



## FOR IMMEDIATE RELEASE:

# MicroLED displays could disrupt LCD and OLED

Microled Displays report – Yole Développement – February 2017

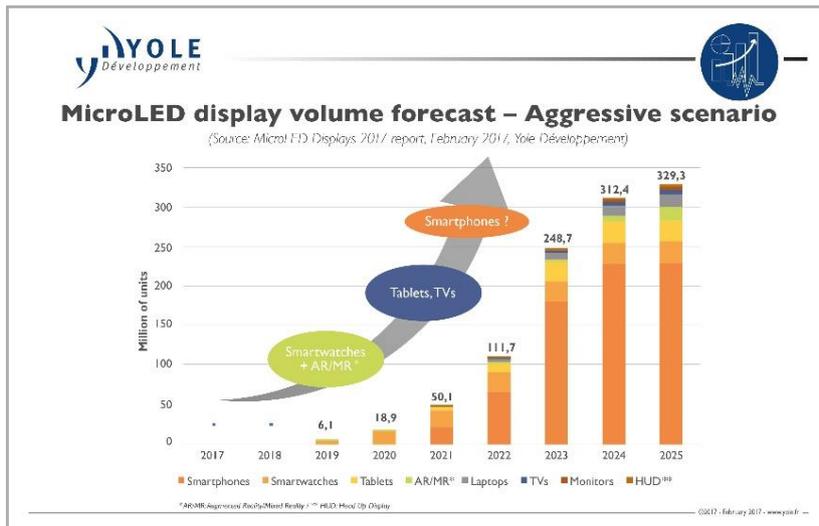
**LYON, France – February 16, 2017:** “MicroLED could emerge as a new display application with unique performance benefits”, comments **Dr Eric Virey, Senior Technology & Market Analyst at Yole Développement (Yole)**. “But there are still numerous challenges ahead”.

Interest in microLED displays has grown exponentially since the acquisition of Luxvue by Apple in 2014. Since then, numerous companies have initiated work on the development of innovative technologies: [KnowMade](#), Yole’s sister company identified more than 1,570 patents in the microLED field during the 2000 – 2016 period. Multiple companies have invested in microLED development but startups including X-Celeprint, Playnitride, Mikro-Mesa, VueReal and Lumiode... have been the most active.

The “More than Moore” market research and strategy consulting company Yole expands its solid-state lighting and displays activities including LED, OLED, UVLED... towards the microLED technologies with a new technology & market report titled [MicroLED Displays](#). Today Yole’s team proposes a deep understanding of the microLED technologies, current status, prospects roadblocks and key players. Initially focused on LED substrates, devices and advanced packaging,

the consulting company is following the market & technology evolution and enlarge its expertise.

Micro-light emitting diodes or MicroLED are an emissive display technology. Just like OLED<sup>1</sup>, they offer high contrast, high speed, and wide viewing angle. However, they could also deliver wider color gamut, dramatic – orders of magnitude – higher brightness,



<sup>1</sup> OLED: Organic Light Emitting Diodes



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significantly reduced power consumption and improved lifetime, ruggedness and environmental stability. In addition, microLEDs allow the integration of sensors and circuits, enabling thin displays with embedded sensing capabilities such as fingerprint identification and gesture control.

The first MicroLED commercial product was unveiled by Sony in 2016 in the form of a small-pitch LED video display where traditional packaged LEDs are replaced by microLEDs. The first consumer killer-app could come in the form of smartwatches, propelled by Apple, and its acquisition of Luxvue. MicroLEDs could also eventually dominate augmented and mixed reality displays thanks to their unique ability to deliver both the brightness and low power consumption required for the application.

*“We expect smartwatches and AR/MR<sup>2</sup> microdisplays to be the first applications for microLED displays”, comments Dr Virey from Yole. “However due to the variety of technical challenges still to be solved, we remain cautiously optimistic and do not expect to see any product on the market before at least 2019 and most probably 2020.”*



Moreover initial success in smartwatches could accelerate technology and supply chain maturation, making microLED competitive against OLED in high end TVs, tablets and laptops. Although less disruptive for those applications, microLED would still bring the best of OLED and LCD<sup>3</sup> together. Smartphones will be a tough nut to crack and require further technology improvement in the manufacturing and handling of

very small microLEDs (< 5 μm). In the most optimistic scenario developed by Yole’s analysts, the market for microLED displays could reach up to 330 million units by 2025.

A detailed description of this new technology and market report is available on [i-micronews.com](http://i-micronews.com), [LED section](#).

<sup>2</sup> AR/VR : Augmented Reality/Virtual Reality

<sup>3</sup> LCD : Liquid Crystal Displays



### About **MicroLED Displays** report

*Hype and reality: hopes for smartwatches and beyond must overcome technical and manufacturing challenges.*

▪ Author:

**Dr Eric Virey** serves as a Senior Market and Technology Analyst at Yole Développement (Yole), the “More than Moore” market research and strategy consulting company. Eric is a daily contributor to the development

of LED, OLED, and Display activities at Yole, with a large collection of market and technology reports as well as multiple custom consulting projects: business strategy, identification of investments or acquisition targets, due diligence (buy/sell side), market and technology analysis, cost modelling, technology scouting, etc. Thanks to its deep knowledge of the LED/OLED and displays related industries, Eric has spoken in more than 30 industry conferences worldwide over the last 5 years. He has been interviewed and quoted by leading media over the world. Previously Eric has held various R&D, engineering, manufacturing and business development positions with Fortune 500 Company Saint-Gobain in France and the United States.

Dr Eric Virey holds a PhD in Optoelectronics from the National Polytechnic Institute of Grenoble.

▪ Companies cited in the report:

Aledia (FR), Allos Semiconductor (DE), Apple (US), AUO (TW), BOE (CN), CEA-LETI (FR), CIOMP (CN), Columbia University (US), Cooledge (CA), Cree (US), CSOT (CN), eMagin (US), Epistar (TW), Epson (JP), Facebook (US), Foxconn (TW), Fraunhofer Institute (DE), Glo (SE), GlobalFoundries (US), Goertek (CN), Hiphoton (TW), HKUST (HK), HTC (TW), Ignis (CA), InfiniLED (UK), Intel (US), ITRI (TW), Kansas State University (US), Kopin (US), Lumiodo (US), Luxvue (US), Metavision (US), Microsoft (US), Mikro-Mesa (TW), mLED (UK), Nichia (JP), Nth Degree (US), Oculus (US), Osterhout Design Group (US), Osram (DE), Ostendo (US), Playnitride (TW), PSI Co (KR), Rohinni (US), Saitama University (JP), Samsung (KR), Sanan (CN), Semprius (US), Sharp (JP), Sony (JP), Strathclyde University (UK), Sun Yat-Sen University (TW), Texas Tech (US), TSMC (TW), Tyndall National Institute (IE), University of Illinois (US), VerLASE (US), VueReal (CA), Vuzix (US), X-Celeprint (IE) and many more...

### About Yole Développement – [www.yole.fr](http://www.yole.fr)

Founded in 1998, Yole Développement has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole Développement group has expanded to include more than 50 collaborators worldwide covering MEMS, Compound Semiconductors, LED, Displays, Image Sensors, Optoelectronics, Microfluidics & Medical, Advanced Packaging, Manufacturing, Nanomaterials, Power Electronics and Batteries & Energy Management.

The “More than Moore” company Yole, along with its partners System Plus Consulting, Blumorpho and KnowMade, support industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to grow their business.

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