

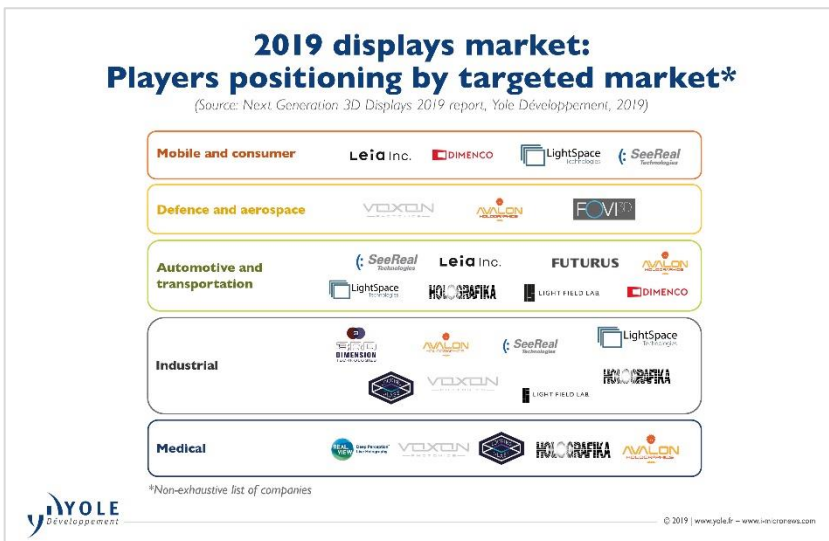


**FOR IMMEDIATE RELEASE:**  
**3D display technologies:**  
**A new chance to reach the market?**

Extracted from : Next Generation 3D Displays report, Yole Développement, 2019

**LYON, France – October 30, 2019:** “3D has always been the holy grail of display”, asserts **Zine Bouhamri, PhD. Technology & Market Analyst at Yole Développement (Yole)**. “Indeed it represents the world as human eyes see it. Today goal of display technologies is clearly to match closely the performance and capability of the human visual system.”

As of today many challenges such as the image or display resolution, the number of viewers, the field of view... remain to be solved. When most of these challenges will be overcome, then several waves of adoption could set up, announces Yole in its latest display report, [Next Generation 3D Displays](#). The market research and strategy consulting company investigates the 3D display world and proposes a comprehensive overview and a deep understanding of the today’s technologies and their challenges, Yole’s analysts reveal in this report, the technology status and the related issues. They identify the numerous applications and analyze the ability of the technology to penetrate each market segment.



When will the adoption start? What will the main applications be? Who is doing what today/tomorrow? What is the technical positioning of each key player and the strategy behind? How will evolving the competitive landscape? From imaging to display, Yole invites you to dive into 3D displays.

“The 3D display industry does not have many players but it is becoming better structured with

companies emerging from stealth mode,” explains Zine Bouhamri from Yole. “We are at a time when VR<sup>1</sup> is well-recognized by the consumer market. AR<sup>2</sup> has seen some hiccups and is now mainly targeting industrial

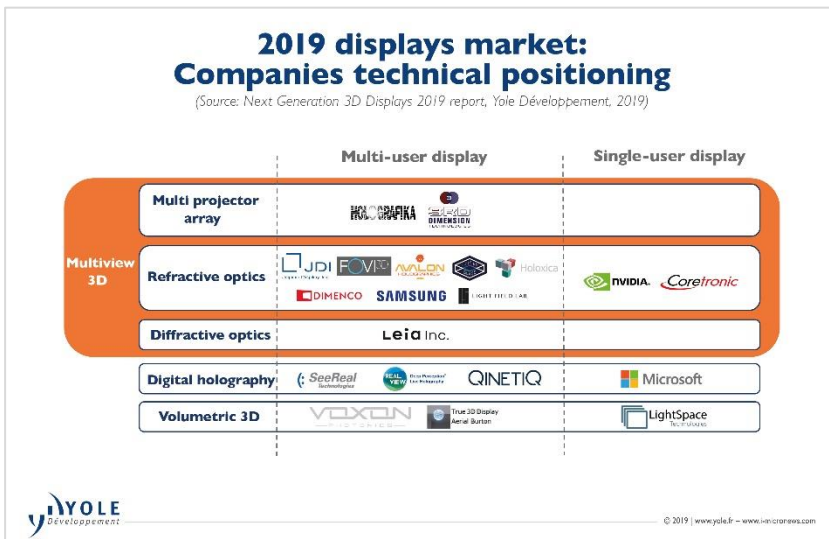
<sup>1</sup> VR : Virtual Reality  
<sup>2</sup> AR : Augmented reality

markets. Hence, the next hyped display technology, 3D, has arrived with many promises. But the challenge is addressing all physical and psychological cues corresponding to the human vision system and how it sees objects.”

For several decades now, the military has financed many projects on 3D displays. It is of utmost interest to be able to see every angle, as if being there, battlefield digitizations on table top displays. But it can do other things, like visualizing 3D satellite data. Medicine also benefits greatly from visualizing 3D data. For example, imaging the human body with MRI<sup>3</sup> or CT<sup>4</sup> gives 2D slices. It is possible to rebuild that into a 3D model and display it in 3D to make better use of data.

The recent trend of having 3D data at one’s disposal, or almost, thanks to 3D sensing in particular, gives the 3D display industry new ideas. If one has a set of 3D data, one might as well display it. That is why Yole’s analysts have seen great traction coming from the automotive industry over the past few months for in-cockpit 3D displays, either heads-up or regular. In recent examples, Continental partnered with and invested in Leia, Volkswagen did the same with SeeReal, while Bosch and Hella invested in Light Field Labs. This follows the trends for advanced driver assistance systems for autonomous vehicles, and trying to find new ways to alert drivers.

Yole has seen some plans and even trials in consumer markets by a few companies, the most famous being Leia with the Red Hydrogen One smartphone during summer 2018. But the traction is not great, mostly because of associated technical challenges and consumers looking for perfect display solutions.



“There are many technical challenges to overcome to deliver on what is expected,” comments **Pierrick Boulay, Technology & Market Analyst at Yole.**

“One that is hard to pass by is the required computing power. The recent uptake in 3D display comes from a Moore’s law-type of improvement of the global supply chain. Pixel size has diminished, display resolution has increased, and

manufacturability of optics and micro-optics has been increased tremendously. But first and foremost, the increase in available computing

<sup>3</sup> MRI : Magnetic Resonance Imaging

<sup>4</sup> CT : Computed Tomography

*power has allowed for better and better prototypes, and even the first products.”*

Computing is one of the major challenges across the entire 3D display landscape.

But efforts have been focused on identifying and discussing the display and optical elements existing or in development. Important topics include spatial light modulators, lasers, diffractive optical elements and associated wafer level optics, and the trend toward 8K panels.

Now, depending on the kind of displays developed and the technical challenges addressed, players are tending to closely focus on one specific segment.

Yole’s display team explores the display ecosystem and proposes all year long dedicated technology & market analyses. MicroLED, miniLED, TV panels... all these topics are part of the 2019 collection of display reports. To get an overview of Yole’s expertise and knowledge, visit [i-Micronews.com](http://i-Micronews.com).

In addition, during the next months, Yole’s analysts will offer deep insights in the display industry through relevant presentations. Save the date right now!

- [IDW 2019](#) (November 27-29 – Sapporo, Japan):  
Presentation on Nov. 29 at 3:20 PM: “Impressive Technologies for MicroLED Displays”  
*Speaker: Zine Bouhamri, Technology & Market Analyst, Displays, Yole Développement*
- [FINETECH JAPAN](#) (December 4-6 - Makuhari Messe, Chiba, Japan):  
Yole’s presentation will take place on Dec. 4 at 3:00 PM: “Micro LED Displays: Status and Reality Check”  
*Speaker: Zine Bouhamri, Technology & Market Analyst, Displays, Yole Développement*
- [Emerging Technologies 2020](#) (January 14 & 15 – Shanghai, China)  
“Next generations TV technologies: how could microLED, QD and improved LCD challenge OLED”  
*Speaker: Eric Virey, Principal Analyst, Technology & Market, Sapphire & Display, Yole Développement*

Stay tuned!

## ABOUT THE REPORTS



### [Next Generation 3D Displays](#)

*Are 3D displays getting a new chance to reach the market? – Powered by Yole Développement*

#### Companies cited in this report:

Avalon Holographic, Avegant, Bosch, Burton, Continental, Coretronic Corporation, Creal 3D, Dimenco, Facebook, Fovi 3D, Futurus, Google, Hella, Holografika, Holoxica, Japan Display, JLR, Leia, Light Field Lab, LightSpace Technologies, Looking Glass Factory, Microsoft, Nvidia, Ostendo, RealView Imaging, Samsung, SeeReal Technologies, Third dimension technologies, VividQ, Volkswagen, Voxon Photonics... and more.

As well as:

- [MicroLED Displays 2019](#)
- [Next Generation TV Panels: New Technologies, Features and Market Impact 2019](#)
- [Displays & Optical Vision Systems for VR, AR & MR 2018](#)

#### About the authors:

- As a Technology & Market Analyst, Displays, **Zine Bouhamri**, PhD is a member of the Photonics, Sensing & Display division at Yole Développement (Yole).  
Zine manages the day to day production of technology & market reports, as well as custom consulting projects. He is also deeply involved in the business development of the Displays unit activities at Yole. Previously, Zine was in charge of numerous R&D programs at Aledia. During more than three years, he developed strong technical expertise as well as a detailed understanding of the display industry.  
Zine is author and co-author of several papers and patents.  
Zine Bouhamri holds an Electronics Engineering Degree from the National Polytechnic Institute of Grenoble (France), one from the Politecnico di Torino (Italy), and a Ph.D. in RF & Optoelectronics from Grenoble University (France).
- As part of the Photonics, Sensing & Display division at Yole Développement (Yole), **Pierrick Boulay** works as Market and Technology Analyst in the fields of Solid State Lighting and Lighting Systems to carry out technical, economic and marketing analysis. Pierrick has authored several reports and custom analysis dedicated to topics such as general lighting, automotive lighting, LiDAR, IR LEDs, UV LEDs and VCSELs.  
Prior to Yole, Pierrick has worked in several companies where he developed his knowledge on general lighting and on automotive lighting. In the past, he has mostly worked in R&D department for LED lighting applications. Pierrick holds a master degree in Electronics (ESEO – Angers, France).



#### ABOUT YOLE DEVELOPPEMENT

Founded in 1998, Yole Développement has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services, reverse engineering and reverse costing services and well as IP and patent analysis. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole group of companies has expanded to include more than 80 collaborators worldwide covering MEMS and image sensors, Compound Semiconductors, RF Electronics, Solid-state lighting, Displays, software, Optoelectronics, Microfluidics & Medical, Advanced Packaging, Manufacturing, Nanomaterials, Power Electronics, Batteries & Energy Management and Memory.

The “More than Moore” market research, technology and strategy consulting company Yole Développement, along with its partners System Plus Consulting, PISEO and KnowMade, support industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to grow their business. . For more information, visit [www.yole.fr](http://www.yole.fr) and follow Yole on [LinkedIn](#) and [Twitter](#).

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