Optical Connector Technology
Based on Intel silicon photonics technology, the MXC cabling solution developed by Intel and Corning could allow data centers to send up to 1.6 terabits of data per second at distances of up to 300 meters.

Corning’s ClearCurve LX Multimode Fiber transmits 1,310 nm, which is the wavelength (color) of light used by Intel silicon photonics modules, with low optical loss. The MXC connector will support up to 64 fibers, each operating at 25 Gbps, for a total aggregate bandwidth of 1.6 terabits of data per second. The MXC connector uses a lensed ferrule to carry light from one connector to the other, rather than physical fiber contact of the end faces as with traditional connector technology. The fiber lenses have a beam expander that increases the diameter of the light beam by four times. This mitigates dust contamination at the connection point, a significant cause of connector failure at cloud storage and data centers.

In March 2014, US Conec announced that it would start making production shipments of MXC components available to the industry in the second quarter of 2014, and Corning has announced it will start shipping MXC cable assemblies in the third quarter of 2014.

Miniaturized Gesture-Recognition Device
Logbar, a developer of gesture-recognition and power-saving technologies for miniaturized consumer personal devices based in California and Tokyo, has developed Ring, a wearable finger input device that will allow users to perform tasks with a single gesture. The Ring hardware is based on motion sensors and Bluetooth low energy (BLE) technology. Example applications include controlling home appliances, sending texts, receiving alerts via built-in vibration or LED, and making payments at participating retail stores and restaurants.

To enable text input, the device uses Ring letter recognition software (Ring Font). Gesture controls are preset, but font strokes and other gestures can be edited using a downloadable iPhone or Android app. Available in six sizes, Ring has a rechargeable battery and comes with a mobile battery stand with a micro USB cable.

The company is accepting preorders as part of its Kickstarter campaign and expects to begin mass production and product shipments by June 2014. For more details, visit http://logbar.jp/ring and https://www.kickstarter.com/projects/1761670738/ring-shortcut-everything.

Next-Generation Optical Discs
Sony and Panasonic jointly announced a new standard for professional-use, next-generation optical discs, called Archival Discs. To enable long-term digital data storage, both Sony and Panasonic aim to launch systems with a recording capacity of 300 Gbytes per disc by the summer of 2015. To achieve larger capacity and higher playback signal quality, the companies have employed crosstalk cancellation technology, which electrically removes crosstalk from the adjacent tracks that increase as the track pitch becomes narrower to increase playback performance, and high-order partial response maximum likelihood (PRML) signal processing technology, which improves reproduction performance by allowing inter-symbol interference. Sony and Panasonic anticipate further expanding the recording capacity per disc to 500 Gbytes and 1 Tbytes.

Visible Light Communication
The light communications technology company pureLiFi (formerly known as pureVLC)
has developed Li-1st, the first commercially available bidirectional optical wireless communications system achieving high-speed Internet in both the down and uplink.

Based on visible light communication (VLC)—the use of the visible light spectrum instead of radio frequencies to enable wireless data communication—Li-Fi technology attempts to provide full networking capabilities similar to Wi-Fi. Capable of operating with a range of commercially available LED light bulbs, Li-1st units consist of an IP-enabled ceiling unit and a desktop device that can be connected via USB to client devices. Li-Fi uses the light waves from LED light bulbs to transmit data, thus providing both illumination and wireless data communications with the same device.

In late 2013, pureLiFi demonstrated Li-Fi technology can work with both direct and indirect or reflected light and demonstrated data communication rates of 3 Gbps on a single color. The company estimates that a single LED with full color (R,G,B) could communicate at speeds up to 9 Gbps. Because Li-Fi uses light instead of radio waves, it does not generate electromagnetic interference (EMI). In addition, the technology may offer data security benefits because data communicated via Li-Fi can only be accessed where the LED light illuminates, as opposed to Wi-Fi, which uses radio waves that pass through walls and ceilings and thus are more accessible to hackers.

pureLiFi will be make its first product publicly available to select industry partners in the first quarter of 2014. Future product R&D efforts will focus on providing full networking capabilities and miniaturization. Visit http://purelifi.co.uk for more details.

Real-Time Video Processing
Zeppelin, a UX/UI (user experience/user interface) design and consulting company, recently launched the VideoShader app, a programmable real-time video processor that applies filter effects to live video. Available for download on iOS platforms, VideoShader allows users to create and edit photos and video content in real time using artistic filters, enabling real-time video processing that has previously only been available using PC postprocessing software. Unlike most filter apps, VideoShader lets users record video with the filter on, showing them the video with the filter applied while it’s recording. The company has also launched, VideoShader Composer, which is a filter composer that allows users to customize filters without writing code. Visit http://en.zeppelin.co.jp or iTunes for more details.

13 MP CMOS Image Sensor
Toshiba has announced the launch of T4K82, a 13 megapixel (MP) BSI CMOS image sensor that allows smartphones and tablets to record full HD video at 240 equivalent frames per second (fps). T4K82 incorporates Bright Mode technology to boost image brightness up to four times and offers extended imaging functions including smooth slow motion playback and high-speed continuous shooting.

Bright Mode technology increases exposure time by adopting interlaced video output. It also uses charge binning, which doubles the electrical charge of each pixel, resulting in a brighter image than that from a CMOS sensor without Bright Mode. Toshiba will also provide an interlace-progressive conversion program that enables users to offer high-quality progressive video with low image deterioration, without changing the frame rate.

Sample shipments of T4K82 are scheduled to start in March. For more details, visit www.semicon.toshiba.co.jp/info/lookup.jsp?pid=T4K82lang=en.