

ActiveRotation

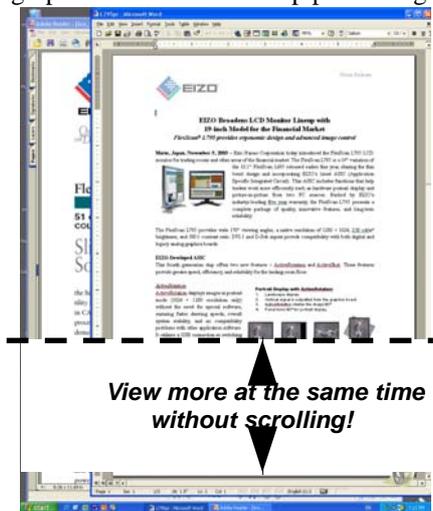
- Advantages of Portrait Desktop and the Hardware Alternative Provided by EIZO -

Any Advantages in Portrait Desktop? - Portrait Paper vs. Landscape Screen -

To answer this question, we have to consider what we look at on a computer screen. Much of the content is meant for printing or closely resembles printed material that is typically read in portrait format such as newspapers, magazines, books, and reports. In portrait desktop, we can see a whole page with little or no scrolling at almost the same size as when it is printed. This is an advantage not only for text-based documents, but also for graphics work like desktop publishing. Even the contents of new mediums like the Web are optimized for portrait format with less scrolling than in landscape orientation.

Our eyes are accustomed to viewing portrait formats more efficiently than landscape ones. Though TV screens are in landscape format, the content is meant to be seen from a distance and not read up close. This requires much less effort than is needed to view a PC monitor, which typically consists of small, detailed letters and images.

So, the proper question here is why are screens of almost all PC monitors, LCD and CRT, in landscape format despite the advantages of portrait orientation? The answer is because the screens of their predecessor, the TV, are in landscape format. Additionally, when PCs started to become a fixture of offices in the early 1980's, the monitors available were so small that it made little difference how the screen was oriented, so there was no incentive to break away from precedent.



Monitor Bound by TV Tradition vs. Smart OS

Fortunately, major operating systems available today are so smartly designed that it does not matter whether the targeted screen format is landscape or portrait; they can easily generate images in portrait orientation as long as they can detect monitors with a portrait screen (the same is true of portrait application software). This means we have to do something special to get a portrait image.

Existing Solutions for Portrait Desktop and Their Drawbacks

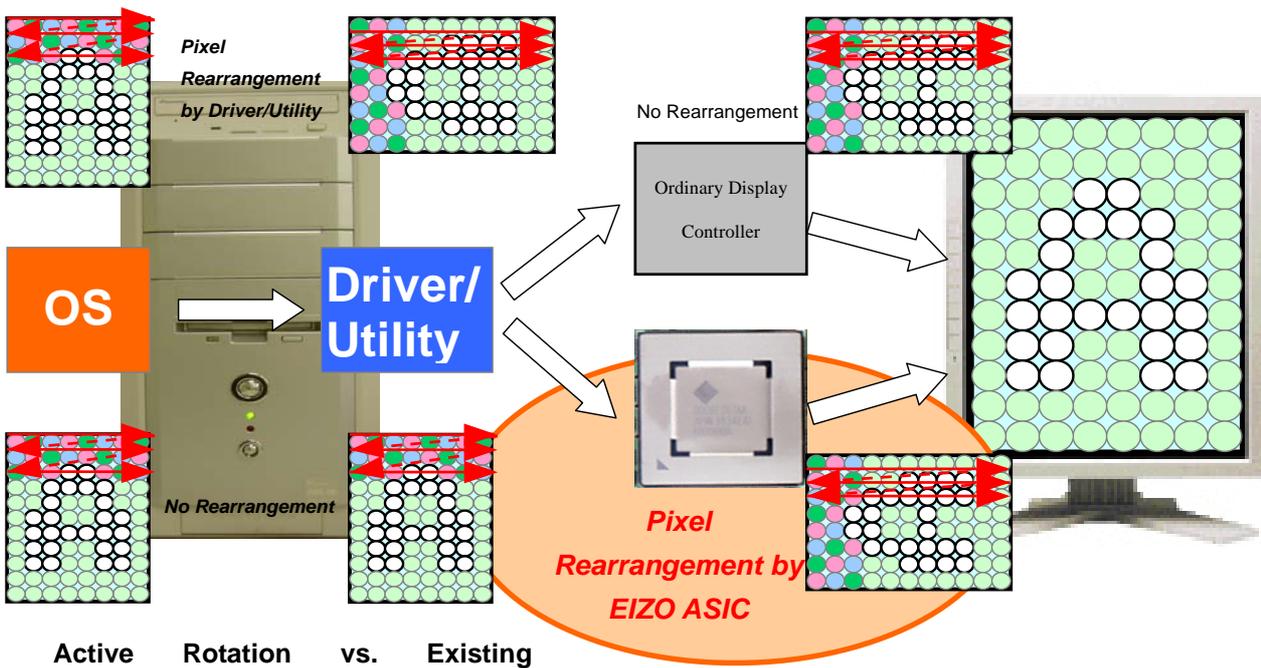
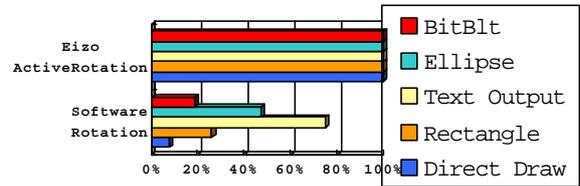
Within the constraint of display modules, and consequently that of monitors, solutions provided so far have been software ones on the PC side – namely graphics board drivers with a rotation feature from graphics board vendors or a rotation utility from independent software vendors (ISV). These solutions lead the OS to believe that a monitor with a portrait screen is connected and then manipulate the OS to output a portrait desktop image to the graphics board. Since the monitor screen is still in landscape format, the software rearranges each pixel of the portrait desktop image to fit into the screen with the corresponding landscape format (the number of horizontal pixels and vertical lines are reversed; 1280 × 1024 becomes 1024 × 1280) and outputs to the monitor in a landscape video timing.

Though portrait orientation is now readily available to us, the task of the software to rearrange all pixels of the entire desktop image into landscape format places a heavy burden that not only absorbs precious CPU power, but also degrades graphic performance. Also, some application software does not run properly because of incomplete support for graphics application interfaces like DirectDraw or OpenGL.

ActiveRotation Feature of EIZO Monitors Resolves Portrait Issues

In EIZO's solution, its own built-in display controller ASIC (application specific integrated circuit) shoulders the burden in place of software components on the PC side. EIZO's ASIC rearranges the incoming pixels of the portrait desktop image from the host system (natively in a portrait format and in a portrait video timing) into landscape format. This is the core of the feature we call "ActiveRotation." In order for the host components (OS and graphics board driver) to output a desktop image in portrait format to the monitor, ActiveRotation leads the host components to believe that a monitor with a portrait screen is connected. You do not have to worry about performance degradation or incompatibility/instability mentioned earlier because the host components do not have to rearrange the pixels.

Graphic performance comparison in 1024 x 1280 resolution using PC w/ Pentium 4 1.6GHz



Additional Flexibility – Dual Portrait and Macintosh Support

Although dual monitor usage has become popular these days, it is usually only seen in an environment where two monitors in landscape orientation are placed side by side. However, the combined width of the two monitors and close proximity to the screen makes it difficult to see the content of both screens without moving one's head. Herein lies an advantage of a dual portrait solution: less head movement and reduced eye fatigue. "Less space with the same pixel count" is an alternative expression of this idea.

Dual output graphics boards have recently become available for reasonable prices with the pervasion of digital display interfaces like DVI. This is yet another advantage: you do not have to buy an additional graphics board for your second monitor, as is the case with current ISV solutions. ActiveRotation also offers support for the Macintosh platform, something no current ISV can boast.

EIZO Monitors with ActiveRotation

ActiveRotation is available with the FlexScan L695, FlexScan L795, and RadiForce G21.

Please note that support for ActiveRotation varies with the operating system and graphics board used. For more details, please see:

<http://www.eizo.com/support/compatibility/lcd/02.asp>