

Full title/name of award: TAN KAH KEE YOUNG INVENTORS AWARD 2005 – DEFENSE SCIENCE CATEGORY

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Details of Invention: The invention makes use of the Bluetooth-enabled mobile devices to establish a virtual link list between all the participating mobile devices.

For the application being considered in the present project, the object of the invention to establish an ordered link list Bluetooth connection between the mobile devices held by the drivers in a vehicle convoy. The purpose is to detect any break in the movement and alert the leading vehicle to slow down to wait for the deviate vehicle.

Using a novel recursive tree algorithm that operates on two separate recursion algorithms, the invention establishes the following performances improvements over normal link list structure.

- **Fast response time** – Minimum number of communication hops between first and last vehicle in the convoy enable a shorter upper bound round trip communication time.
- **Efficient Breakage Detection** – Efficient divide and conquer search algorithm is employed over the ordered link list to minimize search count and reduce Bluetooth frequency collision probability.

With the novel tree algorithm, the invention is able to link a large number of vehicles to move in tandem without deterioration in performance.

Even during emergencies when cellular phones are rendered useless due to operational failures at the telecommunication base station, the invention enables a vehicle synchronization application for the cellular phone without the base station.