Challenges in Long Range Surveillance using Passive Radar

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Passive Radar using FM radio as an illuminator has been shown to provide exceptional surveillance coverage, however there are significant additional challenges with extending this surveillance coverage, as well as increasing the baseline distance.

This presentation will consider the issues in surveillance of targets at long ranges, in order to achieve a practical implementation of a long range passive radar, using broadcast illuminators.

A thorough analysis of the realisable limits in the parameters available to the radar engineer will be included, covering noise, antenna gain, and integration time, and their effect on the target detection range.

Finally, long range results will be presented, including detection of aircraft and satellites from recent DSTG trials in central Australia, demonstrating a practical example of the limitations of these approaches.