Realfiction advances nematic SLM validation for DPT

Realfiction Holding AB (“Realfiction” or the “Company”) announces progress in the physical validation of its patent-pending nematic Spatial Light Modulator (“SLM”) architecture for Directional Pixel Technology™ (“DPT”). The Company has achieved the targeted liquid crystal response time, while relaxation time is approaching the required level but needs further optimization to complete the current physical validation phase. Realfiction is encouraged by the progress achieved and remains focused on completing this phase before the end of 2026, followed by integration and optical optimization in a compact 7-inch DPT Evaluation Platform, targeted for completion before the end of Q1 2027.

“Achieving the targeted response time represents an important technical step in the ongoing physical validation of the nematic SLM, ahead of its subsequent integration into the compact 7-inch DPT Evaluation Platform. We are also encouraged by the progress made towards achieving the required relaxation characteristics. Our development process is iterative, with each round of testing providing valuable insights into the refinements needed. While the number of iterations required cannot be predicted with certainty, we remain positive about the outcome and our ability to complete this milestone before the end of 2026,” says Steen Iversen, Head of R&D at Realfiction.

From Project ECHO to demonstrated DPT functionality
Realfiction's development of DPT began with Project ECHO and the vision of creating displays that allow multiple people to experience individual perspectives and three-dimensional images without glasses.

Over several years, the Company has progressed from theoretical studies and early prototypes to integrated demonstrators capable of delivering glasses-free multi-user 3D and individual viewing experiences.

At the core of DPT is a proprietary architecture combining a specially configured and driven image-generating display with an SLM. Through precise synchronization and time-multiplexing, the SLM directs different images and perspectives towards individual viewers, supported by third-party eye-tracking technology that follows viewers dynamically within the supported viewing area.

The technology supports conventional 2D viewing, individual 2D content for different viewers and glasses-free multi-user 3D, with the ability to switch between conventional and directional viewing modes. The image-generating display can utilize LED, OLED or LCD technologies depending on the application. Realfiction has demonstrated its proprietary display-driving architecture using LED-based implementations, initially at relatively low resolutions, while higher-resolution implementations are technically feasible.

FLC has demonstrated the concept; nematic offers an additional industrialization pathway
Realfiction has explored several SLM architectures in the development of DPT. The Company began working with ferroelectric liquid crystals (“FLC”) in 2022 and presented its first FLC-based proof of concept at Display Week in 2023. In parallel, Realfiction investigated alternative approaches, including an SLM architecture based on twisted nematic (“TN”) liquid crystals, which was demonstrated together with PlayNitride at Touch Taiwan in April 2025. However, the switching characteristics of this TN-based approach proved insufficient for the targeted multi-user 3D functionality.

Using FLC technology, Realfiction has since demonstrated the integrated DPT architecture, achieving the intended multi-user functionality and individual viewing experiences. FLC remains a viable technical approach, although commercial-scale manufacturing would require further industrial process development and investment.

Realfiction has therefore invented a patent-pending nematic SLM architecture designed to utilize established LCD manufacturing knowledge and processes. As previously announced, the architecture has demonstrated the required performance in theoretical studies and is currently undergoing physical validation. The objective of the nematic SLM architecture is to provide an additional and more accessible route towards industrialization without changing the fundamental DPT architecture.

Physical validation: Response time achieved, relaxation time approaching target
The current physical validation focuses on two key characteristics of the nematic SLM:

- **Response time:** How quickly the liquid crystals reach the required optical state when a control signal is applied. The target has been achieved.
- **Relaxation time:** How quickly the liquid crystals return to their original optical state in preparation for the next image sequence. Results are approaching the target.

The validation follows an iterative process in which SLM designs are adjusted, test components are fabricated, integrated and measured, and the results guide subsequent refinements. Each iteration provides further insight into the performance of the nematic liquid crystals. However, the number of iterations required to achieve the performance targets cannot be determined in advance.

Realfiction has achieved its targeted response time in physical testing, representing a positive step in validating the new architecture. Progress has also been made in optimizing relaxation time, with results approaching the required performance level, although further development and testing remain necessary. An ongoing iteration is expected to further improve relaxation time. Both targets must be met to demonstrate the required switching performance.

Based on the results achieved and the progress made towards the required relaxation characteristics, Realfiction remains positive about completing the current physical validation phase before the end of 2026.

Optical contrast and crosstalk: The next stage of optimization
In parallel, Realfiction is working to optimize optical contrast and minimize crosstalk during time-multiplexed operation. Crosstalk occurs when unwanted light from one image or perspective reaches viewers intended to see another. The SLM must maintain sufficient optical separation between individual images and perspectives across the required viewing angles, including more oblique viewing positions.

Contrast ratio, crosstalk and viewing-angle performance are therefore closely interconnected. Realfiction has accumulated extensive experience in these areas through previous DPT prototypes.

Further optimization of the nematic SLM's optical performance is planned as part of the integration, testing and calibration of the compact 7-inch DPT Evaluation Platform during Q1 2027. Together with the required switching performance, achieving the necessary optical performance is essential for demonstrating the intended functionality of the nematic-based DPT solution.

Next steps: Evaluation platform and industrial qualification
The image-generating display and third-party eye-tracking system have already been demonstrated as part of the DPT architecture. A key focus of Realfiction's current development activities is the physical validation of the nematic SLM and its subsequent integration into the compact 7-inch DPT Evaluation Platform.

To support this integration, the Company is developing a new LED display configuration, together with the electronics, mechanics and software for the platform. The new platform will incorporate a higher-resolution LED display with a pixel pitch of 0.63 mm, compared to 1.2 mm in the demonstrator presented to investors during the summer of 2026, representing a significant improvement in pixel density and addressing an area of interest expressed by potential industrial partners.

Subject to successful physical validation of the nematic SLM, integration, testing and calibration of the compact platform are targeted for completion before the end of Q1 2027.

Commercial strategy and outlook
Realfiction's commercial strategy for DPT remains focused on licensing, industrial partnerships or a potential sale of the technology rather than independently financing large-scale product manufacturing.

The Company believes that its demonstrated DPT architecture, combined with the potential of the patent-pending nematic SLM to leverage established manufacturing processes, provides a foundation for continued discussions with potential industrial partners.

Beyond the compact evaluation platform, further industrialization and scaling to larger display formats are expected to be pursued in cooperation with, and with funding from, industrial partners.

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About Realfiction Holding AB

Founded in Denmark in 2008, Realfiction is a provider of cutting-edge 3D display technologies designed for tomorrow's needs, featuring technological breakthroughs with its Directional Pixel Technology for LCD, OLED and microLED. These technologies support a wide range of use cases, including enhancing driving safety, medical imaging, immersive gaming and entertainment, digital signage, as well as applications in architecture, engineering, and design. The Company offers a comprehensive intellectual property portfolio tailored for OEMs and Tier-1 partners involved in developing and marketing displays for markets and industries requiring high-resolution multistereoscopic displays. All technologies are ready for licensing, and Realfiction is actively pursuing commercial licensing agreements and partnerships to pave the way to mass production. Realfiction's IP portfolio comprises 15 patent families and registered trademarks, including patent applications filed in multiple countries. Realfiction Holding AB's shares are publicly traded on Nasdaq Stockholm First North under the symbol "REALFI", with the share's ISIN code being SE0009920994.

Attachments

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