

# The Rise of Automobile Screens: The New Horsepower

IRYStec CEO Simon Morris shares his thoughts on the role of innovation in creating a competitive advantage for OEMs

By Simon Morris



The automotive industry has witnessed a dramatic shift driven by the convergence of CASE (Connected, Autonomous, Shared, Electric) and the changing consumer behavior opening the door to new opportunities for OEMs and Tier-1s.

We have started to see new car models such as Mercedes-Benz E Class with end-to-end digital dashboards, where all information presented to the driver will be delivered through digital screens. We will also see an adoption of multiscreen interfaces, both for drivers and passengers. This “screen real state” not only represents a huge disruption in cockpit design and a huge new branding opportunity but could also lead to new services and revenue streams for automotive OEMs. New screen technologies and innovative display system design also represents opportunities for automotive Tier-1s like Denso, Harman, Visteon, Continental, LGE Vehicle Solutions, etc. to grow their market share and build new and larger revenues from supplying these new cockpit display systems to automotive OEMs. The deployment of 5G networks will bring a large bandwidth of data and it will enable vehicles to connect to each other and to the cloud; as a consequence the cloud services that today we receive on our mobile devices will start appearing on the screen vehicles for passengers. This means that major content providers like Netflix, Apple, YouTube,

Amazon, Baidu will be streaming video content including advertisements to the screens in vehicles, the so-called 4th screen. The 4th screen therefore will lead to new advertising and content revenue. However, what can the automotive OEMs or even their Tier-1 suppliers do to better tap into these new revenue streams?

## The Smart Content Engine: A New Stream of Revenue for OEMs

The quality of the screens and the resulting viewing experience will be critical to selling the vehicle. The display viewing environment in vehicles is however not static like it mostly is when viewing a computer screen in an office or a home entertainment screen at home. The automotive screen viewing experience will be greatly affected by bright sunlight which can make it challenging and potentially unsafe to see content on the screens; for night time driving, the brightness of the screen can reduce the driver’s night vision, and for passengers long term viewing can cause eye fatigue and strain. As a result of these challenges, automotive OEMs and Tier-1s are investing in new display or screen technologies to improve the visibility, including adapting the content to deal with perceptual based issues such as how viewers eyes see colour and contrast in dark and bright ambient light driving conditions.

As a result of the growing importance of in-car screens in the perceived value of the vehicle, automotive OEMs are looking at ways to differentiate in terms of screen cockpit design and they also see these screens as critical to establishing their brand. Automotive OEMs are also starting to invest in their own cloud services and partnering with content providers like Google in order to create new revenue from the services or to somehow tap into the revenue generated from content being streamed to the these 4th screens.

As mentioned, automotive OEMs are investing in new screen technologies including introducing OLED screens with larger colour gamuts or LCD screens with local dimming and greater contrast ratios but are also looking for other less costly means to improve the display viewing experience in these new cockpits. For example, the major European automotive OEMs are looking to add smart content adaptation engines like *IRYStec Perceptual Display Technology, PDP Vision*, as a software image processing technology to enhance the automotive display viewing experience. PDP Vision enables automotive OEMs to provide a consistent viewing experience from dark to bright driving conditions, and an experience that can be personalized to the driver or passenger's preference which is largely a result of the age of the viewer's eyes. This same smart content engine could also be used by automotive OEMs to offer differentiated viewing modes, including a "premium" passenger viewing mode offered to specific content providers where viewing quality is personalized and optimized for the unique and challenging viewing conditions of vehicles.

### **Other Factors Driving Adoption of a Smart Content Engine**

Automotive OEMs know that the cockpit design and resulting screen user experience are determining factors in the purchasing decision of new vehicles. In addition to the importance of providing a consistent, safe and quality screen viewing experience in dark and bright driving conditions, automotive OEMs are also very aware of other screen design factors that will affect buyer's impression of the vehicle quality. With multiple in-car screens being installed, colour and image quality uniformity also influences the car buyers view of the quality of the vehicle. Inconsistent image quality and colour uniformity detracts from the perceived quality just as non-uniform seat upholstery is perceived as indicator of poor quality and an

inattention to detail. A smart content engine is seen as one of the technologies that can be used to better guarantee colour uniformity among different screens in the vehicle as well as a means to bring white point back into tolerance as the screens age or heat up. The only other alternative to better ensuring colour uniformity is to ensure all screens in the vehicle are sourced from the same supplier and from the same panel production line which can be costly and make the automotive OEM overly dependent on one supplier. Automotive OEMs and Tier-1s are recognizing the multiple benefits of adopting a smart content engine like *PDP Vision* to not only ensure a much better viewing experience across all driving conditions, but also to better ensure consistent screen quality in multi-screen vehicles and to ensure screen quality is better maintained as screens age.

### **Why NOW is The Time to Act?**

IRYStec PDP Vision is a customizable and scalable Software Development Kit (SDK) that integrates rapidly and easily into automotive display systems and specifically to the applications processor often referred as "the silver box". PDP Vision is the host platform for the various perceptual based algorithm products that addresses different perceptual viewing challenges such as how humans see in the dark or see in bright light. The most popular of these PDP Vision based products is *DRIVEvue-Bright* which modifies the content before it's displayed on screen to match how we see in the bright sun and thereby ensures that the content is seen as originally intended. Some automotive OEMs and Tier-1s are also investing now in personalizing the viewing experience by licensing IRYStec's PDP Vision with *MYvue-Age*. The assumption of the display industry is that everyone sees the same. This is clearly not the case. *MYvue-Age* is the first display enhancing product that adjusts in real time the color and contrast of the content (graphics, video) to match the viewer's preference which is largely based on the effective age of the viewer's eyes. This technology is particular valued by older drivers and passengers who see less contrast than a younger person due to hardening of the lens and see white differently from younger views because an older person's cornea yellows as they age. With an investment now in PDP Vision IRYStec's customers can add *DRIVEvue-Bright* and *DRIVEvue-Dark* now to all vehicle models for production in 2020 or 2021 and add *MYvue-Age* to perhaps premium vehicle models while in the near future add newer IRYStec products like *Video Tone Mapping (HDRvue)* to better adapt

high dynamic range video from vehicle cameras to the standard dynamic range screens.

### **How to Start?**

For both automotive OEMs and the Tier-1s, IRYStec has two very low cost and rapid ways to apply this new innovative display viewing enhancement technology: A free tablet-based evaluation of PDP Vision followed by a developer license for integration of PDP Vision SDK for customization and vehicle testing purposes. Please contact us or one of our regional support partners to get started. Visit [www.irystec.com/contact-us](http://www.irystec.com/contact-us)

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