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Socionext's Latest Generation of Smart Display Controllers Uses APIX3 Technology from Inova Semiconductors

Continuing a Successful Long-Term Relationship in Automotive Platforms

Yokohama and Munich, March 16, 2021 – Socionext Inc. has licensed APIX3 technology from Inova Semiconductors for its next generation of smart display controllers. This opens another chapter in a long-standing success story which began in 2007. Socionext was the first manufacturer to license the APIX interface for its smart display controller and a number of other products and subsequently was also the first licensee of APIX2 and APIX3.

Socionext has continuously expanded its portfolio of display controllers and SoCs with APIX interfaces over the years, thereby covering the need for ever more networked and more sophisticated display architectures in vehicles. With this in mind, the fourth generation of smart display controllers has already been developed with the designation SC172x. The first samples will be available by 2Q 2022. For the first time, the extended features of the fourth generation also include a repeater function where several graphic controllers can be cascaded. This enables new architectures such as panoramic displays in the dashboard where there is a clear trend towards ever larger or multi-display applications. Moreover, new functionalities such as Local Dimming and Warping-on-the-fly will be implemented in order to support more demanding requirements and to achieve system integration.

The new smart display controllers will be used in vehicles from 2025/2026 and will continue the success story of the partnership of more than two decades between Socionext and Inova Semiconductors.

APIX licensed products from other manufacturers and Inova Semiconductors' own products, means there are around 150 million chips with APIX interfaces currently in use in the vehicles of numerous manufacturers worldwide. Well over 50 million of them are from Socionext alone, which has played a very important part in the great success of APIX.

"Socionext has successfully integrated APIX technology into its smart display controllers and other products over several generations, so that it is now fair to speak of a de facto standard," said Koichi Yamashita, Corporate Senior Vice President, Head of Automotive Business Unit of Socionext. "Thanks to the high flexibility and the scalable bandwidths, a wide variety of applications can be served in the car - from inexpensive, simple information displays through to sophisticated infotainment systems to safety-relevant instrument clusters."

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"With over 150 million parts sold, we have established APIX technology in the market with licensed partners like Socionext," emphasizes Robert Kraus, CEO of Inova Semiconductors. "In addition to the performance and scalability of APIX technology, the decisive factor for success is the availability of a complete ecosystem: semiconductor modules from several manufacturers, together with all other important components such as cables, connectors, evaluation boards and test solutions. And, the promise of our APIX partners that all components of the APIX ecosystem will function with one another without restriction. Together with very good application support (without it, the complex designs in the Gbps area are impossible) we ensure that systems in vehicles work reliably. This is what ultimately counts for the acceptance and sustainable success of a sophisticated technology; no standard can achieve that."

About APIX3
APIX (Automotive Pixel Link) is a high performance 12 Gbps SerDes (Serializer / Deserializer) technology developed by Inova for high resolution automotive video applications. APIX is available from Inova as proprietary chips and also as IP for licensing. Typical applications for APIX3 are infotainment and entertainment systems in vehicles. APIX3 offers different operating modes of 1.5 Gbit/s, 3 Gbit/s, 6 Gbit/s and up to 12 Gbit/s bandwidth. The APIX3 family is designed for standard displays (e.g. 2880 x 1080 x 24 bit, 60 Hz) in automobiles, however, video resolutions up to Ultra High Definition (UHD) and colour depths up to 30 bit are also possible. In addition to versions with HDMI and DSI interfaces, the latest generation features, among other things, a DisplayPort interface and HDCP2.3 encryption, which now also enables the transmission of DSC-compressed video streams with a future-proofed video bandwidth of up to 28.8 Gbps.

In addition to the established HSD connectors and Q(uad) STP cables of APIX and APIX2, APIX3 also supports single-pair STP and coaxial cables. The wide bandwidth of the APIX sideband channels makes it possible to realize extensive functions such as touch control, gesture recognition and camera applications in addition to image transmission. The components enable the simultaneous transmission of up to eight audio channels. A special feature of the APIX technology is the media-independent interface (MII, RMII, RGMII) for 100-Mbit Ethernet according to the IEEE standard. An SPI interface for convenient configuration of the components and data transmission is also available.

APIX3 also enables automatic calibration (link training) of the entire transmission path to the cable. This achieves a very stable and reliable transmission, but it can also clearly identify defective cables, errors in the image sequences and other disturbances. In addition, impairments caused by temperature fluctuations or ageing cables can be detected and partially compensated for at an early stage. With its many diagnostic functions, APIX3 also supports safety-relevant applications and meets all the requirements of the automotive industry with regard to electromagnetic properties.

Photo 1: Socionext and Inova Semiconductors continue their successful partnership by licensing the next generation APIX3 with daisy chain for the next generation of Display controllers
([View Larger Image](#))

About Inova Semiconductors

Inova Semiconductors is a fabless semiconductor company that has developed APIX, the Automotive Pixel Link: a serial high-speed Gigabit multichannel link for interconnecting displays, cameras and control units over a single cable. Inova specializes in developing state-of-the-art APIX products for serial data communications, with a clear focus on the automotive segment but also for transportation, medical and industrial applications. Based in Munich, Germany, Inova was founded in 1999. Today, APIX is used by ten of the leading automotive manufacturers and more than 30 OEMs and tier 1 suppliers. For more information, please visit http://www.inova-semiconductors.com.

About Socionext

Socionext is a global, innovative enterprise that designs, develops and delivers System-on-Chip solutions to customers worldwide. The company is focused on technologies that drive today's leading-edge applications in consumer, automotive and industrial markets. Socionext combines world-class expertise, experience, and an extensive IP portfolio to provide exceptional solutions and ensure a better quality of experience for customers. Founded in 2015, Socionext Inc. is headquartered in Yokohama, and has offices in Japan, Asia, United States and Europe to lead its product development and sales activities. For more information, visit https://www.socionext.com.

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