Adaptive active phased array radars

Adaptive active phased array radars are seen as the vehicle to address the current requirements for true multifunction radars systems. Their ability to adapt to the environment and schedule their tasks in real time allows them to operate with performance levels well above those that can be achieved from the conventional radars.

Their ability to make effective use of all the available RF power and to minimize RF losses also makes them a good candidate for future very long range radars. The AAPAR can provide many benefit in meeting the performance that will be required by tomorrow's radar systems. In some cases it will be the only possible solution.

It provides the radar system designer with an almost infinite range of possibilities. This flexibility, however, needs to be treated with caution: the complexity of the system must not be allowed to grow such that it becomes uncontrolled and unstable. The AAPAR breaks down the conventional walls between the traditional systems elements- antenna, transmitter, receiver etc-such that the AAPAR design must be treated holistically.

Strict requirements on the integrity of the system must be enforced. Rigorous techniques must be used to ensure that the overall flow down of requirements from top level is achieved and that testability of the requirements can be demonstrated under both quiescent and adaptive condition.