

# Telemedicine: from concept to conception

## About IPL

IPL is a software and IT services company specialising in the delivery of intelligent business solutions. We help our clients to exploit corporate information assets to yield tangible business benefits.

IPL's consulting is renowned for its quality and value. We consistently exceed our clients' expectations through a combination of imaginative thinking, managerial and technical expertise and many years of systems engineering experience.

IPL's track record in end-to-end business solutions development is exceptional. Our proven development methodology allows us to cut through technical complexity, manage risk and completely focus on delivery. We always deliver reliable, efficient and accurate systems to a precise schedule.

IPL is certificated against three international standards:

- ISO 9001:2008/TickIT (Quality)
- ISO 14001:2004 (Environmental)
- ISO 27001:2005 (Information Security)

The company has a permanent workforce of 260, revenues of ca. £29M p.a. and 40,000 sq ft of secure office space in central Bath.



## How IPL takes the risk from medical product development

### Product development story

**Following research at Bristol University into the relationship between Basal Body Temperature and ovulation, Fertility Focus identified an opportunity to develop and market a unique Advanced Fertility Monitor.**

The product concept offered a brand new approach to the problems of planned conception and infertility diagnosis: a unique method of identifying (and then predicting for future cycles) the periods of maximum fertility in a woman's ovulatory cycle. The product also diagnoses women who are unable to conceive naturally, providing a faster route to medical intervention. Existing products and techniques have an error rate of 25-30% in identifying and predicting the fertile days in any cycle: the Advanced Fertility Monitor aims to reduce the error rate to 10% or below.

Fertility Focus required a quality conscious software specialist to develop the application software for the Advanced Fertility Monitor's reader system in accordance with FDA guidelines and CE conformity requirements.

Our reputation in medical software development led Fertility Focus to IPL. Our ISO9001:2008/TickIT certificated quality management system already had a proven record in the medical sector, and we could demonstrate extensive experience in relevant embedded systems development skills.

From a very early stage in the product's conception, IPL worked closely with Fertility Focus's other specialist partners: the researchers, the industrial design consultancy, the electronic engineering and manufacturing company, and the management consultancy, to ensure not only that the software met its technical requirements, but that those technical requirements addressed the real clinical and business needs.

IPL not only took on the development of the reader software, but provided a great deal of consultancy effort to help Fertility Focus to realize its ambitious goal. In a demanding time scale, IPL's effective communication and coordination capabilities were essential to the success of the project.

IPL's extensive knowledge of embedded systems development, working to exacting quality control requirements, together with effective consultancy and cooperation with other suppliers, assisted Fertility Focus with the successful production of the innovative Advanced Fertility Monitor in time for entry to market through a high profile medical trial.

## Entrepreneur Interview

**IPL customer Michael James has many years of experience as an entrepreneur in high technology fields. We asked him to share some of his experience in software-intensive telemedicine product development**

**IPL:** At what point in a telemedicine product's development do you call in the software specialists?

**Michael James:** Often a product needs software design input from before the very first prototypes. For a company which doesn't count software as its core expertise, moving from paper to a first prototype is a difficult transition. We may have an idea which we think is precise, but we have so little understanding about its implications for the operation of software, that we absolutely require expert help to make any progress at all if potential investors require evidence that the idea can be delivered.

**IPL:** Do you ever find it difficult to get the software reliability that your product needs?

**Michael James:** I think this is a real challenge, but possibly not in the obvious sense that your question meant. For example, product designers can find it difficult to think about all the possible ways in which a user interface might fail, either due to misuse, or (which was a much more difficult thing to analyse) due to unpredictability in the product's environment. It can require a great deal of work to anticipate all the potential external events, and it's important to find a software supplier that can do the sort of analysis that's needed to achieve reliability in this respect.

For me, IPL's input has been absolutely essential in getting this right. A product recall because of software unreliability would be catastrophic for a new product, and any product developer needs to control that risk; not all software specialists have the software reliability skills to do that.



**IPL:** In choosing a software partner, do you look for more than just technical capability?

**Michael James:** Generally, yes. It's not enough to find someone who can do the early prototypes. A software partner needs to be big enough to take on the whole software development. I would be reluctant to take on a project where I had to use one developer for one aspect and another to deal with something else. And as product investors are always anxious to control their risk, it's very helpful to use a software partner with a known and trusted name. I chose to use IPL on the basis of a recommendation from a person I trusted, and I'm happy to pass that recommendation on.

**IPL:** Is getting the software for a composite hardware/software product very different from developing a pure software product?

**Michael James:** Getting good communication between hardware and software development teams is critical. You need a software supplier that gives very clear visibility of what it's doing, and that can work comfortably with very technical information from the hardware team. And often the hardware development lead time means that the software developer has to be able to get very close to software completion before the hardware is ready. Not every developer has the design discipline to do that but I must say that IPL were really excellent in this respect.

**Michael James is Chairman of Fertility Innovations Ltd.**



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