ABOUT THE CLIENT

Feedback Medical Ltd (a company previously known, and referred to in this case study, as Cambridge Computed Imaging Ltd) is a specialist medical imaging technology company, dedicated to providing innovative software and systems to Radiologists, Clinicians & Medical researchers, with the aim of improving workflows and patient outcomes. Created by the merger of two established software companies; Cambridge Computed Imaging Ltd (www.cadranism.co.uk) and TexRad Ltd (www.texrad.com).

FUTURE PROCESSING’S ROLE

Our cooperation with CCI started 10 years ago. In collaboration with CCI, we have worked on advanced systems for fluoroscopy, angiography and the statistical analysis of medical images.

Projects developed with CCI are a good example of how research findings (also conducted at Future Processing) can be applied in the industry.
RESULTS OF THE COOPERATION

Future Processing helped to develop medical imaging software used in hospitals, universities and laboratories worldwide.

We helped CCI create software for a digital Fluoroscopy acquisition system called FluoroPro. The manufacturer of this combined hardware and software product was Virtual Imaging Inc. (later a subsidiary of Canon US), and the system successfully obtained FDA 510k clearance for use as a medical device in 2007.

Our engineers also assisted in creating an image sharing platform, used for teaching and collaboration between clinicians. This is a Cloud-based platform which allows real-time synchronisation of medical image display for multiple users in geographically separate locations.

Furthermore, we have worked with CCI on TexRAD.

Medical images are used to make decisions on patient care and treatment but are limited to what the human eye can see. TexRAD can be used to extract features (not perceptible by the naked eye) from images acquired in routine clinical practice.

The extra information provided by TexRAD has the potential to assist clinicians to make more informed decisions, for example by predicting the prognosis and enabling the stratification of patients with cancer so they receive the most appropriate treatment.

CCI chose to work with Future Processing, as the projects that CCI work on are not straightforward programming projects. They generally require a detailed understanding of Maths, Physics and Engineering in addition to the skill and knowledge required to implement code that is both fast and robust. The real-time processing and storage of medical images is often a time-critical operation, and all processes have to be designed in a way that minimises risk – ultimately to the patient.

Outsourcing this work made sense to CCI for a number of reasons, financial as well as practical. As a small business, the ability to have extra resource “on tap” has been very useful to us. At the same time, Future Processing provided us with some continuity – the background knowledge required to work with CCI’s code libraries is not insignificant, and so our relationship with specific key individuals has been essential. CCI have been able to extend the reach of our quality system to include those key individuals, allowing Future Processing to play a crucial role in the development of Medical Device regulated products for sale both in the US and EU.

DR. STEPHEN BROWN
COO at CCI Ltd
BUSINESS SIDE OF THE PROJECT

The Image Sharing platform was adopted by the International CTEPH Association (ICA) in July 2015.

ICA is an organisation of physicians, surgeons, and other medically qualified professionals committed to advancing the diagnosis and treatment of Chronic Thrombo Embolic Pulmonary Hypertension (CTEPH). This online platform enables specialists and centres to share clinical cases with selected users with the ultimate goal of improving the diagnosis and management of patients with CTEPH. The platform enables upload, sharing and discussion of images including CT scans, V/Q scintigrams, pulmonary angiograms, and MRI scans.

TexRAD has already proven its value in medical research and it is being applied in a wide range of studies which are then published in scientific journals.

As a research version it has been sold to universities and research institutes around the world. It is hoped that in the future TexRAD can be used to provide more information from clinical trials and help researchers understand the effects of new drugs.

CHALLENGES

The projects that we work on for CCI have to be conducted with great care, as the intended use of the end products will be as Medical Devices.

Our engineers have been trained to work within the constraints of CCI’s EN ISO 13485:2012-compliant quality system.

We have also provided small Agile Teams to work rapidly on smaller, well defined projects (such as the image sharing platform used by CTEPH).

Working on such an advanced research project is a challenge in itself. As well as software development, CCI have asked us to assist in performing research-based tasks, such as image analysis to extract important discriminative features, statistical analysis and more advanced machine learning techniques to guide algorithmic design.
WHAT HAVE WE LEARNED?

We’ve gained experience in the analysis of medical images, as well as in working with complex and innovative research projects, where there is a strong connection between science and business.

What is important, research at Future Processing has proven vital. Our engineers publish many scientific papers and present them on conferences and symposiums worldwide, among others, in Canada, Australia, USA, Spain, Mexico, Chile and China.

LOOKING TO THE FUTURE

The ultimate goal for TexRAD is for it to be used in clinical practice, to support diagnosis of cancer and other diseases, to enable patients to receive the most appropriate treatment.

CCI aims to extend their imaging platform to increase its applicability to an increasing number of medical image-related problems, and their ultimate solution in robust well-designed products.

---

PRIMARY TECHNOLOGIES USED:

- C++
- IPP
- WPF
- RIA
- OpenCV
- C#
- Silverlight

---

CAN WE HELP YOU SOLVE YOUR BUSINESS PROBLEM? CONTACT US TO FIND OUT.