

News Article for RISUD Strategic Focus Area (SFA) Scheme

	Name	Department
1. Principal Investigator:	Xiaoli Ding	LSGI
2. Name of SFA:	Smart Utilities	
3. Project Title:	Development of a Strategic Focus Area (SFA) in Utility System Research	

4. **Second Year Progress/Achievement**

Sensing the conditions of underground utility systems such as water and gas pipes, cables and tunnels is critical to ensure the normal operations of the systems. The research has been focused on developing various sensing technologies including Interferometric Synthetic Aperture Radar (InSAR), Global Navigation Satellite Systems (GNSS), Ground Penetrating Radar (GPR), and Unmanned Autonomous Vehicle (UAV) based sensing technologies. Progress has been made in developing new InSAR algorithms that enable more accurate and reliable ground deformation measurements with InSAR, a state-of-the-art remote sensing technology for ground deformation measurements. New GNSS techniques have been developed for more accurate real-time positioning based on signals from multiple navigation satellite systems. New algorithms called time-lapse GPR slices and change detection have been developed for more accurate subsurface diagnosis with GPR. An UAV system that is able to fly in closed space where GNSS signals are not available has been developed and tested. The research team has been very active in applying major external research funding. Members of the research team have also been invited to carry out consultancy services in the field by, e.g., various government departments.