

Mine Rescue – Gemini-Scout

Development Project for NIOSH/MSHA

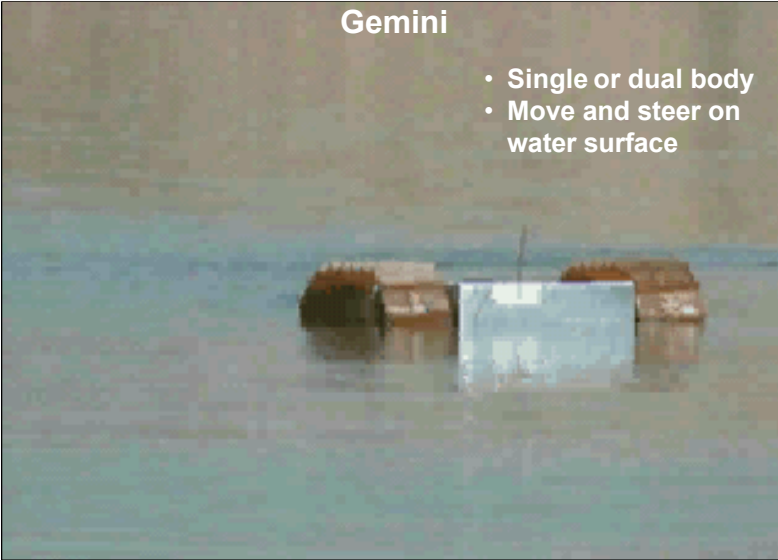
March 2011

Jon R. Salton

Gemini / Sand Dragon Robot

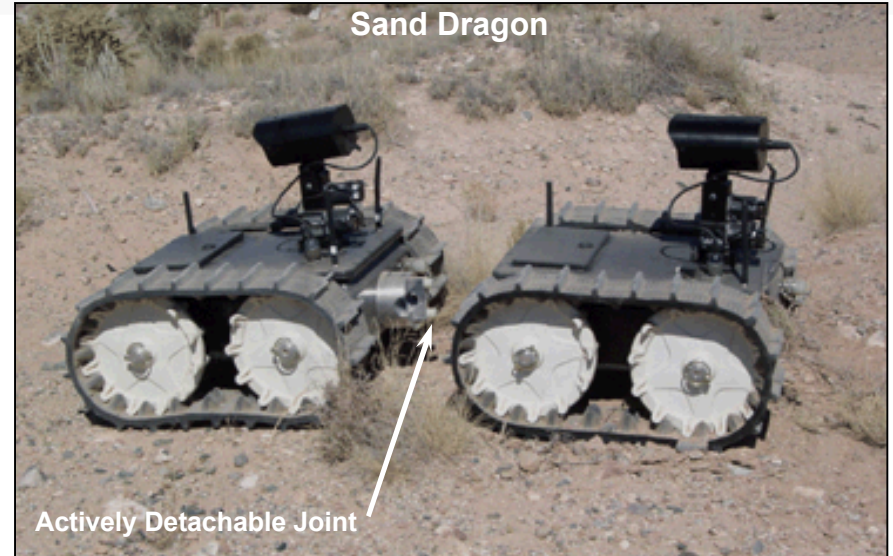
Gemini

- Single or dual body
- Move and steer on water surface



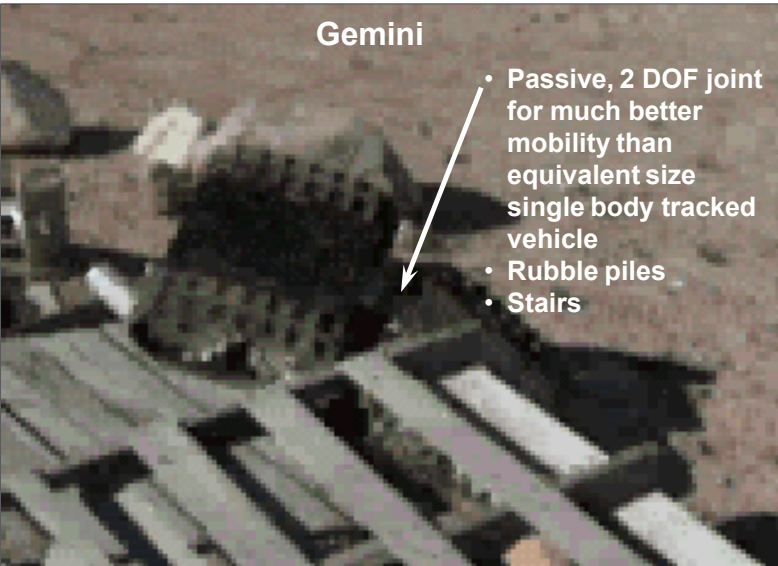
Sand Dragon

Actively Detachable Joint



Gemini

- Passive, 2 DOF joint for much better mobility than equivalent size single body tracked vehicle
- Rubble piles
- Stairs



Original Gemini platform was based on mobility analysis for wheeled and tracked vehicles traversing obstacles

- Dual body concept ideal for larger obstacles and unstructured terrain
- Identified what degrees of freedom optimized capabilities
- Established length/width ratios for ideal tracked vehicle skid steering capabilities



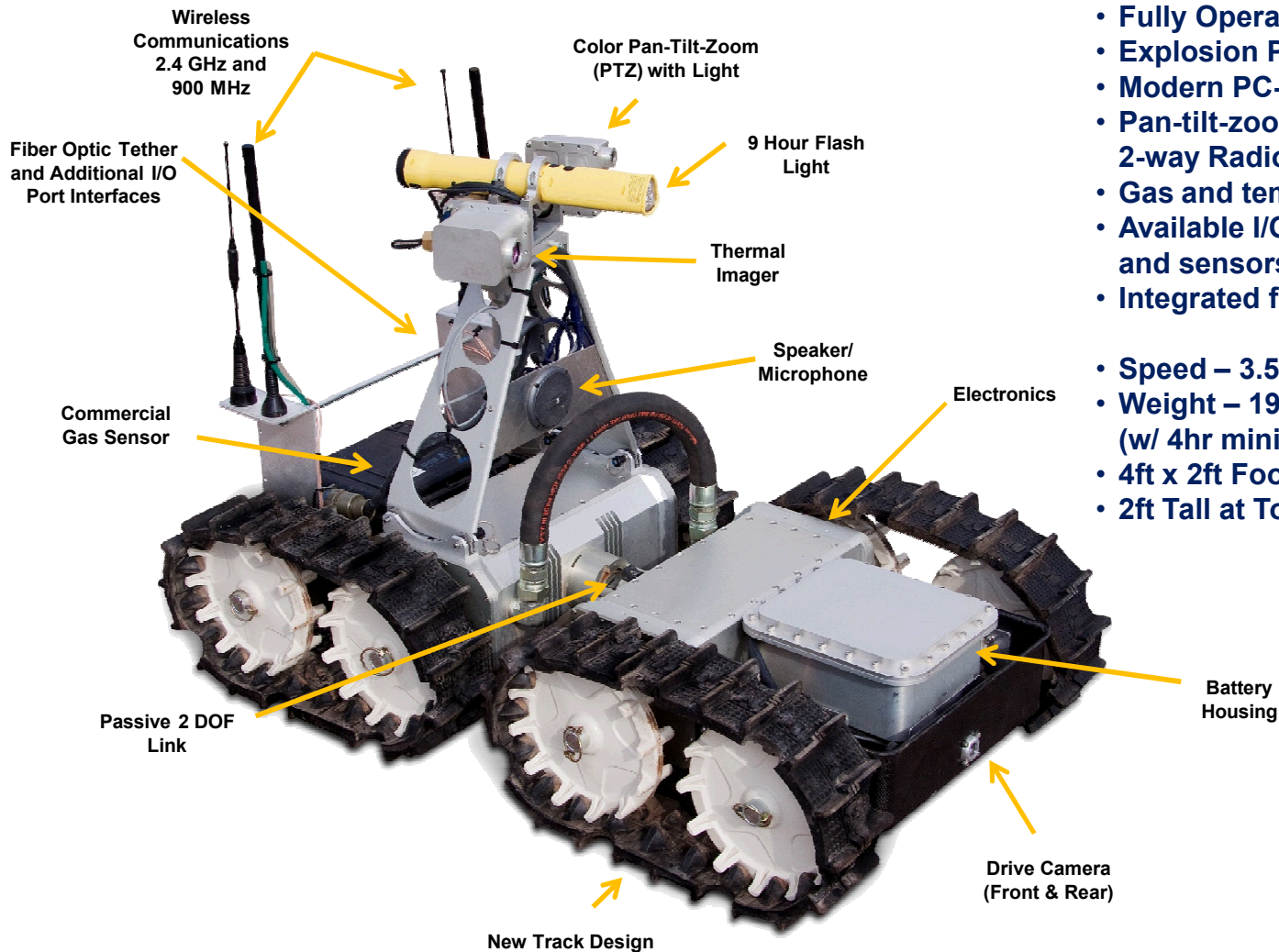
Gemini-Scout

Mine Rescue Vehicle

Patent Caution

Specifications:

- Extreme Ground Mobility Platform
 - Fully Operational in ~18 inches of water
 - Explosion Proof Housing
 - Modern PC-based Control Interface
 - Pan-tilt-zoom color and IR cameras with 2-way Radio and lighting
 - Gas and temperature sensors integrated
 - Available I/O's for adding payloads and sensors
 - Integrated fiber optic interface
-
- Speed – 3.5 MPH
 - Weight – 190 LBS (w/ 4hr minimum battery life)
 - 4ft x 2ft Footprint
 - 2ft Tall at Tower



Early Testing

Pittsburgh Bruceton Research Mine – May 2010



NIOSH Testing

NIOSH Requirements Testing – Dec 2010



NIOSH Testing

NIOSH Requirements Testing – Dec 2010



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