

CASE STUDY

OphthalSuite

SURGICAL CENTER OF COIMBRA

Summary

Company

Coimbra's Surgical Center

Sector

Health - Ophthalmology

Needs

Simplification of the storage and access to results of complementary diagnostic exams (images, video, numeric values, reports), performed on different equipment.

Solution

OphthalSuite - Integration Platform for Ophthalmology

Current Situation

Solution up and running on the client, with 100% medical and technical staff satisfied with the improvements.

Benefits

- Speed, ease and convenience of access to examinations;
- Increase of 170% in quality of stored information;
- Increase of 500% in quantity of stored images;
- Safety, reliability and data integrity;
- Business Intelligence for clinical and administrative decision support.

Other Data

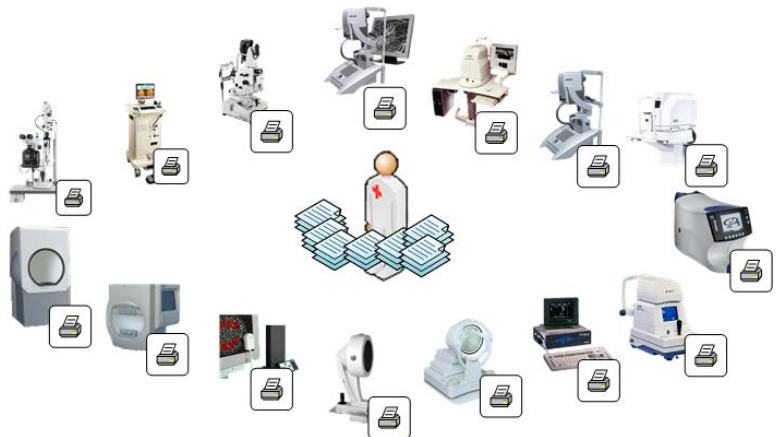
- 25 diagnosis equipments
- 7 Ophthalmologists
- 200 consultations/day
- 94,242 patients
- 188,488 exams
- 1,480,153 images

Context

The act of diagnosing ophthalmologic pathologies requires the analysis of the results of complementary diagnostic tests.

In general, the equipments where these tests are performed are very limited in terms of their ability to connect to a central system and in terms of interoperability between them.

This limitation results in the need for greater effort by health professionals in storing, accessing and analyzing data collected by the several existing equipment.



The integration solutions that exist in the market are restricted to only one of the brands of equipment, have limitations in quantity and quality of data collected or have a very high impact on productivity.

OphthalSuite is a reliable solution, simple to learn and use, extremely fast and flexible to adapt to physicians, technicians and internal working mechanisms of different health units.





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Problems and Needs

The ophthalmologists from Coimbra's Surgical Center intended to reduce the difficulty of accessing and analyzing the exams that were performed on their patients.

Additionally, there was interest in facilitating the execution of statistical analysis for the collection of internal quality indicators and the publication of scientific articles. This component of Business Intelligence would depend on the solution's ability to collect and organize automatically the information generated by the diagnostic equipments.

The creation of a solution would also have to take into account that the test results can have various formats - high resolution pictures, videos, tables of numerical values, etc..

At the time of the beginning of the project, the mechanisms used to access the patient's exams consisted in the printing and filing of paper documents or remote access to screenshots of images collected by the repetition of a sequence of steps for each individual picture to place on the central system.



The main disadvantages of this approach were:

- The increased time required for implementation of each examination;
- The reduced number of images collected;
- The low quality of images collected, depleted during the export process;
- The lack of organization of numerical data in easily analyzable formats (e.g. Excel spreadsheets);

Therefore, the identified need was that of an integration platform capable of sending automatically the data collected by each device to a secure central file, where they would remain accessible to be remotely consulted .

The functioning of the entire system should be autonomous and transparent, allowing, for example, storing the correspondence between tests on the equipment and on the electronic patient record (EPR).

Surgical Center of Coimbra

www.ccci.pt



The Surgical Center of Coimbra is a private healthcare unit, based in Coimbra, being recognized by the differentiation and high quality medical services that has to offer to their users. Provides health cares in several specialties, such as: ophthalmology, neurosurgery, cardiology, pediatrics, orthopedics, medically assisted procreation techniques, development psychology, urology, endocrinology, speech therapy, among others, with special focus on the area of ophthalmology .



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Solution

After analyzing the data and the workflow of the Surgical Center of Coimbra, an application software was installed and customized - OphthalSuite - which consists in an integration platform that allows to automatically collect information from different devices and redirect it to a centralized database.

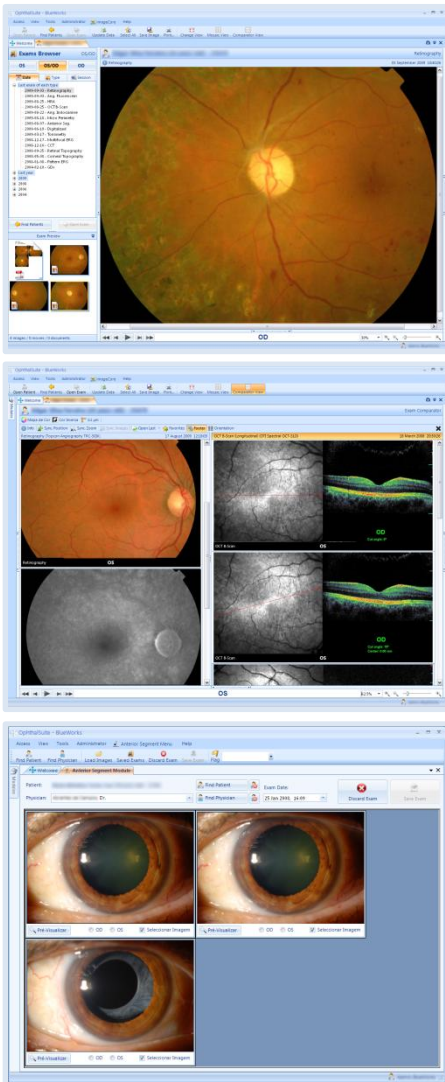
OphthalSuite is compatible with several equipments and exams, such as fundus, angiography, tonometry, OCTs, electroretinography, perimetry, GDx, among others.

For some of these equipments, also allows to synchronize the databases in order to avoid repeating the registration of patients.

OphthalSuite requires a maximum of three "clicks" to define the patient (if this has an ID number in the equipment different from the ID number in the central system), store and print out an examination and the respective report, these being readily available for all physicians to consult them.

In the event of flaws in the internal network, OphthalSuite has the ability to keep up functioning with limited functionalities, resending automatically and in a transparent manner, the data that have been affected by failures, when the network connection is restored.

This application allows an organized and structured storage of information collected that becomes available to be accessed via its own OphthalSuite or other third-party solutions.



The ophthalmologists from the Surgical Center of Coimbra who are already using OphthalSuite consider that:

- Using OphthalSuite is *easy or very easy*;
- There was a *positive impact* on daily clinical practice;
- The quality and quantity of information available for the diagnosis *has increased*;
- The daily productivity (no. of consultations) *has increased in some cases*;

Source: Survey from October 2009



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Current Situation

OphthalSuite proved its strength as a platform for interoperability regardless of manufacturer, the generation of operating systems, storage mechanisms and data transmission, since it allowed the following equipment integration:

Manufacturer	Equipment - Model	Equipment Type
Alcon	UltraScan	Ecograph
Clarity Medical Systems	Retcam II	Retinograph, Pediatric Angiograph
Haag-Streit	LenStar LS900	Biometer
	BQ900 (José Cotta software)	Slit Lamp (Anterior Segment)
Heidelberg Engineering	HRA2	Angiograph, Retinograph, Auto-fluorescence
	HRA Spectralis+OCT	HRA II + OCT
Metropsis	CCT-Cambridge Color Test	Sensitivity chromatic analysis
	CSF-Contrast Sensitivity Function	Sensitivity contrast analysis
Oculus	Pentacam	Corneal topograph
Optos	Optomap Panoramic 200	Wide field Retinograph and angiograph
OTI	OCT-SLO	OCT
	OCT-Spectrallis	OCT – Spectral domain
Reichert	AT550	Tonometer
Rodenstock	SLO-Scanning Laser Ophthalmoscope	Micro-Perimeter, Visumetry
Roland Consult	Retiport ERG	Electroretinograph, PEV
Tomey	EM-3000	Specular Microscope
Topcon	TRC 50IX/50DX (IMAGEnet2000 and i-base)	Angiograph, Retinograph
	SL-D (IMAGEnet i-base)	Slit Lamp (Anterior Segment)
	KR-8100P	Auto-refractometer
	TRC-NW8 (IMAGEnet i-base)	Non mediatic retinograph
	CT-80 (IMAGEnet i-base)	Tonometer
Zeiss	GDx Vcc	RNFL Polarimeter
	Humphrey HFA II-i (with network plugin)	Computerized perimeter
	Stratus OCT	OCT



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Benefits

1. Time Saving

- Information available increases without increasing the time of export.
- In some cases the whole export process becomes faster.
- In some cases, the need to enter the patients data on equipments is eliminated.
- Reduction of time and complexity of accessing examinations by physicians.

2. Quality increase

- The available information has a higher quality.
- The synchronization of the users registration significantly reduces the likelihood of getting information associated with incorrect records.
- Greater ease in identifying and correcting nonconformities (missing data, duplicate patients, etc.).

Average examinations access time

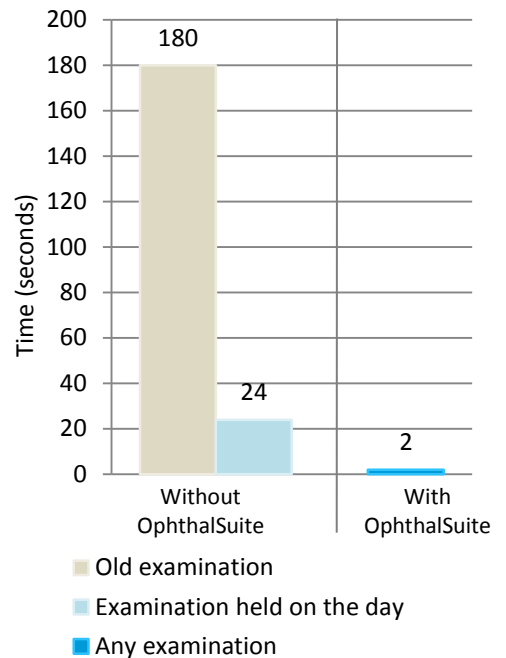


Image Quality Increase

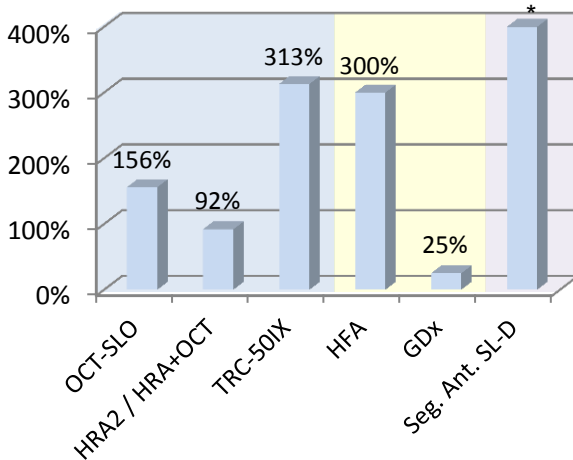
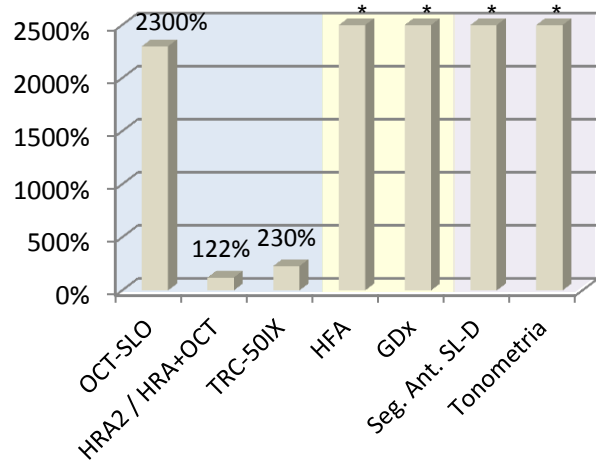


Image Quantity Increase



- Images that before the OphthalSuite were saved digitally using print screen
- Examinations that before OphthalSuite were only printed
- Examinations without any support before OphthalSuite

* Examinations whose content was not saved before OphthalSuite



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Benefits

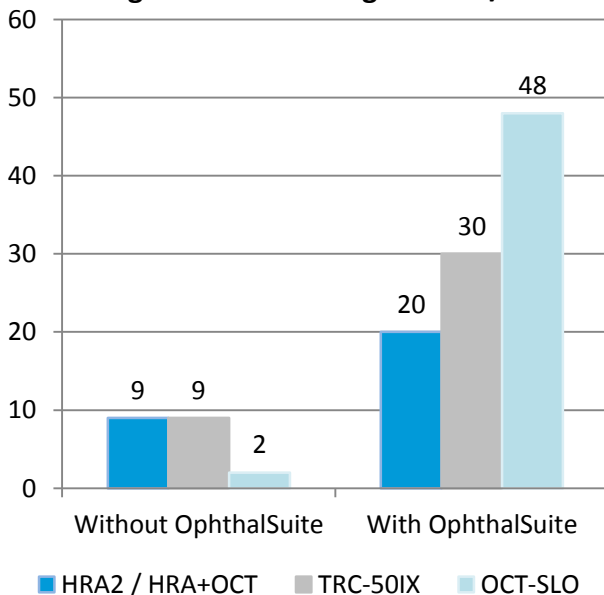
3. Fault Tolerance

- The automatic recovery of failures that can occur on the internal network and the ability to keep the system in operation during these precludes the need to suspend the examinations.
- Existence of backups to avoid data loss when a failure of equipment occurs.

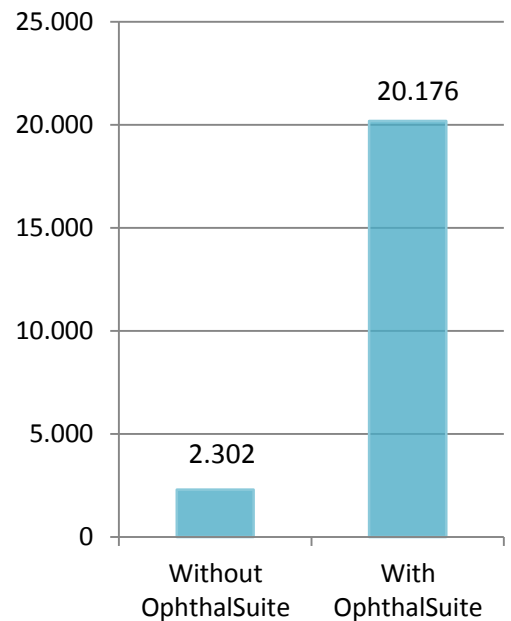
4. Business Intelligence - Research & Management Support

- Very easy to execute statistical studies, data collection and data mining (e.g., the mean ocular tension of all patients of the Glaucoma consultation).
- Possibility of extracting various reports, such as total number of exams grouped by equipment, pathology, physician and date.

Average number of images saved/examination



Average nr. of examinations saved digitally/year



BlueWorks - Medical Expert Diagnosis Ltd. is a technology based company that has as main objective the development of innovative systems to support the diagnosis and therapy, and is currently developing solutions primarily to the area of Ophthalmology. Improving the quality of health cares, optimizing processes and supporting health professionals in clinical practice is our mission.