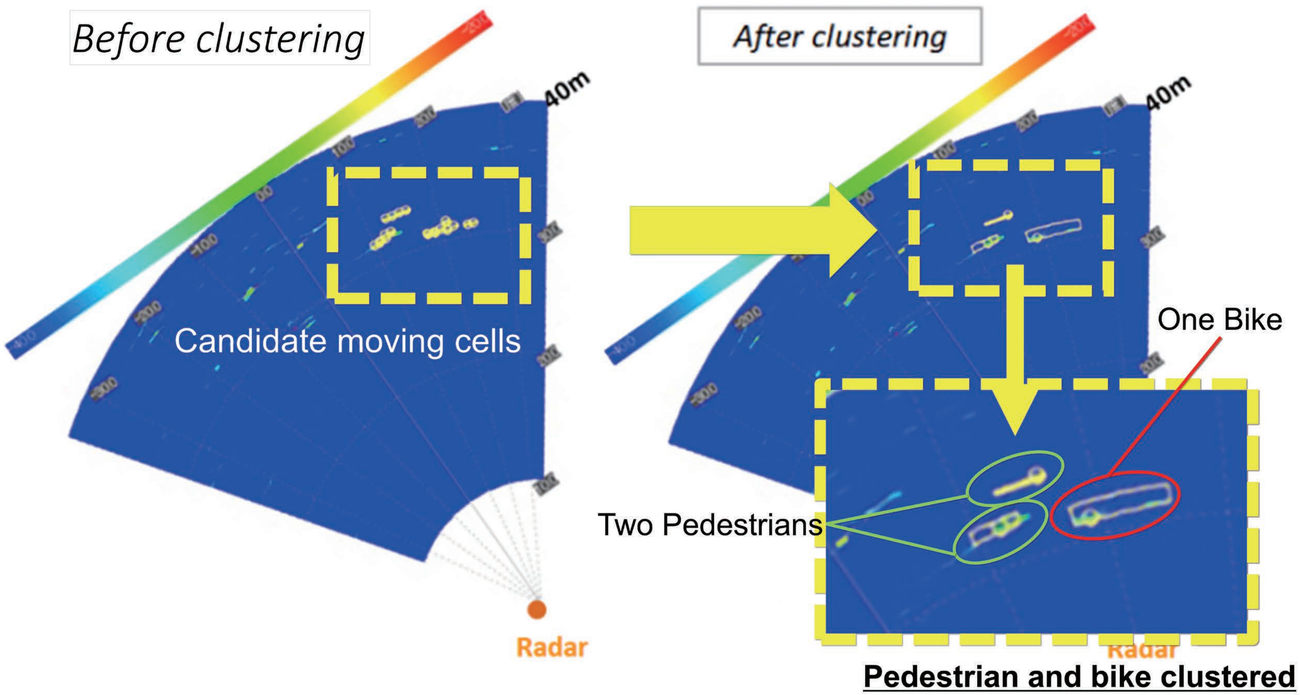
Connected Vehicles Infrastructure Radar System

Development of infrastructure radar system

High-resolution radar technology

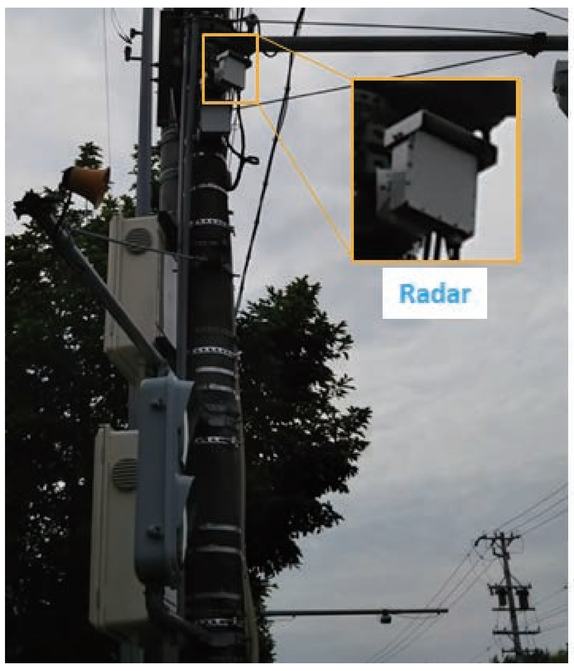
As expectations for spatial imaging by millimeter-waves are increasing, the way of scanning a wide angle is becoming a standard operation of the high-resolution 79 GHz band radar.



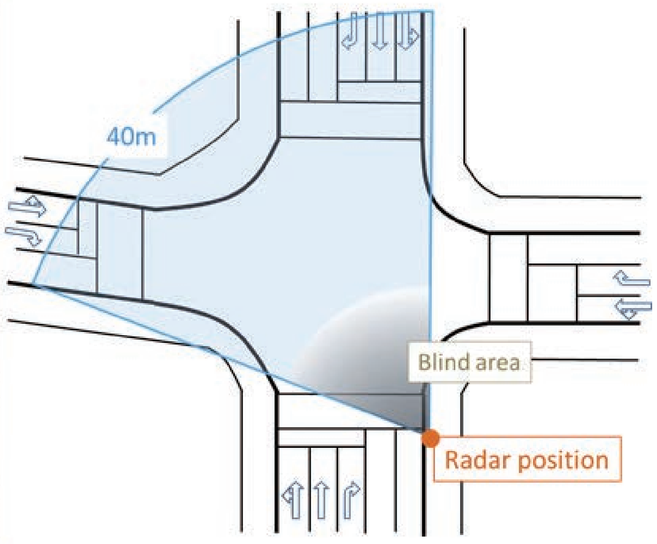
- ✓ In order to improve the effective detection accuracy of the radar system, it is essential to optimize clustering and tracking based on the echo characteristics of targets.
- ✓ It is necessary to treat the spatially spread candidate cells as the same group by using the Doppler frequency and the like.

Detection accuracy verification on public road

The improvement the effective detection accuracy of our 79 GHz band radar system was verified through the detection of pedestrian on the crosswalks and the measurement of traffic volume on the inflow paths at the intersection of public road, where the experimental system is installed.



Installation of the radar



Bird view of the intersection

- ✓ The present system is set to output the scan data at a frame period of 50 ms, and its maximum detection distance for a pedestrian is about 40 m and for a passenger car is about 80 m.
- ✓ When the detection target is a pedestrian, the power of its echoes randomly fluctuate, so an interpolation processing in a plurality of data frames is required.
- ✓ By applying the interpolation processing of the several frames, the detection rate achieved 95 % or more, and the false alarm rate result to be about 1 %.

Detection accuracy on the crosswalkers

	Time (frame)	Result
Pedestrian detection rate	165 s (3300)	95.5 %
False alarm rate	402 s (8040)	1.1 %

Panasonic