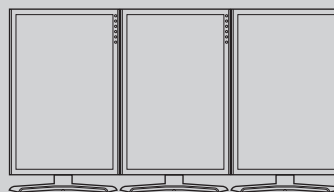
their own dedicated monitor. This enables true multi-tasking as 3D professionals have everything they need – a whole project's worth of software and data – right at their fingertips. The second is when Eyefinity is used to generate one big visual workspace. Here users can form an ultra high resolution 'video wall' out of multiple displays and use it to visualise a detailed design in its entirety. This setup can also be used for group presentations or digital mock-up.

Dedicating a single monitor for an individual application or dataset can offer huge productivity benefits. This means all relevant project data can be shown on screen at the same time, multiple results can be compared side by side, and users do not have to waste time 'Alt / Tabbing' between applications to find what they're looking for. This is particularly relevant to modern CAD/CAM/CAE workflows where engineers and designers increasingly

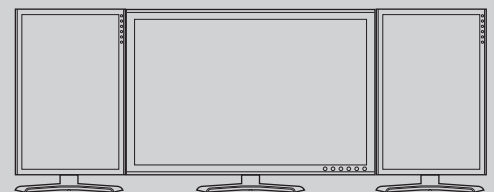
RECOMMENDED EYEFINITY MONITOR CONFIGURATIONS



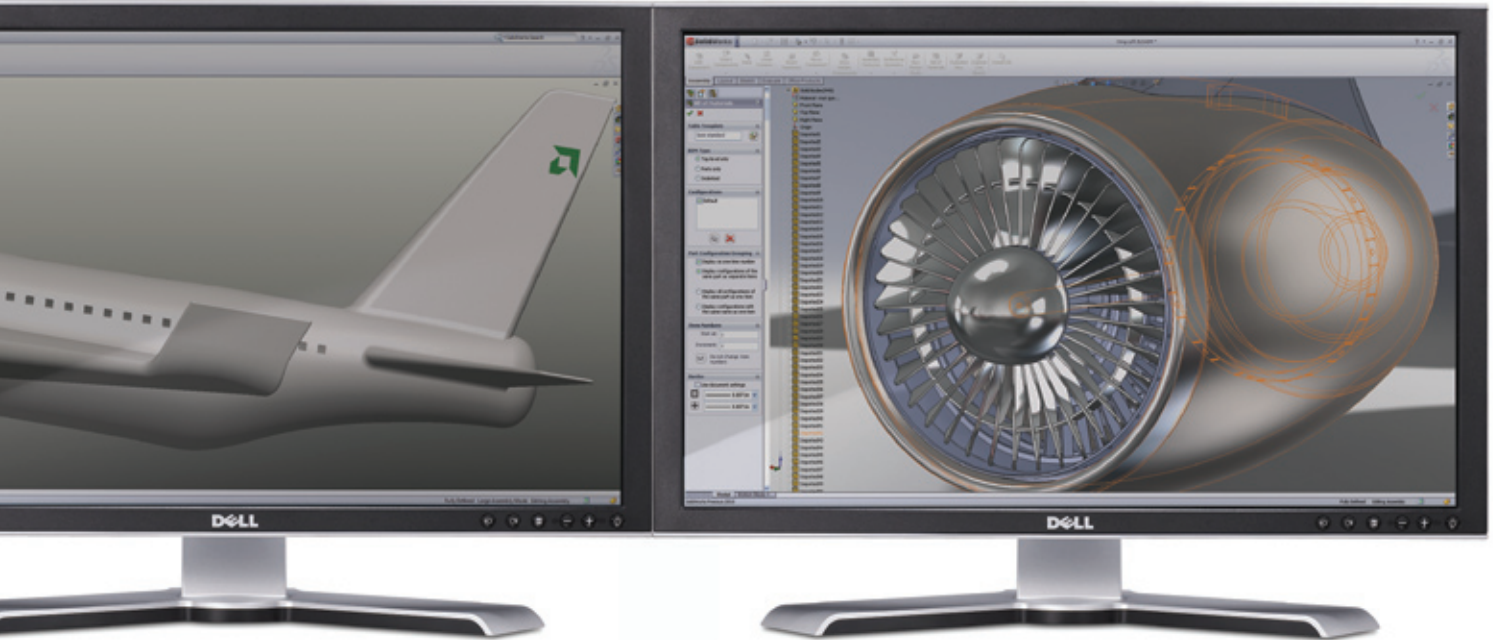
1 Three monitors: landscape (3 x 1)
One extended desktop up to 7,680 x 1,600 resolution



2 Three monitors: portrait (3 x 1)
One extended desktop up to 4,800 x 2,560 resolution



3 Three monitors landscape and portrait (3 x 1)
One hi-res 2,560 x 1,600 resolution display flanked by two portrait monitors of any resolution



use multiple applications to complete their tasks. Some examples include, part and assembly modelling, simulation and rendering, collaboration and document management – not forgetting email, spreadsheets and Web browsing.

AMD's intelligent HydraVision windows management software can also be used to manage multiple applications on individual displays and users can also maximise their modelling space by moving menus and toolbars to adjacent monitors.

Eyefinity also has a major role to play in bringing down the cost of powerwalls and making large scale visualization accessible to companies of all sizes. Even with four low-cost HD monitors incredible detail can be revealed across an entire model or companies can host group design / review sessions where styling and form and fit can be assessed and refined.

Taking large-scale visualisation to the next

W Eyefinity enables true multi-tasking as 3D professionals have everything they need – a whole project's worth of software and data – right at their fingertips

level, a single Eyefinity graphics card can also be used to power a 4k projector (4,000 pixels wide) and create a mini VR wall. In the past, two or three graphics cards would have been required to do this.

PROFESSIONAL PERFORMANCE

Eyefinity is supported in all new ATI FirePro graphics cards, which are designed specifically to accelerate complex 3D models in professional applications. They fully support DirectX11 and OpenGL 4.0 and are fully certified to run a massive range of CAD/CAM/CAE applications.

With a total of five models in the new FirePro 'Eyefinity' range, there is a card for

all budgets and requirements. The entry-level FirePro V3800 supports up to two monitors, the V4800, V5800 and V7800 up to three, while the high-end V8800 supports up to four.

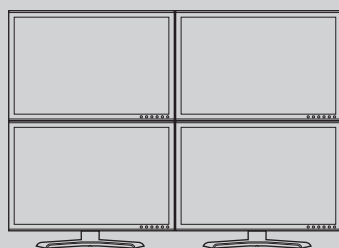
The FirePro V8800 is the ideal partner for an ultra high-resolution video wall. With its 1,600 stream processors and 2GB memory it is able accelerate complex 3D models at a staggering resolution of 5,120 x 3,600 pixels.

Furthermore, AMD already has plans for an even more powerful graphics card that will support up to six high definition displays and a resolution of 7,680 x 3,200 - the equivalent of 24.6 megapixels.

www.amd.com/firepro/eyefinity

MOUNTING MONITORS

In order to construct some of the more complex monitor arrays a dedicated stand can be a major benefit. Ergotron is a specialist in this field and provides a huge range of desktop stands and wall mounts. With a variety of pivot mechanisms a desktop stand can be used to position each monitor for optimum ergonomics, while a wall mount can help build a low cost video wall for presentations or design/review sessions.



4 Four monitor array (2 x 2)*

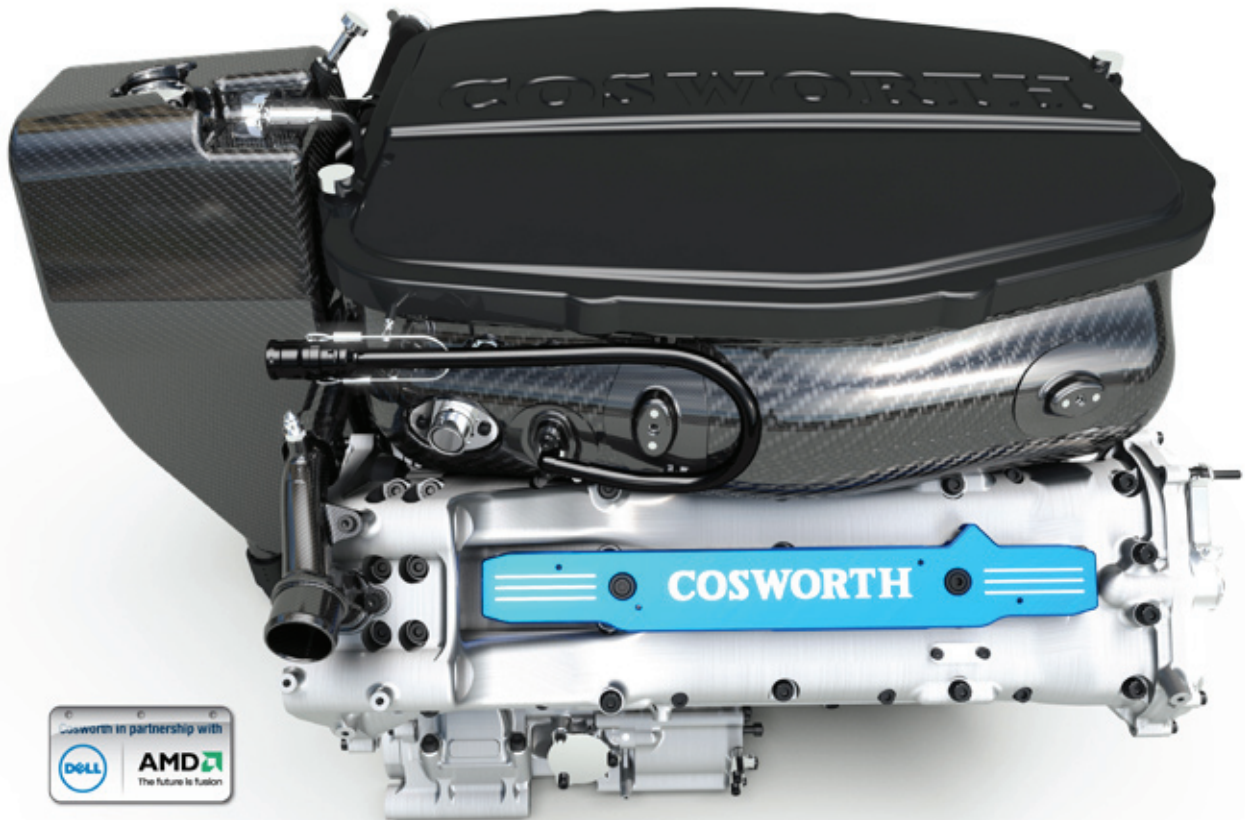
One giant extended desktop or a setup for design / review with displays mounted on a wall - up to 5,120 x 3,200 resolution

*only supported on the FirePro V8800

www.ergotron.com

PHOTO FINISH

The ATI FirePro V8800 workstation graphics accelerator and a Dell Precision T5500 workstation drive three finish as Cosworth returns to Formula One supplying competitive, high performance engines in line with



Having been the most successful independent engine supplier in Formula One for over forty years, Cosworth is on the race track again, supplying four teams with its latest engine, the CA2010. That's eight drivers who each have an allowance of eight engines per season so production has to ramp up from 0 to 64 in record time.

Operating globally in aerospace and defence, sports, automotive and energy, Cosworth supplies other famous names such as Rolls Royce, Aston Martin Lagonda and the United States Department of Defence. Most Cosworth engines, including those destined for Formula One, are completely bespoke and are designed, manufactured, built and tested in the group's Northampton facility in the UK. Others, for the niche automotive market, are part of longer term development programmes between Cosworth and its OEM customers.

Customers are keener than ever to see how their finished products will actually look. Cosworth's own designers are just as interested and they certainly want to satisfy customers by giving them a peek at the product ahead of time. The response? Provide

high quality photorealistic images based on the actual CAD designs which are a key part of Cosworth's engineering processes. These are made possible by the combination of an ATI FirePro V8800 2GB graphics card from AMD sporting Eyefinity technology to drive three 24-inch screens; and a Dell Precision Workstation T5500 with dual quad-core Xeon processors. This machine currently has 24GB RAM but can be scaled up to a mammoth 72 GB via its nine memory slots.

The satisfied user of this high octane solution is Yusuf Islam, Brand, Communications and Design Specialist. "Here in the marketing communications department we need to create sales collateral, sometimes when a product is still in development. Whether for print or the web, great pictures have the biggest impact and renderings are not only the best way to impress, they speed up the development process creating productivity gains and enabling Cosworth to respond to customer requirements more effectively."

Renderings can be produced well before a design goes into production. As designers at Cosworth use NX software from Siemens PLM they supply an NX CAD assembly file which Yusuf imports into Autodesk

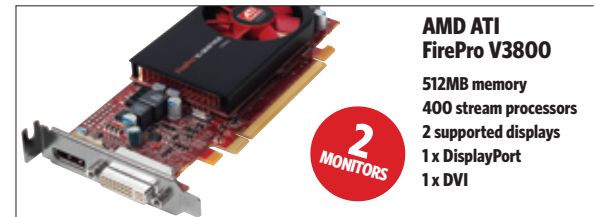
3ds Max with the help of a third party plugin. Behind every fantastic rendering there is a painstaking manual process and Yusuf finds that the Eyefinity-powered triple display configuration boosts his personal productivity. "I start by filtering out large components such as the engine block and head, assigning them to layers and switching off their visibility. Then I work my way down through all the internal components until there is nothing left except a set of well managed layers. With three monitors there's no need to fight my way through multiple stacked windows in order to find the one I need. Toolbars and palettes I access most often are always in my peripheral vision while my primary software occupies one monitor directly in front of me."

This critical groundwork takes between one to two weeks. Texturing an engine is approximately another week's work as Yusuf picks out all the little washers, nuts and bolts and assigns them all textures that mimic their real world counterparts. According to Yusuf it is at the texturing stage that the card really comes into its own and productivity increases dramatically. "I might be manipulating an assembly which consists of almost 7,000 components. A large screen operating at a

THE AMD ATI FIREPRO GRAPHICS CARD FAMILY

AMD's new line of ATI FirePro graphics cards offer multiple monitor support with Eyefinity for all budgets and requirements. The high-end FirePro V8800 supports up to four high definition monitors, resulting in a single crystal clear image. The FirePro V4800, V5800 and V7800 all support three, while the FirePro V3800 brings Eyefinity to the entry-level with support for two.

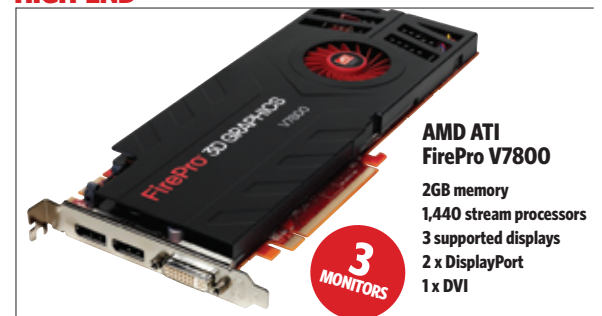
ENTRY-LEVEL



MID-RANGE



HIGH-END



FOR MORE INFORMATION ABOUT AMD'S ATI FIREPRO GRAPHICS, VISIT WWW.AMD.COM/FIREPRO



With three monitors there's no need to fight my way through multiple stacked windows in order to find the one I need



screens to a photo

stringent FIA regulations

high resolution means it is easier to see detail and with three of them I can work faster and accomplish more in less time. However at this point most of the processing is being handled by the graphics card. Having one that can keep up and drive three monitors simultaneously is crucial; a task that would be near enough impossible for a lesser graphics card.

"The FirePro card is a major advantage when working on complex models like a Formula One engine assembly. A dense model like this has to be processed and previewed fast as I pan, tumble and zoom around yet I still achieve relatively high frame rates as I work the scene. I can systematically get the job done without experiencing awkward lags whilst the model is being updated on screen."

At the final stage Yusuf is free to render a product in any position and at any angle. Each hi-res image can be rendered in about two hours. "While traditional photography will always play a part in our communications, renderings have the advantage of always looking perfect and dirt-free; great for brochures and catalogues. Also, cameras cannot easily capture certain technical shots such as engine internals, cutaways and x-ray views. More importantly though, if a CAD assembly of a product exists, I can create renderings of it long before the manufacture and assembly processes are completed."

Cosworth now uses renderings extensively. "Before, we had to rely on rapid prototypes as a visual representation of the product. They still have their use when testing for fitment issues however rendered images are now the basis for various stages in the development process, for example during meetings with customers. A photorealistic picture has much greater impact during the client approval stages than brightly coloured CAD screen shots. Customers are more engaged and excited about the end product and as a result more satisfied with the level of service received from Cosworth."

Yusuf now plans to take digital rendering at Cosworth to the next level with animation and videos. Meanwhile the visual appeal of renderings continues to arouse a sense of positive anticipation across Cosworth. "Everyone loves them and doing this work has turned out to an important part of my job. In the end it's all about satisfying our customers and these images provide the 'wow' factor."

ACKNOWLEDGEMENTS:

TEXT: JENNIFER HAND, THE SKILSTREAM PARTNERSHIP
IMAGES: COSWORTH

Cosworth's 2.4 litre V8 CA2010 engine operates at 18,000 rpm. Here, shown in its full glory rendered inside Autodesk 3ds Max

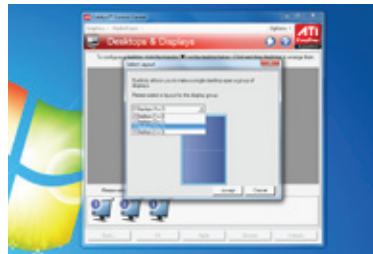
HOW TO SET UP EYEFINITY

Step by step guide to configuring Eyefinity in Microsoft Windows 7

Eyefinity is fully supported in Microsoft Windows Vista and Windows 7. Configuration is easy, and is controlled through the ATI Catalyst Control Center (CCC). Here's our step by step guide to setting up a 3 x 1 monitor array.



1 With three displays connected right click on the desktop and open the CCC. Click graphics tab >> Desktops and Displays. Click on the black triangle to access the context menu. Select the "Create Group" menu option.



2 The "Select Layout" dialog is shown allowing you to choose the desired arrangement. Choose the 3 x 1 layout from the drop-down.



3 To arrange the displays in a group there is no need to physically move or re-cable your displays. Instead the arrangement wizard starts.



4 All the displays in the group will be blacked out and then each one in turn will turn blue. As this happens, click on the corresponding cell in the UI. When this is finished the 3 x 1 group is properly organised.



5 Eyefinity can compensate for monitor bezels (the border that surrounds the actual LCD panel). It does this by removing the pixels that would appear to be obscured by the bezel.

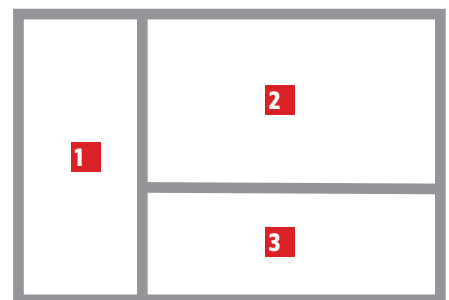
This feature is useful for presentations or when playing

movie files (or games), as it stops rendered objects appearing to "jump" across the gap between displays. However, for detailed design or digital mock-up it could remove an important element of the model so should be used with caution.

To compensate for monitor bezels, the Eyefinity bezel compensation tool displays a large triangle pattern across two of the adjacent monitors and an on-screen widget is used to adjust the image until the edges of the triangle line up.

TAKING CONTROL OF YOUR WINDOWS

With Windows 7, Microsoft introduced a new feature to help users manage their windows more effectively. AMD's HydraVision software, which ships with all ATI FirePro cards, takes this a step further. Accessed through the Catalyst Control Center users can automatically have their applications snap to a section of a 'HydraGrid' simply by right clicking on an application's title bar. The HydraGrid is fully customisable and users can split up a single screen into two, three or four individual rectangles. This makes managing applications or documents much easier and in conjunction with Eyefinity helps make maximum use of each individual display. HydraVision works with Windows XP, Vista and 7.



RECOMMENDED WORKSTATIONS

From entry-level dual core systems, right up to dual processor, twelve core powerhouses, we give our desktop workstation recommendations for all types of CAD/CAM/CAE users



ENTRY-LEVEL CAD

For 2D Computer Aided Design (CAD) and entry-level 3D CAD

TECH SPECS

CPU: Intel Core i5-670 (3.46GHz) (Dual Core)
Memory: 4GB DDR3 non-ECC (1,333MHz, 2 x 1GB)
Graphics card: ATI FirePro V4800 (1GB)
Operating System: Windows 7 Professional (32-bit)



MID-RANGE CAD

For mid-range 3D CAD (with occasional simulation, design visualisation or CAM)

TECH SPECS

CPU: Intel Xeon W3680 (3.33GHz) (Quad Core)
Memory: 6GB DDR3 ECC (1,333MHz, 6 x 1GB)
Graphics card: ATI FirePro V5800 (1GB)
Operating System: Windows 7 Professional (64-bit)

DISPLAY ADAPTERS AND DONGLES EXPLAINED

Eyefinity is tuned to work with DisplayPort (DP), a relatively new interface designed specifically for high-resolution displays. To get the most out of a multi monitor setup, the ideal scenario is for all of your displays to support the DP standard.

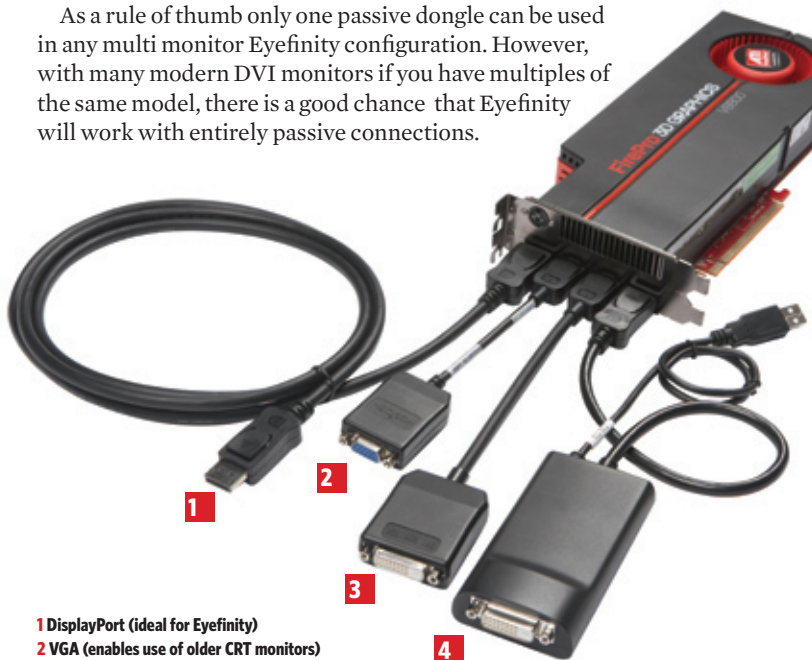
Recognising that many users have already invested in older generation monitor technologies, Eyefinity also works with DVI and VGA displays. However, there are some important considerations to note with regards to adapters if choosing to make the most of existing equipment.

There are two main types of adapters - passive and active dongles.

A passive dongle changes the DP signal to DVI or VGA with minor adjustments. N.B. DP to DVI passive dongles ship in the box with all new FirePro graphics cards

An active dongle, on the other hand, completely changes the signal emulating how DP works. This often requires additional power, typically drawn through USB. N.B. DP to DVI or VGA active dongles are widely available in the market.

As a rule of thumb only one passive dongle can be used in any multi monitor Eyefinity configuration. However, with many modern DVI monitors if you have multiples of the same model, there is a good chance that Eyefinity will work with entirely passive connections.



- 1 DisplayPort (ideal for Eyefinity)
- 2 VGA (enables use of older CRT monitors)
- 3 Passive DVI (enables use of older LCD monitors)
- 4 Active DVI - with additional power from USB (enables use of older LCD monitors but emulates the DP standard)

CHOOSING MONITORS FOR EYEFINITY

To get the most out of Eyefinity the ideal is to buy three identical DisplayPort monitors. This not only provides consistency in terms of size and resolution, but means colour reproduction will be similar across your entire extended desktop. The width of the bezel, the border that surrounds the LCD panel, is also important as thick bezels will interfere when images are spanned across multiple displays.

Recommended monitors

Samsung MD230 23" Flat Panel (1,920 x 1,080)

HP DreamColor LP2480zx 24" monitor (1,920 x 1,200)

Dell UltraSharp U2711 27" Flat Panel (2,560 x 1,440)

Of course, a major part of Eyefinity is about reducing the cost of multiple monitor setups. Ultra high resolution monitors with resolutions of 2,560 x 1,600 can still be expensive and while these deliver exceptional results, a much more cost-effective way of increasing the resolution of your entire desktop is to buy standard HD monitors with resolutions of 1,920 x 1,080. When used together these still provide a significant amount of desktop space at a much lower price, with three 24-inch displays often costing less than a single 30-inch screen.

In addition to the ubiquitous widescreen format, some monitors also support portrait mode by enabling users to swivel the monitor by 90 degrees. Portrait style monitors can be used to good effect to flank a central widescreen display or three can be used together to maintain a more familiar aspect ratio.

Finally, the beauty of Eyefinity is that you can use virtually any combination of monitors to generate an extended desktop. It is not necessary to go out and buy new monitors from the start as existing lower res displays can be used and these can then be upgraded in stages as the needs of the user evolve. N.B. Eyefinity supports individual monitor resolutions from 800 x 600, right up to 2560 x 1,600.



Samsung's 23" MD230s feature very thin bezels

HIGH-END CAD

For high-end 3D CAD (with frequent simulation, design visualisation or CAM)

TECH SPECS

CPU: Intel Xeon X5677 (3.46GHz) (Quad Core)
Memory: 12GB DDR3 ECC
 Memory (1,333MHz, 6 x 2GB)
Graphics card: ATI FirePro V7800 (2GB)
Operating System: Windows 7 Professional (64-bit)

HIGH-END SIMULATION

For high-end Finite Element Analysis (FEA) and CFD (Computational Fluid Dynamics)

TECH SPECS

CPU: 2 x Intel Xeon X5677 (3.46GHz) (Quad Core)
Memory: 24GB DDR3 ECC
 Memory (1,333MHz, 6 x 4GB)
Graphics card: ATI FirePro V5800 (1GB)
Operating System: Windows 7 Professional (64-bit)

HIGH-END VISUALISATION

For high-end 3D rendering and animation

TECH SPECS

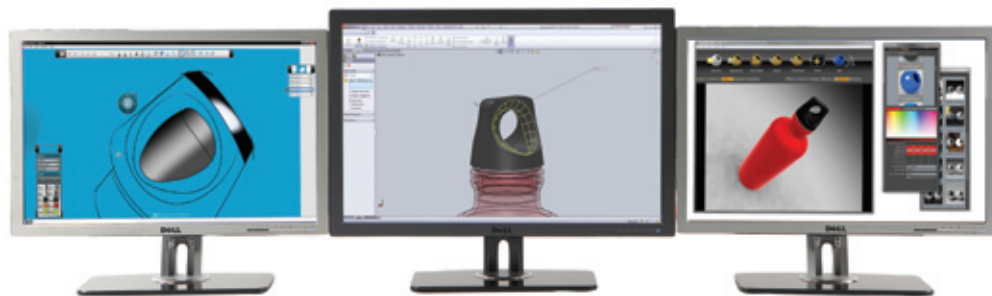
CPU: 2 x Intel Xeon X5680 (3.33GHz) (Six Cores)
Memory: 24GB DDR3 ECC
 Memory (1,333MHz, 6 x 4GB)
Graphics card: ATI FirePro V8800 (2GB)
Operating System: Windows 7 Professional (64-bit)

EYEFINITY IN PRACTICE

We look at three typical CAD/CAM/CAE users and how a multi-monitor Eyefinity setup could be used to enhance productivity

For CAD (design viz)

During the conceptual design phase product designers typically use a number of different applications, from dedicated sketching tools to 3D rendering software. Having all these applications at your fingertips can streamline the process as data moves between them



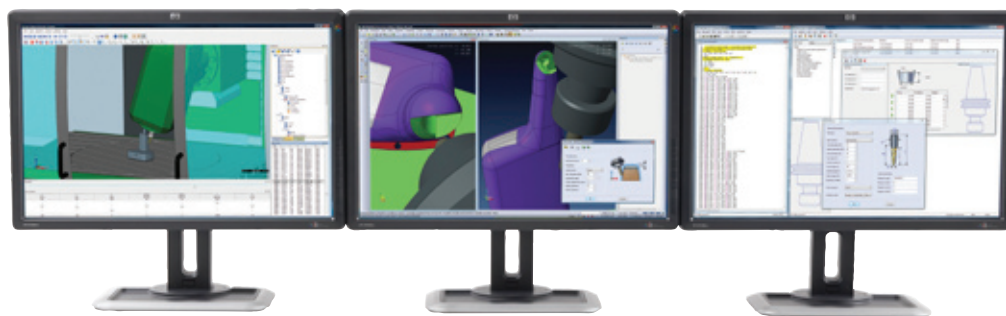
1 Conceptual design of a water bottle using Autodesk Alias Sketch

2 Building up a solid model of the water bottle inside SolidWorks

3 Rendering and material tweaking inside PhotoView 360

For CAM (machining)

CAM operators typically have a number of tasks running in parallel. VISI Machining, like many other CAM applications, allows the toolpath calculation to run on separate processors, therefore freeing the operator to set up and calculate further toolpaths without a performance penalty



1 Simulation of the programme prior to running to check against physical machine limits

2 Setting up machining parameters for a 5-axis milling programme

3 Updating the tooling carousel / library and validating the NC code in the CAM database

For CAE (simulation)

An engineer's workflow when using CAE applications like Siemens PLM Software's NX Simulation typically revolves around model preparation and results visualisation. The whole process is managed from inception to completion, in this case using Teamcenter.



1 Simulation tasks are assigned and managed inside Teamcenter

2 CAE models are prepared using NX and simulations are executed

3 Results from completed simulations are visually verified using Teamcenter Lifecycle Visualisation

LIFE ON THE BIG SCREEN BEYOND THE DESKTOP



Eyefinity for AMD ATI FirePro is just at the beginning. Just around the corner is a graphics card capable of driving six monitors, each offering up to 2,560 x 1,600 pixels of resolution. Configured as a group consisting of three monitors wide by two monitors high this creates a single large

desktop surface with a pixel resolution of up to an incredible 7,680 x 3,200.

Furthermore, with AMD's optional FirePro S400 synchronisation module multiple workstations can be connected together to sync images for extremely hi-res power-

walls or immersive 3D stereo environments. With AMD's forthcoming technology, up to six displays per graphics card can be synchronised at one time, making it possible to produce incredibly high-res video walls made up of multiple arrays of thin bezel monitors.

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