Rapid, Near-Surface Geologic Site Characterization for HDBT Defeat

Vision

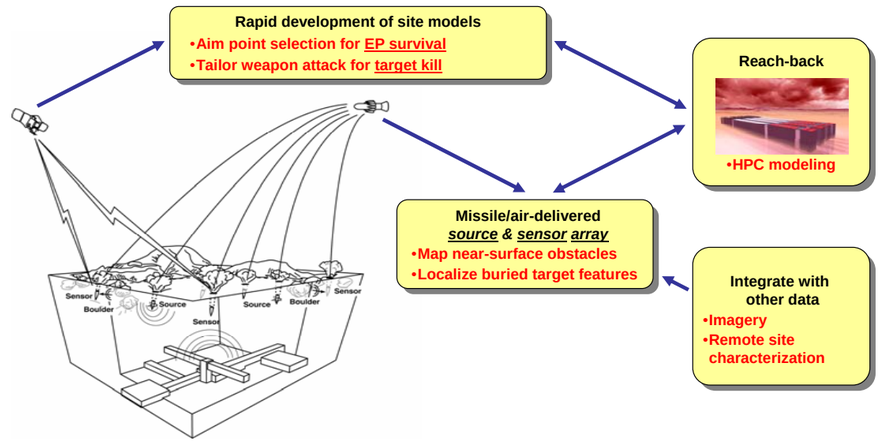
Perform R&D on the key technologies for a sensor system that would assure success of an EPW strike on an underground strategic target through

- rapid site characterization
- optimal aim point selection

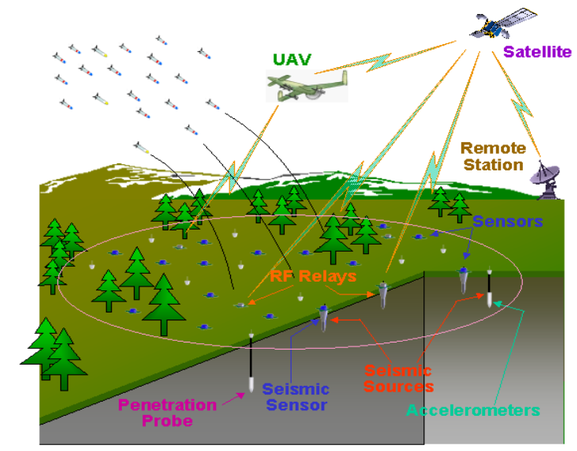
Key Features

- Rapid aerial deployment of self-forming networks of sensors
- High data transmission rates and reach-back
- Rapid characterization of surface geology and penetrability
- Prediction of loads on earth penetrator
- Potential facility localization through passive monitoring
- Potential passive monitoring for BDA
- Potential beacon for improved weapon guidance

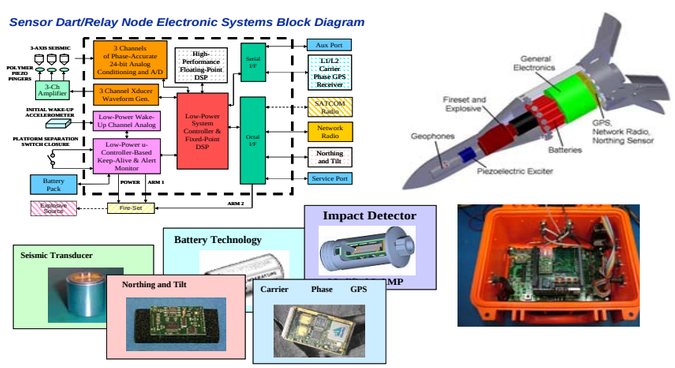
Rapid Site Characterization



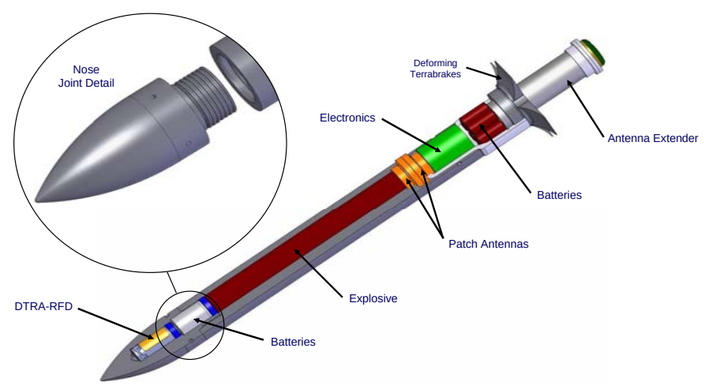
Concept of Operations



Sensor Dart/Relay Node Design



Penetration Probe Design



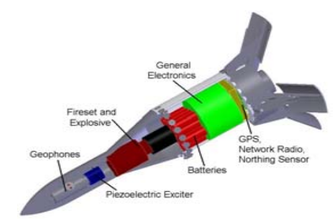
Dart and Probe Drop Tests

Goals

- Ensure terrabrake operation and confirm design robustness
- Shock test components in an actual penetration event
- Confirm deceleration data reduction algorithms
- Gather deceleration data from known sites

Results

- Conducted helicopter drops of 3 darts and 2 probes into Antelope tuff (S=2) and Antelope lake (S=8) at Tonopah Test Range
- Terrabrakes on dart and probe performed as designed, even in very soft targets
- Critical electronic components survived



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