**THE LARGE TANK FACILITY**

- A general-use facility for testing and calibrating underwater sources and receivers, support of experiments in acoustic scattering and propagation, testing new concepts, and the operational evaluation of new systems
- Freq. range: 250kHz - 15 MHz
- Provides both acoustical and optical access

**THE ANALOGIC ULTRASOUND ENGINE**

The Ultrasound Engine is a fully-configurable diagnostic imaging machine donated to CenSSIS by Analogic Corp.

- 64 channel digital beamformer
- Open software interface - Matlab Toolbox
- Beamformed signals can be acquired from any stage of the image processing
- Non-beamformed signals for 64 consecutive channels
- Engine supports (or has supported) 6 different CenSSIS projects:
  1. Tissue Harmonic Imaging
  2. Elastic Modulus Imaging
  3. Coral Imaging
  4. Quantitative Ultrasonic Imaging
  5. Opto-Acoustic Imaging
  6. Image Guided Ultrasound Therapy

**AFFILIATED PROJECTS**

**QUANTITATIVE ULTRASOUND IMAGING**

- **Topological Evaluation of New Acoustic Scattering and Propagation, Calibrating Underwater Sources and Different CenSSIS Projects**: Engine supports (or has supported) 6 different CenSSIS projects:
  1. Tissue Harmonic Imaging
  2. Elastic Modulus Imaging
  3. Coral Imaging
  4. Quantitative Ultrasonic Imaging
  5. Opto-Acoustic Imaging
  6. Image Guided Ultrasound Therapy

**ELASTIC MODULUS IMAGING**

- Many clinical diagnoses are made by manual palpation to detect stiff lumps
  - Approach: Developed a 3D inversion of the elastic deion problem in tissue which yields quantitative reconstruction of elastic modulus of tissue.
  - Results: A tissue phantom undergoing deformation was imaged with the Analogic Engine. The inversion correctly reconstructed the inclusion.

**TECHNOLOGY TRANSFER**

- **MedBED is a general purpose testbed that supports all manner of CenSSIS research in ultrasound, nonlinear and dual wave imaging**
  - Provides a pathway in which algorithms developed in R2 can be implemented as proof-of-concept to show potential for commercialisation
  - Most of the applications that utilise MedBED employ commercially available ultrasound imaging systems that will allow for rapid progression to commercial viability