

# New challenges and applications for ultrasonic imaging: Exploring the parallels between medical imaging and NDE (non-destructive evaluation)

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Recent developments in parallel computing technologies have seen increasing cross disciplinary interest in applications of 2D ultrasonic array imaging. Implementations of full matrix capture (FMC) and the total focussing method (TFM) on increasingly low cost hardware provide the driver for new applications of ultrasonic imaging technologies across many diverse sectors. The Centre for Ultrasonic Engineering at Strathclyde University has a broad range of interests in these approaches ranging from sonar systems, through non-destructive evaluation (NDE) and medical imaging, to delivery mechanisms and associated system integration in robotics and large volume metrology. This paper will describe some of the fundamental motivations, technical obstacles, and key enabling technologies required to address the global challenges in driving the uptake of these new capabilities in ultrasonic imaging. Examples drawn from NDE and robotic knee surgery will be used to illustrate some of the key drivers, challenges and opportunities in this area.