received radar signal which incorporate the aircraft's own forward movement, SAR's create the effect of focusing the radar image through creation of a "synthetic" antenna up to a kilometre or more in length. SAR resolution is virtually independent of altitude and stand-off range, unlike the earlier RARs. SAR has an improved resolution over RAR by a factor of one hundred or more. Early SARs were limited because of the cumbersome optical processors required for the synthetic focusing operation. The newer commercially available state-of-the-art SARs are now capable of processing real time synthetic aperture information on-board relatively small twin engine turbo-prop aircraft. SAR systems can also incorporate a Moving Target Indicator (MTI) that automatically cues the operator to moving targets within the radar scene. The wide swath coverage enables very large areas to be searched quickly and comprehensively.

SAR systems can acquire data in two modes; high resolution mode (23 km swath width) or wide swath mode (46 km swath width) from an operating altitude of 11,000 m above ground level. The base system parameters for commercially available SARs are as follows:

Frequency:	X-band (3 cm wavelength)
Polarization:	HH, parallel
Pixel Size: (Resolution)	Azimuth: 6 m Range: 6 m (23 km swath width) or 12 m (46 km swath width)
No. of Looks:	7
Weight:	450 kg, including antenna and recording systems

The SAR systems use real-time, on-board digital processing. The data products and replay capabilities include an interface for on-board, real-time display and digital recording, as well as the capability to downlink a digital data stream to a ground-based receiving station. In other words, the operator on the aircraft can see immediately an image of what the SAR sees. The data can also be transmitted to a ground station or recorded