SONY

News & Information

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Sony Releases the Transparent Lens Eyewear "SmartEyeglass Developer Edition"

- Promotes the development of a wide range of apps by offering Software Developer Kit -

Tokyo, Japan – Sony Corporation ("Sony") has developed[*1] the "SmartEyeglass" transparent lens eyewear that connects with compatible smartphones[*2] to superimpose information such as text, symbols, and images onto the user's field of view, and it is moving forward with preparations towards the commercialization of the product. In order to explore the possibilities with and facilitate the development of apps for the device, Sony announces that it will offer the SED-E1 "SmartEyeglass Developer Edition" for sale in Japan, the United States (US), the United Kingdom (UK), and Germany from March of this year.

In the UK and Germany, the device is now available for pre-order. It will also be offered for sale to enterprise customers in France, Italy, Spain, Belgium, the Netherlands and Sweden from March 10, 2015 in order to promote the development of apps geared toward industrial use. The SmartEyeglass Developer Edition will be sold through the dedicated SmartEyeglass page of "Sony Developer World," an application development support website for Sony products.

In addition to the hardware, Sony will also begin providing the official release of the Software Development Kit (SDK) for the SmartEyeglass, an upgraded version of the Developer Preview SDK that it has made available since last September. Through this official release, it is looking to promote the development of even more apps compatible with the device. Sony also has its eyes set on the future of wearable devices and their diversifying use cases, and it hopes to tap into the ingenuity of developers to improve upon the user experience that the SmartEyeglass provides.

Going forward, Sony will accelerate its efforts to promote the development of apps for SmartEyeglass, as it eyes the commercialization of the product for both consumers and enterprise customers in 2016.

SmartEyeglass Developer Edition, designed to facilitate app development

Visualization of the user interface

Product name	Model	Release date	Price
SmartEyeglass Developer Edition	SED-E1	March 10, 2015	100,000 yen + tax (Japan) $840 + tax (US) 520 pounds + tax (UK) €670 + tax (all other applicable countries)

In addition to acting as the purchasing portal for this device and as the channel for obtaining the SDK, the dedicated SmartEyeglass page on the Sony Developer World website will also provide detailed specifications on the device as well as information potentially useful for app development, such as examples of apps already in existence and conceivable use cases.

＜**"Sony Developer World" SmartEyeglass dedicated page:** http://developer.sonymobile.com/smarteyeglass/＞

The SmartEyeglass has the potential to be used in a wide range of scenarios[3], depending on the app installed on the wirelessly-connected smartphone that it is being used in conjunction with. Its most salient characteristic is the superimposed display of information on top of a view of the real world, which enables the user to obtain desired information without having to turn his attention away from what he is doing or looking at. This has considerable implications for AR (augmented reality), which holds great potential in the domain of professional use as well, such as when giving instructions to workers at a manufacturing site or when transmitting visual information to security officers about a potential breach.

Indeed, at the Sony booth at CES 2015 held in Las Vegas in January, several instructional apps (developed by APX Labs Inc.) for the workplace setting were showcased, utilizing SAP's cloud computing system. One of the apps helps users at a warehouse select the correct component to use next, and another gives step-by-step engine maintenance instructions at a repair shop. Many applications for consumer use also seem ripe with potential, such as the user viewing data related to a certain player while watching a game, displaying SNS messages pertaining to an event the user is attending, and displaying sightseeing information while exploring a tourist spot. The SmartEyeglass will thus be able to realize more convenient and enjoyable lifestyles for users.

Sony is working to build a rich portfolio of apps compatible with the SmartEyeglass so that individuals across the world can benefit from the increased convenience in accessing helpful information that wearable devices provide, both in professional use and consumer use settings.

*1: Announced on September 19, 2014. (http://www.sony.net/SonyInfo/News/Press/201409/14-090E/index.html)

*2: Operating requirements – Android 4.4 or higher.

*3: Potential use cases for this device are currently under consideration, with app development, market research, and field testing still continuing. Examples cited here are potential applications being considered at the present time and do not represent use cases whose safety has been tested and confirmed.
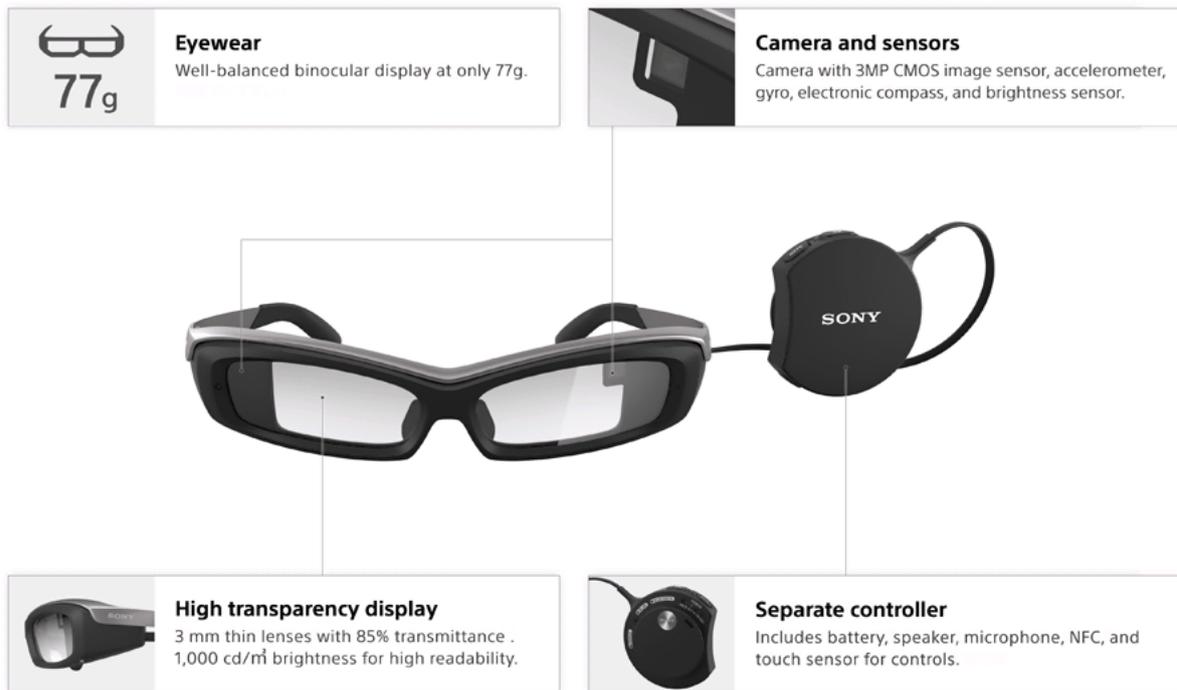

【Overview of the SmartEyeglass Developer Edition】

The SmartEyeglass is equipped with a diverse range of sensing technologies, including a CMOS image sensor, accelerometer, gyroscope, electronic compass, brightness sensor, and microphone. It utilizes these features, together with GPS location information obtained from the connected smartphone, to provide information tailored to the user's immediate circumstances. Sony has leveraged its unique hologram optics technology to develop a lens that achieves a high transparency of 85% and a thickness of just 3.0 mm, without the use of half mirrors that obstruct

the user's vision. Furthermore, the monochrome display ensures that while energy consumption is lower than a color display, high luminance (up to 1,000 cd/m^2) is achieved, realizing an easy-to-read binocular display with clearly legible text under a wide range of conditions.

The exchange of information, from sensing data to images, between the SmartEyeglass and a wirelessly connected smartphone means that, depending on the smartphone app, the device has the potential to be used in a wide range of scenarios.

Primary Component Elements of the SmartEyeglass Developer Edition (SED-E1)

Eyewear
Well-balanced binocular display at only 77g.
77g

Camera and sensors
Camera with 3MP CMOS image sensor, accelerometer, gyro, electronic compass, and brightness sensor.

High transparency display
3 mm thin lenses with 85% transmittance .
1,000 cd/m^2 brightness for high readability.

Separate controller
Includes battery, speaker, microphone, NFC, and touch sensor for controls.

Thin, lightweight display module made possible by Sony's unique hologram optics technology

The SmartEyeglass is equipped with a thin, lightweight display module designed specifically for the transparent lens glasses-style smart device and featuring Sony's unique holographic waveguide technology.

Holographic waveguide technology entails the propagation of image light that is output from the optical engine, using holographic optical elements embedded in both sides of a glass plate. The light is propagated through the extremely thin (1 mm) glass plate and then delivered to the eyes. With this technology, Sony succeeded in designing an incredibly thin 3 mm[4] lens with a very high transmittance of 85%.

*4: Includes the protective plates in front and behind the waveguide.
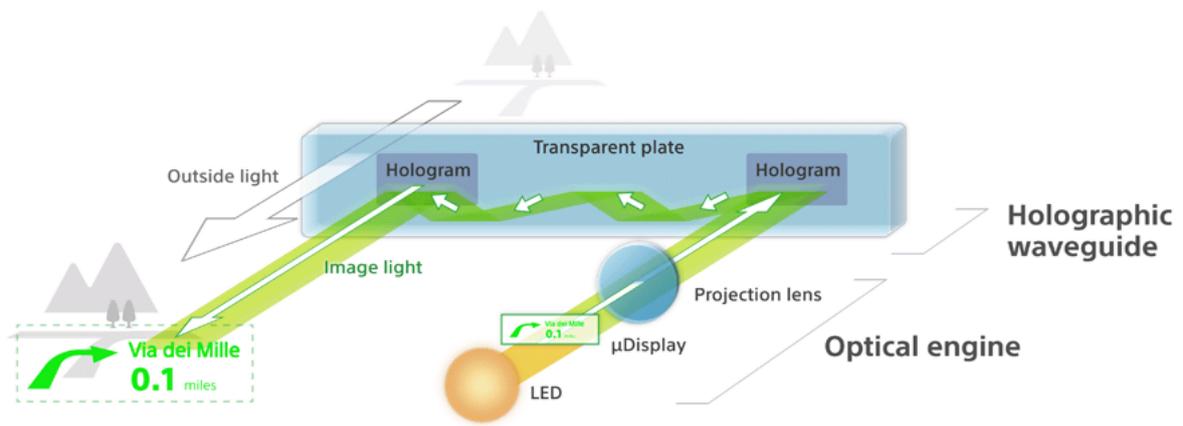
Sony's unique holographic waveguide technology

Key Specifications of the SmartEyeglass Developer Edition (SED-E1)

Item	Specification
HMD type	Binocular see-through with a separate controller
Resolution	419 (H) X 138 (V) pixel
Angle of view	Diagonal 20° (Horizontal 19° x Vertical 6°)
Image color	Monochrome green with 8 bit grey scale
Frame rate	15 fps
Brightness (max.)	1,000 cd/m^2
Transmittance	More than 85%
Sensors	Accelerometer, gyroscope, electronic compass, brightness sensor, microphone, noise-canceling microphone
Camera	Still: 3M pixel Video (soundless): JPEG Stream – QVGA-equivalent 15 fps (requires a camera API; for more information, refer to the SDK)
Sound	Speaker in controller
Power source	Built-in lithium ion battery
Battery life	Not using the camera: approximately 150 minutes Using the camera: approximately 80 minutes *1: These values apply when device is used under the following conditions – display always on; display brightness at default setting *2: Above time estimates are subject to change based on surrounding temperature and app use conditions *3: Even when not using the camera, battery life will decrease when using wireless LAN connection
Connectivity with Android device	Bluetooth v3.0, IEEE802.11b/g
Android OS operating requirements	Android 4.4 or above

Maximum external dimensions	Eyewear: when folded – approximately 180 mm × 39 mm × 72 mm (width/height/depth); when unfolded – approximately 180 mm × 39 mm × 182 mm Controller: approximately 54 mm × 21 mm × 60 mm (not including protruding part) Cable: approximately 63 cm (length)
Weight	Approximately 77 g (glasses excluding cable); approximately 44 g (controller)
Operating temperature range	5℃ to 35℃
Storage temperature range	-15℃ to 50℃

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*For purchase related inquiries, access the Sony Developer World webpage:
        http://developer.sonymobile.com/smarteyeglass/