



Manchester
Metropolitan
University



Sensing & Imaging
Group



Working together for a safer London

MiRTLE

Millimetre **R**adar **T**hreat **L**evel **E**valuation

Sensing & Imaging Group,
Manchester Metropolitan University
&
Metropolitan Police Service

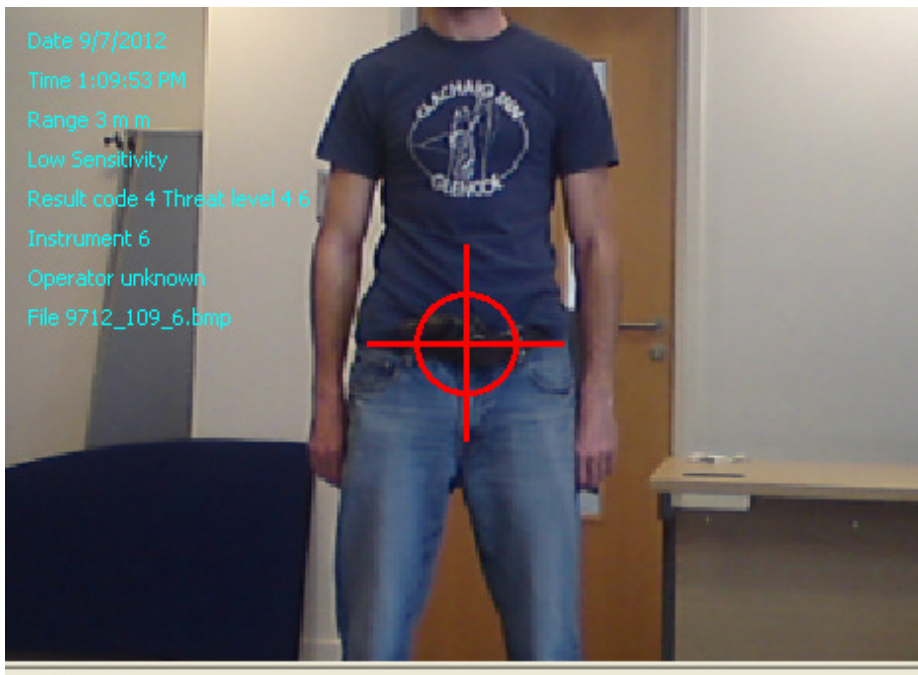
The Sensing & Imaging Group at Manchester Metropolitan University in collaboration with the **Metropolitan Police Service** have developed autonomous sensor systems for the detection of threat objects (handguns, PBIED knives etc) concealed under the clothing.

MiRTLE is mounted on a tripod and can be used at ranges of up to 30 metres.



Prototype MiRTLE device mounted on tripod

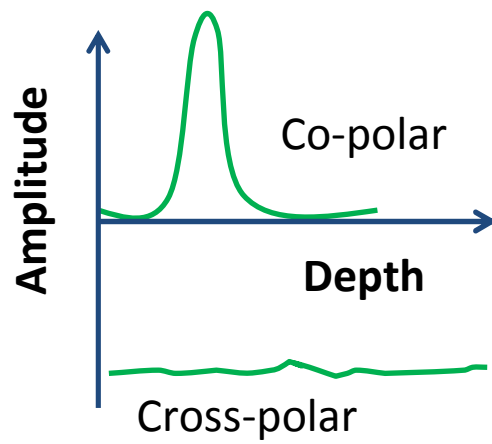
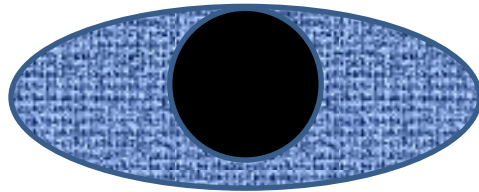
A selection of typical weapons which may be concealed under clothing.



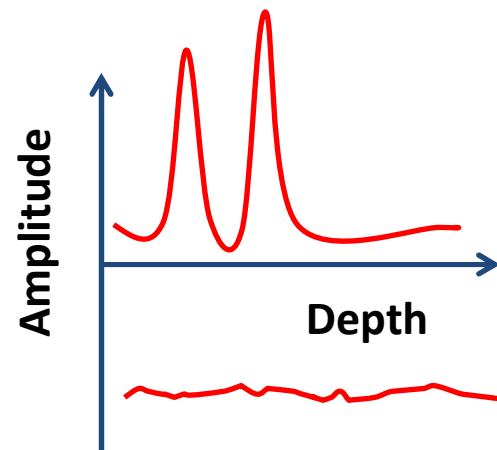
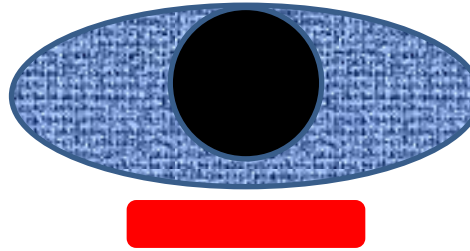
Detection Technique

- Utilises **ultra wide band** radar to enable detection of objects placed in front of the body
- Analyses the **polarisation** state of the scattered radar beam
- Compares these signatures to results taken for scenarios with and without threat objects present
- Makes **autonomous**, real time threat level decision

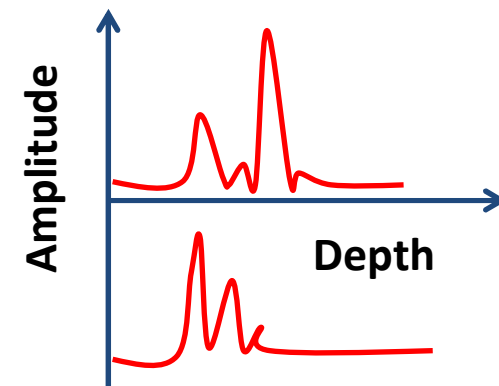
No threat



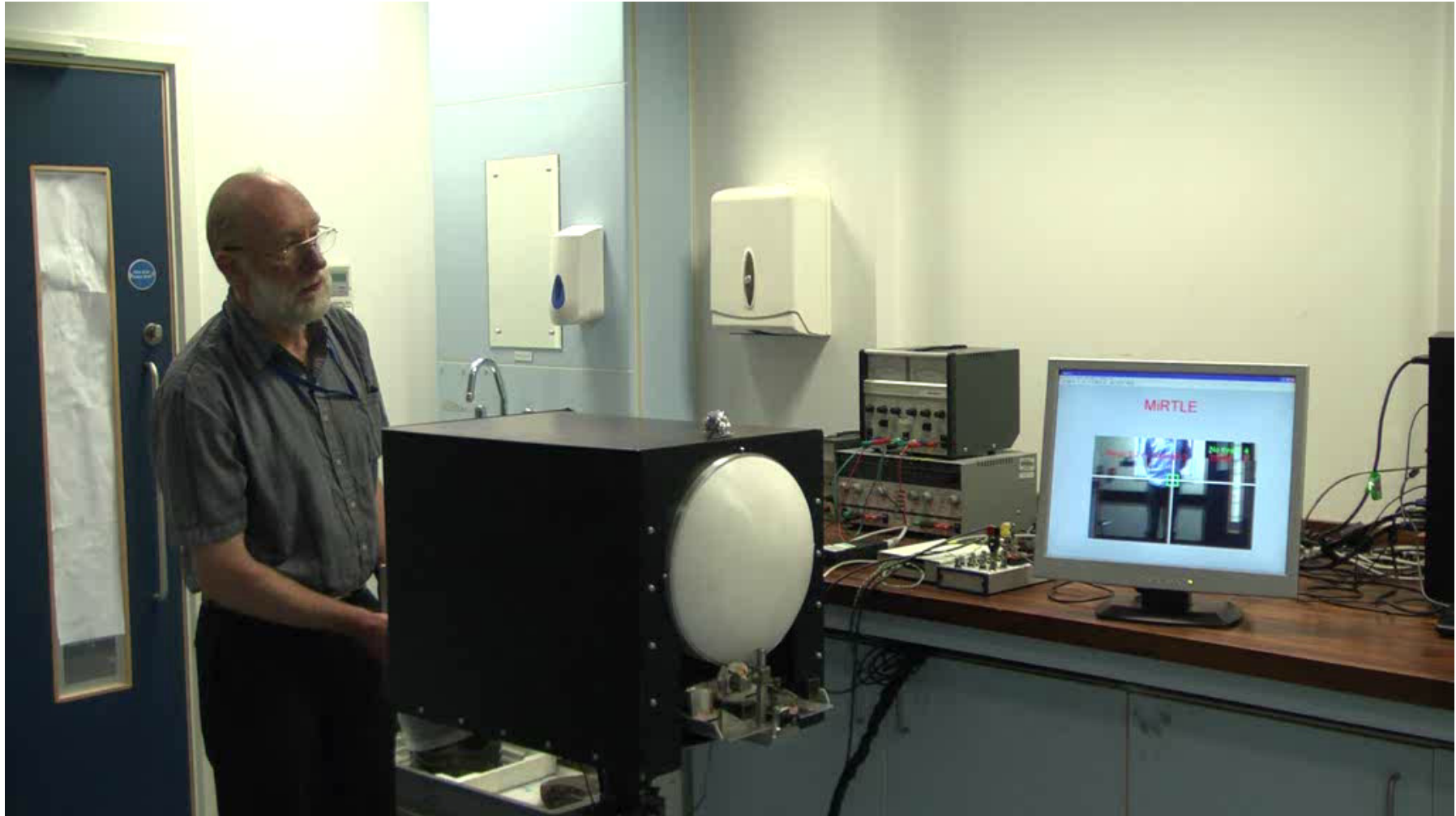
PBIED



Handgun



MiRTLE: Lab Demonstration



- **MiRTLE** at TRL 7
- **Strong IP position:** Nineteen patents filed and patents granted in US, UK and South Africa.
- **Interest from US DoD & Commercial Interest** from Several Defence & Homeland Security companies.
- **Very little competition** (most other systems are based on imaging systems, which are very much more expensive to build and cannot form the detailed images required for detection at extended ranges).
- **Successful in independent testing and trials**
- Developed in Collaboration with MPS so has a **strong CONOPS** input and the development has been end user led.
- **Fully autonomous** operation (no user interpretation of imagery required).
- **System improvement** (further R&D work in progress).