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Application Catalog

Imaging / Networking / Computing



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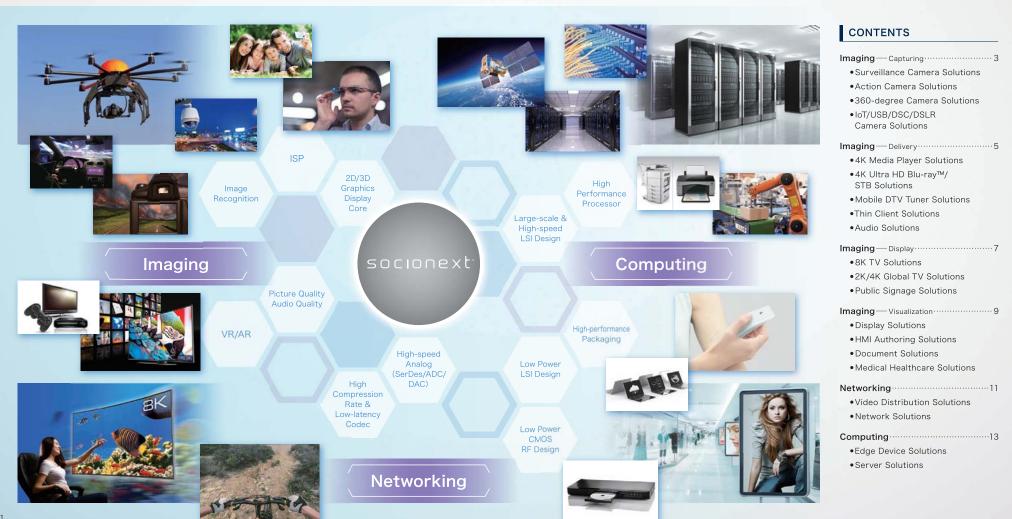
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Socionext offers comprehensive solutions that solve customer issues surrounding new technologies, including IoT, cloud computing, big data, rich content, and sustainability.

With the demands of the market changing every day, we keep customers up-to-date with the times, by fully utilizing our cutting-edge, global technology resources developed through years of experience in the fields of imaging, networking, and computing.



Imaging—Capturing

Our solutions will help you capture every important moment, and enables stable video shooting with reduced camera shake, even in active scenes like bike-riding or motorcycling.



Rapidly responding to the latest market trend, such as web cameras, action cameras enabling various kinds of shooting like shooting video with fast-moving objects in active scenes, 360-degree shooting, etc., we have developed products performing under any conditions with the best image quality and low power consumption. With our "Milbeaut®" ASSP technology we continue to meet the diverse needs of our customers, from surveillance cameras to DSLRs.

Surveillance Camera Solutions

As for surveillance camera solutions, our intelligent ASSP with low power consumption strongly supports image sensing such as detection, identification and prediction. Moreover, equipped with the superior backlight compensation function and the low luminance shooting function, our solutions meet the ever increasing security needs in the world as well as the rising surveillance camera market.



Action Camera Solutions

Possessing features of high performance electronic image stabilization (EIS) and rolling shutter compensation, which are best suited for shooting with drones or action camers, our action camera solutions enable stable shooting of action scenes. Moreover, with the slow motion function suitable for shooting swing practice for golf and other sports, the HDR function controlling luminance at an appropriate level even in dark scenes, our latest solutions are suitable for shooting in various scenes.





360-degree Camera Solutions

In our 360-degree camera solutions, in addition to our excellent video shooting function evolved from our brilliant track record in action cameras, our latest solutions enable creating a beautiful 360-degree video by stitching up to 4 camera images together in real time.



IoT/USB/DSC/DSLR Camera Solutions

Demand for high image quality has been on the rise, not only in the market of consumer cameras, but also in markets of USB cameras (web camera systems), which have seen rapid expansion in market share, cameras for industrial use and wearable cameras. Our solutions will surely meet such demand (for low power consumption and high image quality) in the latest market.

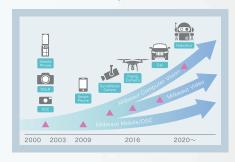


Product Line-up

Milbeaut[®]

	Surveillance Camera	SC2000	4K, H.264/H.265 (HEVC), Dual-camera support, 360-degree distortion correction
		SC2002	3M/30p, H.264/H.265(HEVC)
	Digital Camera	SC2000	4K, H.264/H.265 (HEVC), Dual-camera support, 360-degree distortion correction
		MB86S22	1080/60i, H.264
		MB91696B	1080/30p, H.264
	IoT Camera	MBG967	16M/30, Dual-camera support, PDAF
	USB Camera	MBG967	16M/30, Dual-camera support, PDAF
	360-degree Camera	SC2000	4K, H.264/H.265(HEVC), Dual-camera support, 360-degree distortion correction
		MBG967	16M/30, Dual-camera support, PDAF
	Action Camera/ Drone	SC2000	4K, H.264/H.265 (HEVC), Dual-camera support, 360-degree distortion correction

Product Roadmap



Main IPs

- HybridAF
- •Dual Camera IP
- ◆Color Correction
- Brightness Correction
- Electronic Image Stabilization (EIS)
- ●Video HDR
- Face Detection/ Face Recognition
- Auto Haze Density Detection
- Haze Removal
- ●Noise Reduction/
- Sensitivity Optimization
- •3DNR

Contact

- •Surveillance Camera Solutions
- Action Camera Solutions
- •360-degree Camera Solutions
- ●IoT/USB/DSC/DSLR Camera Solutions Business Project Management Dept. Imaging Solution BU,

Tel. +81-45-568-1065 (Shin -Yokohama)

Imaging-Delivery

We provide world-class advanced solutions that help you build a user-friendly and secure network in the era of cloud computing.



With the arrival of cloud computing, digital devices and network services have become more and more essential in our lives. Both high-speed access and safety are essential in building a user-friendly network to connect such devices or services to the cloud. We have achieved this by combining our world-class advanced technologies that we have developed through years of experience. We will help you create innovative user experiences with a secure link to the cloud.

4K Media Player Solutions

Due to wider variety of viewing environment and high-resolution video format like 4K, today's media boxes play the role of a hub, integrating playback, recording, and distribution functions. We were among the first to meet these needs, providing new user experiences through our SoC for compact, low-power media boxes that integrate encoders, as well as transcoders.



4K Ultra HD Blu-ray™/STB Solutions

The evolution of playback devices and content resulted in the need to support new methods for playback, recording, and distribution, such as time-shifted viewing of full-channel recording and redistribution of content via networks. The solutions we provide utilize 4K Ultra HD Blu-ray™ recorders, STB equipment, and other products that are fun and convenient to use. We integrate various codecs, including H.265 (HEVC), the storage, and network functionality into a compact space.



Mobile DTV Tuner Solutions

This solution can cope with mobile and multi-path environments through low-noise design and mobile optimization, and boasts the industry's top class performance and adoption rate. In addition, our latest technologies achieve both the lowest power consumption*1 and the smallest footprint*1 yet due to a reduced number of external components. This solution can enhance the appeal of smartphone, tablet, and accessory products in Japan, South America, the Philippines, and Europe.

*1 Half that of our previous models

Thin Client Solutions

We provide a comprehensive solution for the increasingly ubiquitous thin client, optimizing server-client communications. This solution allows client terminals to use cloud applications and remote desktop environments with ultra-low latency. Using this solution eliminates the need to upgrade terminals using software, significantly lowering running cost.

Audio Solutions

Use of multi channel audio, like 22.2 channel surround system, is becoming more popular. Meanwhile, TV speakers have become thinner and smaller, making it more difficult to reproduce powerful sound. Our audio solutions address these issues. With IP-based acoustic software technologies for reproducing powerful bass, even with small diameter speakers, and localizing sound images at various positions only with the front speakers, our technologies improve the reproduction of sounds from a wide range of products.



Product Line-up

Field		Feature
AV-SoC	MN2WS03101 (PXs2)	H.265(HEVC)/VP9 4K/60p decoder AV recording and playback
Mobile DTV tuner (RF, Demodulation Integrated LSI)	MN88553	Compliant with digital terrestrial broadcasting in various countries 'ISDB-T(Full segment, one-segment) 'ISDB-Tsb/Tmm (Multimedia broadcasting) '-DVB-T(European system)
Virtual Desktop	SC1110 (PXiV)	PCoIP® hardware decoder 2-channel, 4K video output
Audio solution	_	Localization of audio sources at the ear, harmonic bass

Main IPs

- H.264 decoder/encoder
- ●H.265(HEVC) decoder/ encoder
- Blu-rav Disc™ recorder function
- Digital RF. broadcast demodulation (ISDB-T/Tmm/Tsb, DVB-T)
- Thin client accelerator
- ●USB 3.0
- •3D audio processing

Contact

- •4K Media Player Solutions
- ●4K Ultra HD Blu-ray™/STB Solutions
- Audio Solutions

Business Project Management Dept. Visual Solution BU. Tel. +81-75-778-8011 (Kyoto)

• Mobile DTV Tuner Solutions

- •Thin Client Solutions

Business Project Management Dept. IoT & Graphics Solution BU, Tel. +81-75-778-8011 (Kyoto)

Imaging — Display

We deliver comprehensive solutions that touch people's hearts by creating realistic video and audio that realize the potential of 4K and 8K displays.



From 2K to 4K, and now 8K. In the world of broadcasting and web content, with constant advances in resolution, sophisticated technology collaboration is essential to fully deliver excellent performance. At Socionext, we provide comprehensive solutions, from the latest video processing technology to hardware and applications. We help our customers deliver new video experiences that make viewers feel as if they are there, along with realistic audio.

8K TV Solutions

For 8K TV test broadcasting, which will commence in Japan before the rest of the world, we will be providing an 8K chipset for the first time anywhere. By taking advantage of video signal processing technologies developed while providing 2K and 4K TV solutions, we are producing video that is optimized for 8K and higher resolution, with high-brightness display panels. In collaboration with broadcasters and TV makers, we will lead the launch and development of 8K TV broadcasting services globally.

- ●An 8K TV system easily realized with our 8K chip set*1
- ●The world's first*2 8K video decoder, supporting the H.265(HEVC) standard
- The word's first demodulator*3, supporting ISDB-S3 and multiple carrier standards
- *1 SC1400A(BONNY), SC1501A(ISDB-S3), SC1401A(LD20)
- *2 As determined by our company study, conducted in March 2016
- *3 As determined by our company study, conducted in September 2016



2K/4K Global TV Solutions

For latest TV, besides broadcast viewing, viewing content via networks is becoming more important. With our unique video engine supporting advanced codec and security systems as well as state-of-the-art video and audio technology, our total solution can fully convey the force and excitement of 4K VOD content transmitted from all over the world via network distribution service.

Public Signage Solutions

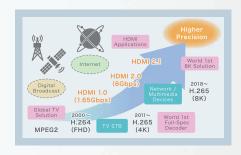
We provide digital signage solutions with a SoC for display devices that include a variety of interfaces. For multi-screen purposes, the SoC also supports the industry's largest 10 x 10 panel. With functions to adjust to the joint width and the differences in display color between panels, it allows you to efficiently develop public display products. Moreover, we have developed the 8K signage solution with IP connection to existing transmission-type signage systems and supporting 8K video streaming, and have proposed the latest signage solutions.



Product Line-up

Field	Product	Feature
8K TV	SC1400A (BONNY)	H.265(HEVC) 8K/60p decoder
SK I V	SC1501A (ISDB-S3)	ISDB-S3/ITU-T J.183 compatible demodulator
4K TV	SC1401A (LD20)	4K Smart TV H.265(HEVC)/VP9 4K/60p
2K TV	SC1405AP1 (LD11)	2K Smart TV DDR on-chip
	MN2WS0290 (sLD10e)	2K Just TV DDR on-chip
2K-4K Converter/ Image Interface Conversion	MN86912x (HV2 series)	HDMI 2.0 Rx (4ch) HDMI 2.0 Tx/Panel output IF (1-ch each) 2K-4K conversion, ultra-high resolution
Digital Broadcast Demodulation LSI	MN884433	ISDB(Japan, South America)
	MN884434	ISDB(Japan, South America) For W tuners
	MN88436	ATSC (North America)
Public	MN81010H (GARNET)	Interactive signage Multi-screen compatible
Signage SoC	8K Signage BOX	8K HEVC Stream Play (8K/60p)

Product Roadmap



Main IPs

- •4K/8K video up-converter
- Digital broadcast demodulation
- Media processor (IPP)Secure transaction processor
- •H.264 decoder
- ●H.265(HEVC) decoder
- Resolution processingAudio processing
- AV input/ output control
- ●HDMI 2.0 Rx/Tx

Contact

- ●8K TV Solutions
- •2K/4K Global TV Solutions
- Public Signage Solutions
 Business Project Management Dept.
 Visual Solution BU,

Tel. +81-75-778-8011 (Kyoto)

Imaging — Visualization

We provide one-stop solutions for displaying large amounts of information clearly.



These days, our lives are surrounded by massive amounts of video information. We provide display devices to present the information out there, as well as other solutions for revolutionizing office equipment. Using technology to display information, we help people create a more prosperous future.

Display Solutions

■ Integrated Human Machine Interface (HMI)

We fully support solutions for centralized control and showing of displays such as meter clusters, head-up displays and various infotainment systems. With the combination of high-performance graphics SoC and chipsets, we realized a low-cost and safe system with a simple structure, high-definition display. Moreover, a great appeal of the system is that it can cope with various types and classes of vehicles with a common design.

■ 360° Wrap-Around View Systems (OMNIVIEW)

This system can display the area you want to see from the location and the angle you want to see it from. For example, this system can seamlessly display an image of your car as seen from above, providing a wide, 360° wrap-around view of the vehicle without the viewer noticing differences in brightness. The optimum LSI and basic software is provided in one package, allowing customers to build systems in fewer man-hours. The 360° Wrap-Around View System conforms to the Drive Monitoring System standards (IEC63033).





HMI Authoring Solutions

CGI Studio is an HMI authoring tool directly embedded with a unique design.With the introduction of CGI Studio, a designer can directly share their design created on a computer with other designers, substantially reducing development man-hours of coding. As CGI Studio supports automobile standards and regulations such as ASIL*1, MISRA*2, Automotive SPICE*3, it can cope with development of automotive HMI solutions according to various purposes and uses.

- *1: Automotive Safety Integrity Level *2: Motor Industry Software Reliability Association
- *3: Software Process Improvement and Capability Determination

Document Solutions

By placing high-performance, highly extensible SoCs at the core, and using a power saving sub-system (network standby/response), interface macro (LCD controller), analog front end (scanner, touch panel), and other IPs, we provide custom SoCs that meet the needs of customers in a short period. Also, by using our design service (LSI design verification, PCB co-design), customers can reduce costs and shorten development periods.

Medical Healthcare Solutions

Utilizing our expertise in sensing technology, we have developed "viewphii", a mobile medical device solution realizing non-invasive monitoring that is compact in size, power-saving and no cable. We provide a technical platform in the medical field with a tablet application displaying sensing data.







Product Line-up

Field		Feature
	MB86R11/12/13	Cortex®-A9, 3D GPU, SEERIS®(Socionext 2D GPU)
Display	MB86R24	Cortex®-A9 Dual, 3D GPU, SEERIS®(Socionext 2D GPU)
Solutión (Integrated HMI)	SC1810	Cortex®-A9 Quad, 3D GPU, SEERIS®(Socionext 2D GPU), VPU(Vision processor unit), CODEC(H.264), M-JPEG Decoder
	MB88F334/336 MB86R91	APIX2® 3Gbps SEERIS®(Socionext 2D GPU)
	MB86R11/12/13	Cortex®-A9, 3D GPU, SEERIS®(Socionext 2D GPU)
Display Solution	MB86R24	Cortex®-A9 Dual, 3D GPU, SEERIS®(Socionext 2D GPU)
(360° wrap- around view)	SC1810	Cortex®-A9 Quad, 3D GPU, SEERIS®(Socionext 2D GPU), VPU(Vision processor unit), CODEC(H.264), M-JPEG Decoder
HMI Authoring Solution	CGI Studio	Authoring Tool
Document Solution	MB86S71 MB86S72	Cortex®-A15 Dual/A7 Dual, Mali™-T624
(Platform SoC)	MB86S73	Cortex®-A7 Dual, Mali™-T624
Medical Healthcare Solution	viewphii	Mobile ultrasound imaging Mobile continuous blood pressure meter Mobile electrocardiogram

Display solution : For more information on our product line-up, http://www.socionext.com/en/products/assp/gdc/

Contact

- Display Solutions
- ●HMI Authoring Solutions Business Project Management Dept. IoT & Graphics Solution BU, Tel. +81-45-568-1040 (Shin -Yokohama)
- Document Solutions
- Medical Healthcare Solutions
 Business Project Management Dept.
 Custom SoC Solution BU,
 Tel. +81-45-568-1055 (Shin -Yokohama)

9

Networking

We accelerate business innovation by supporting infrastructure for video distribution using a variety of communication technologies.



In an era where every corner of the world is connected to a network for either wired communications, mobile communications, or satellite communications, the networking technologies supporting these communications advance every day. We fulfil customers' various needs with our advanced solutions, such as internal networks of data centers, networks between data centers, optical backbone networks for long-haul* communications, and even networks requiring high-compression, high-quality video distribution.

*Distances over 1.000 km

Video Distribution Solutions

Our video distribution solutions connect our imaging solutions, allowing communication and showing content that attracts viewers. Our solutions don't just reduce the number of bands required for video distribution, but they also reduce the storage capacity for content by using our video compression and expansion technologies. Offering the most advanced encoding, we achieve maximum value for video distribution and provide new value to our customers.

- •Multi-format codec / real-time encoder
- It realizes H.265 (HEVC) conversion of 4K/60p video with a single chip.
- Compact and low power consumption codec
- It can perform real-time compression and playback of 4K/60p H.265 (HEVC) video.
- ●Hvbrid codec
 - It is realized by combination of high-speed processing with dedicated hardware and flexible software processing with general-purpose CPU.
- •Real-time transcode engine
- It enables video playback on various display devices by converting video into other formats in real time.

Network Solutions

Our low power consumption, custom SoCs, which use cutting-edge, high-quality IPs, support IT infrastructure around the world. We supported the launch of the world's leading 100, 200, 400-Gigabit and 1-Terabit optical communication technologies. As part of our network solutions, we not only promote the advancement of customer business, but also provide advanced custom SoCs, improving them in step with advances in business.

- ●The world's leading high-speed ADC/DAC
- ●High-speed SerDes
- •High performance package

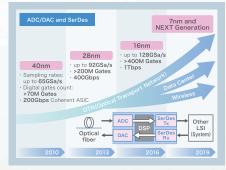
3G, 4G, 5G Optical Access Metro-Access Front-haul Tablet Metro-Regional Data Center Core & Submarine

IP Roadmap

Video Distribution Solution



Network Solution



Product Line-up

Video Distribution Solution

Field		Feature
	SC2M50	H.265(HEVC) 4K/60p Compact and low power consumption codec
	MB86M30	H.265(HEVC) 4K/60p Multi-format codec
AV Codec	8K H.265 (HEVC) Real-time Encoder	H.265 (HEVC) 8K/60p Real-time encoder (By application to codec products)
	SC2M15	H.264 2K/60p Transcoder
	MB86M31	H.265(HEVC) 4K/60p Real-time encoder
	MB86M25	H.264 2K/60i Transcoder

Main IPs

- ■Video Distribution Solutions
- ●H.264 Encoder/Transcoder
- ●H.265(HEVC) Encoder/Decoder
- MPEG2 Encoder/Decoder

■Network Solutions

- ADC 30-128Gsps*1 / DAC 30-128Gsps
- SerDes 1 to 56Gbps, Very Short Reach (VSR) to Long Reach (LR) *1 sps: samples per second

Contact

Video Distribution Solutions
 Business Project Management Dept.
 Enterprise Solution BU,
 Tel. +81-45-568-1075(Shin-Yokohama)

Network Solutions
 Business Project Management Dept.
 Network Solution BU,
 Tel. +81-45-568-1045(Shin-Yokohama)

11

Computing

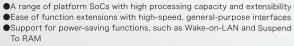
We contribute to ICT innovation with advanced computing solutions in a variety of scenarios, from IT infrastructure to manufacturing.



With the evolution of ICT, demand for computing power has been on the rise, and power supply has become an issue in actual operations. With high scalability and high power efficiency, we provide pioneered soulutions in all fields.from the IoT Gateway to the cloud. Our diversified solutions can support an extensive range of applications, from edge computing to data centers. Our computing technology contributes in all application fields with pioneered solutions, from problem-solving in data centers to developing new business. We provide optimal solutions for image processing, artificial intelligence, latest applications utilizing big data as well as their application scenes.

Edge Device Solutions

The arrival of the era of IoT has created a need for advanced processing. even in edge devices. With its high performance CPUs/GPUs and high extensibility, our platform SoCs meet diverse needs and realize environmentally friendly edge devices thanks to low power consumption.





Server Solutions SynOuacer.

With the evolution of ICT, edge computing technology has become very important, enabling not only data processing in a data center but also low latency in application processing and optimization of communication traffic. With high performance and low power consumption of SynQuacer™ and scalability by using SynQuacer™X, we provide optimal solutions for diverse needs, from edge servers to cloud servers.

- •Support for large-scale data processing using a 64-bit architecture
- A highly efficient computing engine with power-saving, multi-core SoC(SC2A11)
- High speed interconnect that scale out computer clusters (SC2A20)



Product Line-up

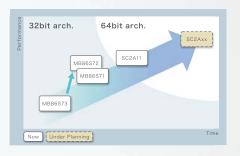
●Edge Device Solutions

Product	Feature		
MB86S71	Cortex®-A15 Dual 1.6GHz Cortex®-A7 Dual 1.2GHz 4K H.264@30p Decoder USB3.0(Host) PCIeG2 4-Iane MIPI DSI, HDMI 1.4a	Mali™-T624 400MHz	
MB86S72	Cortex®-A15 Dual 1.6GHz Cortex®-A7 Dual 1.2GHz 2ch USB3.0(Host) 2ch PCleG2 4-lane FPD-link	LPDDR3 DDR Retention Support Wake-on-LAN, Wake-on-USB JPEG Codec (32k x 32k)	
MB86S73	Cortex®-A7 Dual 1.2GHz 2ch USB3.0(Host) 2ch PCleG2 4-lane FPD-link		

Server Solutions

	SynQuacer Server	SC2A11 (SynQuacer)	Cortex*-A53 MPCore 24cores 1GHz 2ch DDR4 2ch PCleG2 4-lane 2ch LAN 1Gbps
		SC2A20 (SynQuacerX)	Socionext DDT(Direct Data Transaction) 9ch PCIeG2 4-lane 1ch USB3.0(Host) 1ch SATA2

Product Roadmap



Main IPs

- •Base Platform (64bit, 32bit)
- ●Power Saving Sub-system
- •Security Sub-system

Contact

●Edge Device Solutions Business Project Management Dept. Custom SoC Solution BU, Tel. +81-45-568-1055 (Shin -Yokohama)

 Server Solutions Business Project Management Dept. Tel. +81-45-568-1051 (Shin -Yokohama)

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