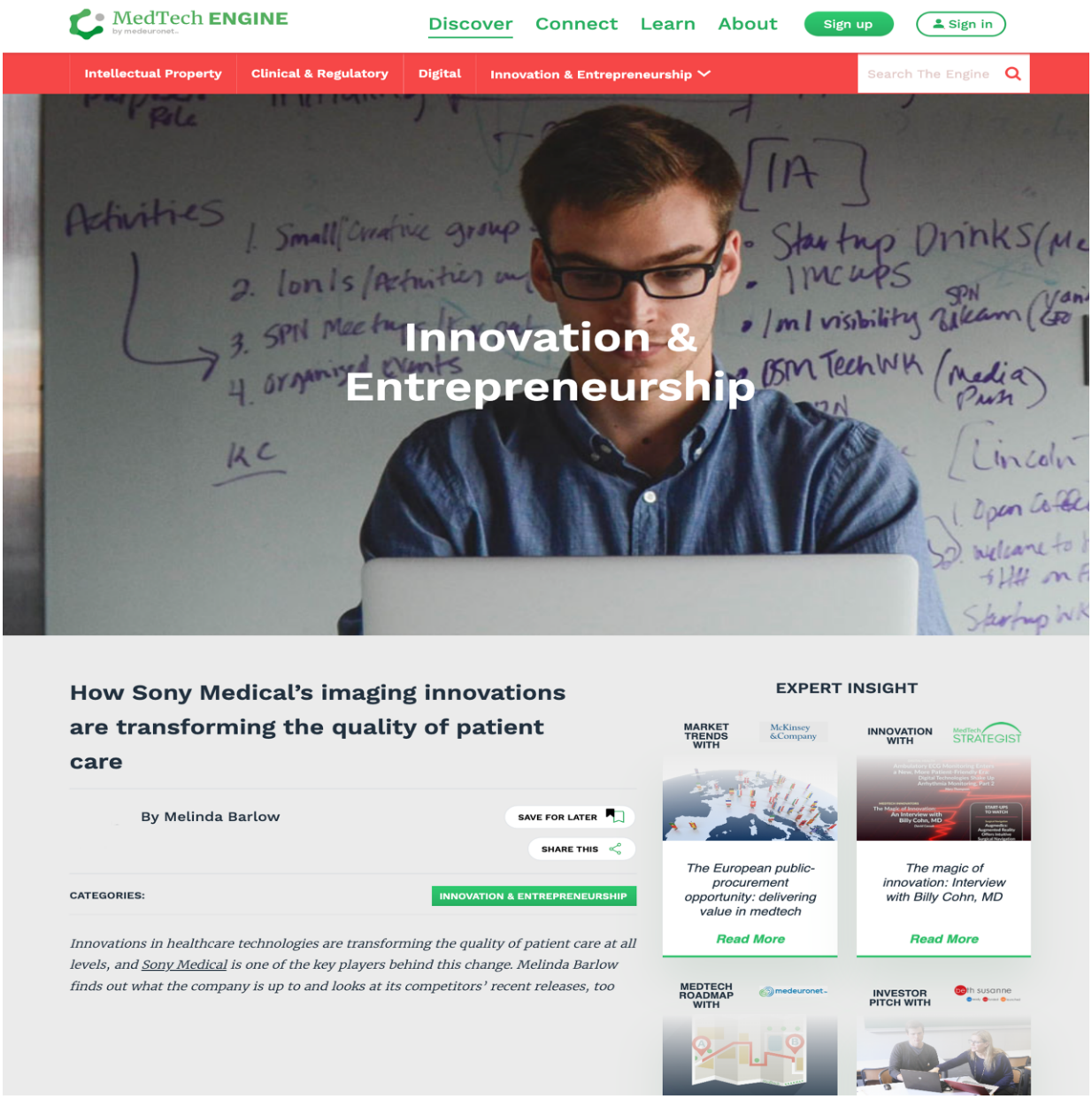

Sony's strategy for innovation in medical technology involves the development of specialist products in the areas of minimally invasive surgery and microsurgery, as well as communications technology for teaching and patient care. Through every stage of the medical imaging workflow in operating rooms, Sony Medical's professional products are revolutionising modern surgical practices.

Expertise in electronics is, of course, Sony's foundation, and its application of this in the medical field considers the whole patient cycle. Innovative assessment and visualisation tools to streamline the workflow not only improve patient outcomes, they also contribute to better service provision overall. Highly skilled surgeons are drawn instinctively to state-of-the-art equipment, and patients, when given the choice, will naturally migrate towards those facilities offering the best possible treatment outcomes.

A new focus

Christophe Gauthier, Strategic Marketing Manager at Sony, says the company uses its expertise in sensor and camera technologies to provide camera modules for manufacturers in the endoscopy market. "Our innovation must have a clinical benefit to the patient or the surgeon, and it is always driven by the desire to capture better images".

In 2015, Sony announced the release of its 4K 2D products at the Medica event in Dusseldorf. At a functional level, innovations in imaging equipment (for example, monitors and cameras) create considerable change in the essential communications – sharing of procedures, patient monitoring and conferencing with remote specialists – needed to provide the best in patient care.

Sony's display products, however, mark a tangible shift in the way surgical procedures can be conducted, by offering significant quality improvement on high-definition 3D as well as 4K imaging. 'These are increasingly becoming the norm for minimally invasive and microsurgical procedures, including neurology and ophthalmic', says Gauthier. '4K has four times more resolution than HD, resulting in vastly reduced pixelation and images with a greater sense of depth.' This translates into a much more immersive and natural experience for the surgeon and will improve further as cameras and microscopes become completely integrated with each other.

Immersed in the experience

New products, such as the HMS-3000MT 3D Head Mounted Display System, are an example of a shift in product design. Sony's background in developing electronic equipment across a wide range of applications gives it the edge in creating innovative products such as these. 'The head mount has a totally immersive view. When we first developed this, a lot of the industry were mystified – they thought it was just for gaming!' Gauthier explains.

The head-mounted monitor offers surgeons better viewing angles and greater manoeuvrability, while the high-quality 3D HD video provides improved depth of field and sharper images. By removing the need to look away and refer to other monitors, the surgical experience is transformed. Gauthier explains how this translates positively for the surgeon and the patient. "Overall, the visual experience is more immersive and more natural for the surgeon, helping improve concentration on the task at hand and reducing operator fatigue, as well as providing a sharper and more detailed view, which improves suture times and precision".

Innovations such as this generate questions that can't help but encourage further innovation. 'What do we do with all this content from the operating room?' asks Gauthier. 'Twenty years ago it was all about printing and sharing, now we provide the CMDS-MS20MD, a content management server in 4K, which can store and share HD medical videos and images, and can also be used for surgical training. We now want to provide our customers with the added value of being able to transmit images to different locations, to edit and present them.' Disseminating information in more productive ways offers better teaching and learning opportunities in developing the next generation of surgeons.

Other technologies such as Sony's Advanced Image Multiple Enhancer (AIME) offer further benefits to the medical field. "AIME is a hardware-implemented technology delivering rapid adjustment of contrast and colour", Gauthier explains. "This technology enables better image reproduction and display, including enhanced focus and better light balance".

A competitive field

Other companies, of course, are also making their mark despite the difficulties involved in servicing the changing needs of healthcare. especially when traditional models still seem to dominate in the developed world.

Siemens offers universal imaging software and advanced products to facilitate multiple users across modalities in a scalable way – so that all links in the patient-care chain, from the nurses' stations to pathology departments and operating rooms, can interact with the technology.

Philips' latest release is the IntelliSpace Console, a Cloud-based dashboard for intensive-care facilities that supports medical professionals in their clinical decision-making by showing them 'the data they need to see, at the point of care, organised in the way they need it'. This is just the latest in Philips' suite of health-tech devices that focus on clinician function and workflow.

GE Healthcare has navigated changing healthcare supply needs by continuing to develop and provide high-quality clinical imaging products while also innovating and creating new ones. Traditional products provide excellence in navigation and advanced visualisation, improving productivity by streamlining processing across imaging modalities. The company's focus is on clinical information logistics through the development of monitors, devices and IT solutions that integrate workflow and provide new ways to assess and treat patients.

GE Healthcare's innovation, however, is in miniatures – it pioneered the miniaturisation of equipment with its Vscan handheld unit. Equipment the size of a refrigerator has been replaced by a pocket-sized product, and by providing more portable devices at lower cost, the company has been able to enter new markets.

Philips' new Lumify product is an advancement on GE Healthcare's innovation. An app-based ultrasound device that pairs with a smartphone or tablet, it provides new approaches to physical assessment and diagnosis that previously involved cumbersome equipment in a fixed location.

Devices such as these have important applications in areas where traditional approaches dominate, where there is limited access to technical specialists, or where patients have limited mobility. However, regardless of its source or location, the data still needs to be translated and used quickly and effectively within the healthcare system, and it is here that Sony's technology dominates with its seamless workflow integrations across devices and modalities. As the companies seek to answer surgical needs and compete in an increasingly tough market, expect to see innovations coming thick and fast.

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