Institution: Middlesex University
Unit of Assessment: 03
Title of case study: Electrical Impedance Tomography
Period when the underpinning research was undertaken: 2014 and ongoing
Details of staff conducting the underpinning research from the submitting unit:

This was an award-winning article in *Physiological Measurement* with significant contribution by the research group at Middlesex comprising accurate forward models of adult male and female thorax, but more specifically of an infant's thorax. These significant developments of EIT led to four significant grants that ultimately allowed this work to be applied in a clinical setting. The first from EPSRC in 2008, resulted in the contribution to the Electrical Impedance and Diffuse Optical Reconstruction Software project (EIDORS). This is a freely available website that provides software algorithms for forward and inverse modelling for EIT and Diffusion based Optical Tomography in medical and industrial settings. This site is also used worldwide to share data and promote collaboration between groups working in this area (over 2000 downloads and cited on over 100 published papers).

Clinical translation and hardware development ***(2016 onwards)***

The research described above allowed the team to develop algorithms and hardware for image reconstruction, parameter measurement and boundary form generation [6]. This culminated in the

been involved with it use. This includes Cyprus who had not previously been using EIT for clinical practice, hence increasing the user base of this technology.

3. Web site (cradlproject.org) showing the device used in Hospitals (see video on website). Middlesex led the development of the CRADL project and coordinated it, along with key contributions in hardware (new belt designs) and software. This shows its impact on all areas, software, hardware and clinical practice. The industry partner was able to disseminate the use of EIT to a wider clinical group at conferences and major trade shows (s