For nearly 70 years, Topcon has specialized in eye care, improving human eye health through innovations in examination, diagnosis, and treatment. Today, as a result of both rapid population growth and aging, we are seeing increased cases of major eye illness, skyrocketing medical costs, and a shortage of physicians. Aiming to resolve these problems, Topcon has applied ICT (Information Communication Technology) to eye care screening and prognostic management to promote early detection, early treatment, and remote diagnosis; thereby reducing overall medical costs. By expanding to prognostic management, Topcon is working to create new value for the future, contributing to the formation of an enriched society that will enable people to enjoy a high quality of life.

**Eye Care**

Remote diagnosis technology allows screening and results from non-mydriatic cameras and OCTs to be used for early disease detection, leading to earlier treatment and better patient outcomes.

**Screening**

Connecting data across all devices and solutions from screening, through management and treatment. Enabling anywhere, ICT is a powerful way to through connectivity and accessibility.

**Examination**

ICT solutions enhance all eye care examination and diagnosis, to prognostic patient data to be accessed anytime and improve clinical care and efficiency.

**Current Business Domain**

- **Prognostic Management**
  - The new prognostic management system provides connectivity to enable remote imaging, reducing hospital visits and improving clinical efficiency. Patients go to the clinic only when immediate treatment is required, thereby enhancing patient care while reducing costs.

- **EMR**
  - Includes Individual medical records to enable different specialists to access and share information.

- **Big Data Collection**
  - Collects information from multiple sources to provide a comprehensive understanding of patient health and treatment outcomes.

- **Telemedicine System**
  - Connects patients with specialists remotely, reducing the need for in-person visits.

- **Eye Clinic**
  - Offers comprehensive eye care services for patients.

- **General Hospital**
  - Provides comprehensive medical care and services.

- **Vision Van**
  - Mobile units for screening and early diagnosis.

- **Visiting Care**
  - Provides care to patients in their homes or other locations outside of the hospital.

- **Opticians**
  - Offers professional optical services.

- **Reading Center**
  - Provides reading glasses and other optical devices.

- **General Practitioner**
  - Provides primary care services.

- **Nursing Home**
  - Offers care to elderly and dependent individuals.

- **Referral Network**
  - Links patients to specialists and other healthcare providers.

**Future Business Domain**

Using advanced technology to increase efficiency, improve patient care, and reduce costs.

**ICT Solutions**

Connecting data across all devices and locations, ICT enhances all eye care solutions: from screening, through examination and diagnosis, to prognostic management and treatment. Enabling patient data to be accessed anytime and anywhere, ICT is a powerful way to improve clinical care and efficiency.
Suite of products for eyecare management

The Topcon suite of products are powerfully contributing to efficient management in eye care practice for optometry, glaucoma, cataract, retinopathies, etc.

- **Auto Kerato-Refractometer**: Uses near-infrared radiation to measure myopia, hyperopia, astigmatism, the degree of each condition, along with corneal shape.
- **Tonometer**: Measures internal ocular pressure (pressure needed to maintain ocular shape), mainly used in the diagnosis of glaucoma.
- **Compu Vision**: Measures vision and confirms lens-corrected vision to support optimal lens selection.
- **IMAGEnet**: The ophthalmic data management system that integrates and analyzes the images and data of Topcon devices and other vendors’ devices. The streamlined data management transforms the clinic’s efficiency.

**Imaging Room**
- **3D OCT**: Imaging device that uses near-infrared light for observation and imaging during fundus retinal tomography. This dramatically improves the diagnosis of retinal and choroidal disorders.
- **Retinal Camera**: Device used for retinal imaging. In addition to glaucoma diagnosis, age-related macular degeneration, diabetic retinopathy, and other eye conditions, the device is also used for the diagnosis of systemic diseases such as high blood pressure.
- **Operation Microscope**: Microscope used during ophthalmology procedures. The bright, clear field of vision and proprietary lighting mechanism enable complex surgery to be conducted safely and quickly.
- **Photocoagulation Laser**: Device that irradiates the retina with a laser in a precise, controllable fashion for the treatment of diabetic retinopathy, macular edema, retinal detachment, and other conditions.
- **3D OCT Retinal Camera**: Operation Microscope Photocoagulation Laser

**Consultation Room**
- **Auto Kerato-Refractometer**: Compu Vision

**Surgical Room**
- **Operation Microscope**: Photocoagulation Laser

**Diagnosis**
- **Slit Lamp**: Slit lamp or ocular biomicroscope that allows imaging of the anterior segment through to the fundus.
- **IMAGEnet**: Ophthalmic data management system.

**Treatment**
- **Retinal Camera**: Operation Microscope Photocoagulation Laser

**Assessment and data management**
- **Tonometer**: Measures internal ocular pressure (pressure needed to maintain ocular shape), mainly used in the diagnosis of glaucoma.
Optical Coherence Tomography

Optical Coherence Tomography (OCT) is an essential tool for worldwide eye care professionals. Topcon introduced the world’s first 3D OCT in 2006, a breakthrough innovation in ophthalmology diagnosis. Topcon continues to drive leading edge developments including simple operation, non-mydriatic retinal camera integration, and fully automatic operation. Topcon’s next generation OCT, swept source, enables clinicians to observe retina, choroid, vitreous and optic nerves with greater detail and superior image quality. It also has the ability to visualize microvasculature flow. These cutting-edge technologies support the discovery of new insights into disease and development of more efficient treatment plans.

Data Management Solutions

Historically ophthalmology departments have been isolated from the medical trend towards digital recording, due to challenges with digitalization of complex tests from a variety of examination devices for unique clinical pathways. As a leading innovator of ophthalmology data management, Topcon has developed an ophthalmology medical record system and is now offering an all-in-one solution, with vendor-neutral data connections and enabling archiving of medical history and diagnosis records. For large hospitals, the archiving system provides seamless connection to a hospital’s information system (HIS). For the future, the next goal is to contribute to the remote medical data sharing.

Courtesy: Carl Glittenberg MD, Karl Landsteiner Institute for Retinal Research and Imaging