

High-Bandwidth, Secure UAV Communications

<p style="text-align: center;">WaveCloak™ Technology</p> <p>The diagram illustrates the WaveCloak™ technology architecture. It features a Retrodirective Array (purple) that receives signals from a Receiver (top right) and reflects them back. A Comms Pipeline (green dashed line) connects the Receiver to the Retrodirective Array. A Null Steering Array (orange) is used to direct signals. Comms Data (purple) and Jamming Data (orange) are processed by the system. A JAMMING SIGNAL (orange) is emitted, while the COMMS SIGNAL (purple) is directed towards the Receiver.</p>	<p style="text-align: center;">Key Discriminators</p> <p>Operational Capability</p> <p>Patent pending WaveCloak™ lowers the probability of signal intercept by providing an additional layer of wireless security that never before existed. It allows a narrow communications beam to be steered between mobile nodes while sending a jamming signal in all other directions.</p> <p>Internet protocol and 802.11 wireless technology used to accomplish low cost, high bandwidth data communications link</p> <p>Specifications that will be achieved are a minimum data rate comparable to high definition video and implementation of the novel security feature</p>																												
<p style="text-align: center;">Program Description</p> <p>Problem being Addressed</p> <p>UAV imaging systems use onboard processing to accommodate low-bandwidth data links, resulting in a loss of information fidelity. The images are often sensitive information, yet the UAV antennas broadcast the signal in a wide area, increasing the probability of interception. A high bandwidth, secure communication link is needed.</p> <p>Technology Readiness Level: 3</p> <p>Champions</p> <p>BAE Systems committed to a subcontract to help the project succeed technically and commercially.</p>	<p style="text-align: center;">Milestones/Deliverables/Date/Status</p> <table border="1"> <thead> <tr> <th>Milestone</th> <th>Deliverable</th> <th>Date</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>Planning Stage</td> <td>Requirements specification</td> <td>11/30/05</td> <td>Complete</td> </tr> <tr> <td>Concept Development</td> <td>Most feasible implementation concept selected</td> <td>1/30/06</td> <td>WIP</td> </tr> <tr> <td>Detailed Design</td> <td>Reviewed system design</td> <td>4/30/06</td> <td>Future</td> </tr> <tr> <td>Implementation</td> <td>Assembled prototype system</td> <td>6/30/06</td> <td>Future</td> </tr> <tr> <td>Engineering Validation</td> <td>System test completed</td> <td>9/30/06</td> <td>Future</td> </tr> <tr> <td>Wrap Up</td> <td>System demonstration</td> <td>10/30/06</td> <td>Future</td> </tr> </tbody> </table>	Milestone	Deliverable	Date	Status	Planning Stage	Requirements specification	11/30/05	Complete	Concept Development	Most feasible implementation concept selected	1/30/06	WIP	Detailed Design	Reviewed system design	4/30/06	Future	Implementation	Assembled prototype system	6/30/06	Future	Engineering Validation	System test completed	9/30/06	Future	Wrap Up	System demonstration	10/30/06	Future
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