Discover the Third Dimension

NextGen Stereo

- Full resolution 2D/3D stereo
- Ideal for high-end professional use
- High compatibility with existing content
- Freedom of movement

SeeReal Technologies

NextGen 3D Display Technology

A brief introduction

Stereoscopic viewing has fascinated people across the globe for a hundred years, with new 3D viewing gimmicks appearing at regular intervals. Remember colored 3D glasses? Or shutter glasses? No single technology has ever revolutionized the mass market.

The focus today is a new technology called "ASD" (Auto Stereoscopic Display) or 3D Displays. And it holds the most promise to date.

Why? There is more focus, awareness and investment in the development of 3D technology than ever. But more importantly, advanced technology now renders glasses or other accessories pointless.

NextGen technology from SeeReal is leading the way, revolutionizing 3D display technology for professional and specialized markets. 3D displays with all the comfort and functionality of a 2D screen are just around the corner.

Why is 3D stereo important?

Look around. How do you gauge depth? You tap into different "depth cues" which distinguish monocular and binocular depth.

Real depth perception resembling natural vision relies on binocular depth cues: each eye sees a different image of the same scene from a slightly different angle. This provides accurate information – essential for decision making in many industries and applications such as CAD, Medical, GIS, oil and gas. Binocular cues add a huge amount to the 3D experience and quality of information.

Common ASD technologies

Several companies have developed technologies, divided into three main categories: multiple viewing angles, parallax barrier and beamsplitter technology.

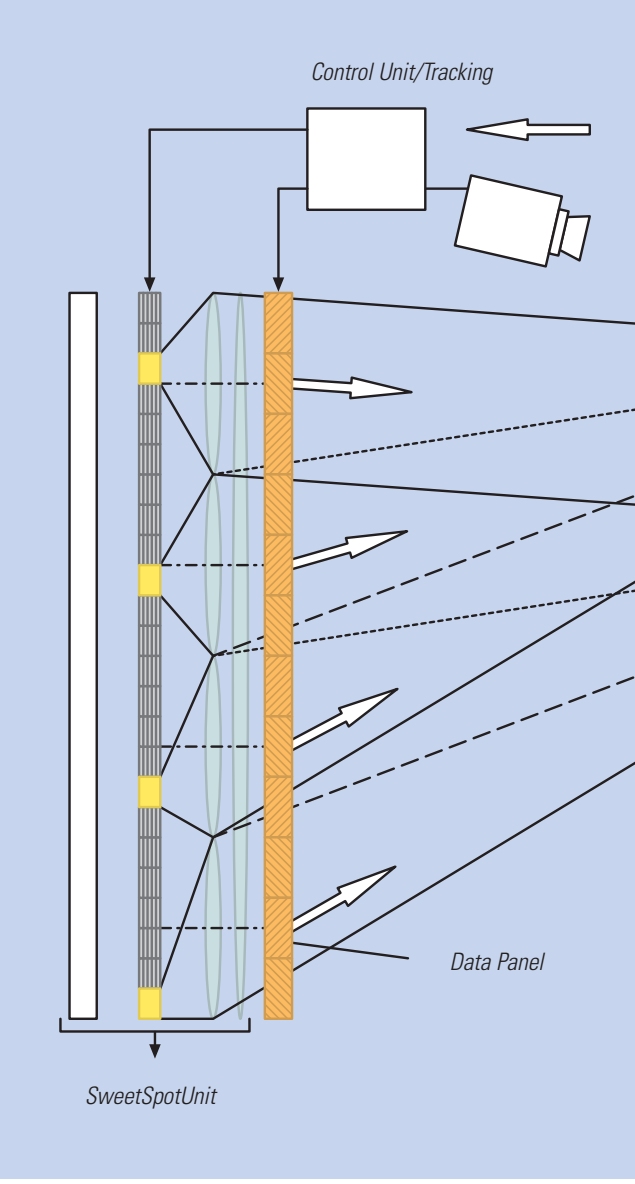
Each one is on the market either as a prototype or a commercial product. But each has its disadvantages. Users expect more – and NextGen delivers more.

NextGen – SeeReal 3D Technology

SeeReal's new display technology bursts through the barriers of conventional 3D display capabilities to satisfy user demand. The technology patent belongs to SeeReal and its release for the professional and specialized markets is close at hand.

NextGen provides a unifying technology for 2D and 3D stereo monitors which has a number of advantages:

- It can be built using existing components, others can be mass produced – giving it a unique competitive advantage
- The design is scalable making it easily applicable to most display sizes
- It side-steps the limitations of existing ASD technologies: NextGen addresses issues such as freedom of movement, and full-resolution 2D and 3D



NextGen – how it works

Making the most of existing technologies, such as beamsplitter technology to create viewing angles, NextGen left and right images are displayed sequentially. Using layers of optics between the LCD shutter and LCD data panel allows different viewing angles. The display redirects the appropriate frames to the right and left eye so that each eye only sees the relevant frame.

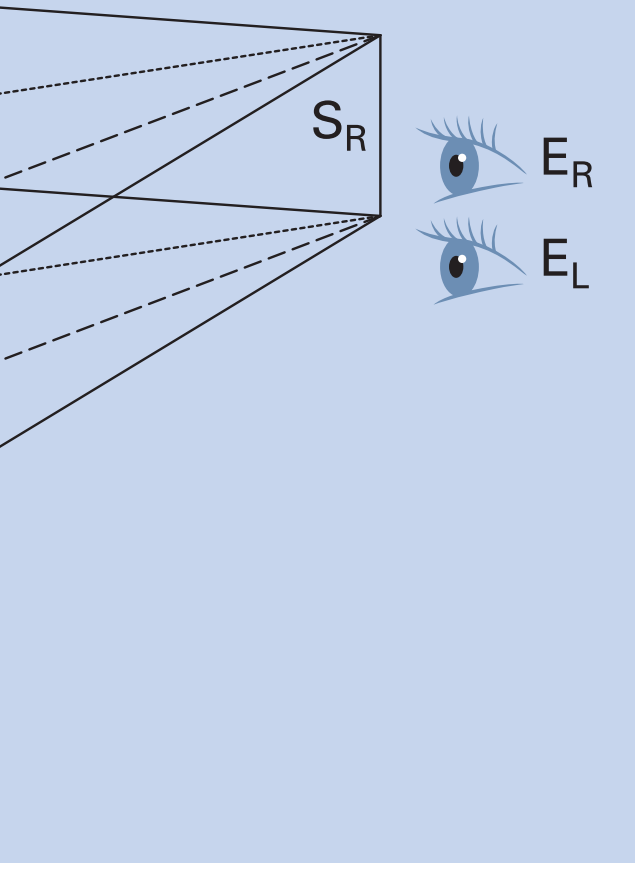
To enable this technology, NextGen only requires a small number of key components:

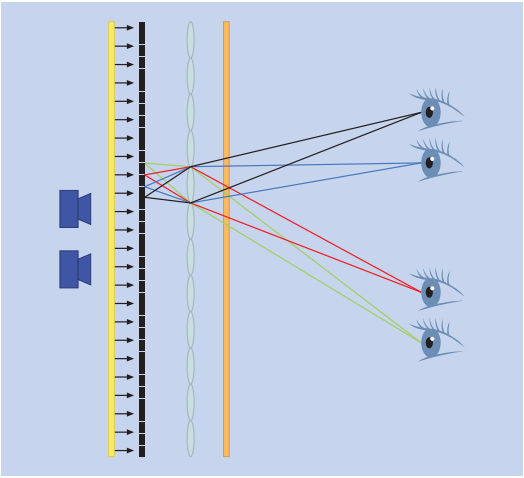
- A tracking unit to determine the position of the user
- A "Sweet Spot Unit" with backlight, illumination matrix and optics to direct the light
- An LCD panel to display the information

The light matrix does not let light from the backlight pass unless a pixel is turned off to make the matrix transparent. To project a single image to one eye, a tracking mechanism finds the viewer's eye and calculates which pixels in the light matrix to open. When a pixel is open and letting light through, the optical system redirects the light, projecting it through the TFT panel to the eye with the help of a field lens. A split second later, the open pixels close again and others open, sending a light beam to the other eye. At the same time, the TFT display switches image so that each eye only sees the image it is supposed to. Similar to shutter glasses, this occurs so quickly that the eye cannot detect the alternating pictures. The high-quality 3D stereo, however, never goes unnoticed.

Multi-user capability

As well as working for single users, this technology sequence offers a real breakthrough in multi-user potential. Multiple users can be tracked simultaneously and more pixels can be opened up at any given time allowing light beams to be directed simultaneously to more than one eye and more than one 3D user.





Position finder

Currently, SeeReal position finders already track pupils of multiple viewers with very small delay. By porting the system to dedicated, but simple hardware, it will be possible to track at full panel refresh rates, therefore eliminating any tracking delay.

Refresh rate

Current technology as implemented in multiple SeeReal prototypes already provides time-multiplexed full-resolution 3D which produces good stereo contrast, in any combination with 2D information – and all in full resolution. But they still show some flicker.

With state-of-the-art 120Hz panels, as used in time-sequential color displays or TV applications, flicker-free full-resolution 2D and 3D will materialise. As these technologies (or OLED) are becoming mainstream, it will be simple to incorporate NextGen.

Conclusion

SeeReal's cutting-edge technology creates displays that benefit users in a variety of ways. To name a few:

- 3D stereo without compromising resolution
- The highest compatibility with existing applications
- Compatibility with standard PCs, doing away with the need for high-end computers to run displays
- Simultaneous 2D and 3D with no text and icon distortion. Text remains clear and 3D maintains full depth – whether in a window or on a full screen
- Active tracking for comfortable freedom of movement
- Real-time video by filming with a stereo camera system, opening up potential for live 3D broadcasting
- Multi-user features
- Mass-produced components, assembled at reasonable cost compared to 2D displays
- Technology sophisticated enough to achieve commercial time-to-market within months

The technology today

- Optical design has been developed, proven and built
- Precision optics manufacturing is available and viable
- Multiple prototypes are available and working
- Intellectual property for licensing is secured

Steps to complete product

- Implement high-speed panels (>100Hz…120Hz)
- Complete multi-user concept
- Complete development of efficient light source

Up for a partnership?

SeeReal's focus is on licensing its NextGen 3D technology to component and display manufacturers as well as to display integrators. By joining forces with us, partners can take advantage of a unique opportunity to blaze trails in next generation display technology – from day one.

If you'd like to partner with us, feel free to find out more by contacting our company. Write to info@seereal.lu to arrange a meeting.

19" NextGen Technology Prototype

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Alternatively, visit our booth at one of the many conferences and exhibitions we will be taking part in to see a detailed demonstration.

SeeReal Technologies