Self-Configuring Wireless MEMS Network

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Project Description

- Considerable interest in miniature, lightweight, self-powered wireless sensors.
- Networking software should sense other compatible sensors and establish secure communication.
- Software needs to be small and efficient.
- Network should be adaptable to real-time changes in number of networked devices, changes in environment, hostile EMI, etc., without loss of service.
Our Solution

• Investigate, prototype, and test small networking software package that meets requirements of secure, viable, and adaptable communication assuming all mobile devices.
• Develop report that identifies and describes work, including requirements, designs, tests, and source.
• Provide software demonstration/prototype.
Our Solution
Experimental Plan

• Leverage existing standards and guidelines to apply and scale to new applications.
• Use model-based engineering techniques for requirements and design.
• Use integrated development environments and automated test and test generation tools.
Industry Member Benefits

- Lockheed Martin Aeronautics: sensors can be installed practically any location and left to function without requiring access panels for maintenance.
- Envisioned use includes condition based maintenance and flight-test and consumer instrumentation applications.
- Large cost savings are be achieved in predictive maintenance rather than timed or reactive maintenance.
Deliverables and Budget

**Deliverables:**

3-months: Interim review of literature search and assessment activities
6-months: Perform incremental review of designs, tests, and prototype code using integrated development environment
9-months: Provide demonstration (actual equipment, prototype, and/or simulation) of network capability to deliver information to requesting system illustrating network re-configurability with nodes dropping out and adding in.

**Budget:**

- Support 2 graduate students, 2 months for PIs, and 2 travels
- $93K for 1 year

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Duration</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>2 graduate students</td>
<td>1 year</td>
<td>$70,000</td>
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<td>2 faculty months</td>
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<td>Travel</td>
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<tr>
<td><strong>Total Cost</strong></td>
<td><strong>1 year</strong></td>
<td><strong>$93,000</strong></td>
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