



# Investment Profile

## Company Overview

InSeT Systems LLC, established April 2006, is developing a patented **Inertial Sensor Tracking** system that will dramatically aid rescue efforts in mines. The InSeT System uses miniature inertial sensors, proprietary software, and a wireless radio network to display and record the real-time location of miners working underground. The InSeT System provides unprecedented tracking accuracy – tracking miners within a matter of a few feet – thereby enabling rapid, highly targeted rescue efforts when mining disasters occur.

The InSeT market opportunity is driven by Federal and State legislation introduced in 2006 that requires mines to implement wireless communications and tracking systems. InSeT is working closely with the Mine Safety and Health Administration (MSHA), as well as the National Institute of Occupational Safety and Health (NIOSH) to comply with this new safety legislation. Demonstrations of the technology's communication relay links and inertial tracking devices have been successfully completed in the largest underground coal mine in Ohio. The technology can also be used to improve the operating efficiency of mines by providing ongoing tracking of mining tools and equipment.

## Solution Overview

The InSeT underground miner tracking system utilizes highly advanced software programming, similar to the NASA Space Shuttle, navy submarine and military satellite navigation systems, to accurately track miners working in underground mines. Recent advances in the miniaturization of sensors have made possible the creation of small battery operated personal navigation devices that can be attached to the miners working underground. These devices communicate via an underground redundant radio mesh network to the mine dispatcher's workstation where a display monitor shows the location of each miner on a map of the mine in real time. In the event of an accident in the mine, the current position of all underground miners is known. During a rescue mission, additional tracking units can be provided to the members of the rescue team to direct them to trapped miners.



## Target Markets

**\$500 Million U.S. market:**

- 630 Underground Coal Mines

**\$2 Billion International market, led by:**

- Canada
- Australia
- South Africa

## Regulatory Drivers

**Federal MINER Act**

- Signed into law June 2006
- Requires mines to implement wireless communications and tracking systems by June 2009, though date extension is expected

**West Virginia Legislation**

- Senate Bill 247 passed on January, 2006
- Requires mine operators to provide wireless tracking systems and communication devices
- Other States are expected to follow

## Competitive Advantage

The InSeT system is superior to “zone” based tracking systems, due to location accuracy of less than 3 meters in both pre-disaster and post-disaster circumstances. In the event of an emergency, the underground mesh network continues to operate on batteries even when the power is cut off. The InSeT system can also be designed to work with existing wireless mesh networks that may already be present. A broad patent covering the use of inertial navigation in underground applications was issued to InSeT Systems on July 15, 2008.

## Management Team

**Russell Breeding, Chief Technical Officer**, served 10 years in the U. S. Navy as head technician on nuclear submarines in charge of maintaining and operating the ships’ inertial navigation systems. After retiring from the Navy, he worked as a Systems Analyst and troubleshooter for several government contractors.

**Jay Breeding, Chief Operating Officer**, has over 45 years of management experience in both manufacturing companies and divisions of companies in the rubber and plastics industries. Jay has a BS in Mechanical Engineering from Carnegie-Mellon University.

**Mike Millam, Chief Engineer**, served 6 years in the U.S. Navy as a Reactor Operator, and has more than 20 years of technical and project management experience with Navy contractors, 11 of these in direct support of inertial navigation systems. Mike has a BS in Mechanical Engineering Technology.

As the company ramps up, key members will be added to the team including technical field personnel to oversee system installation and training, software developers and quality assurance managers.

## Financials (\$ in Millions)

Projected	2009	2010	2011	2012
Revenue (\$MM)	\$ 1.8	\$ 11.8	\$ 23.5	\$ 35.3
Net Income (\$MM)	(\$ 0.2)	\$ 1.8	\$ 3.8	\$ 5.7
Mines Installed ea year	4	25	50	75

The Company has secured a \$400,000 convertible debt commitment from JumpStart, Inc. and has raised an additional \$793K from the Ohio Department of Development to fund additional software development, tooling and the installation of the first commercial systems.

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## Awards and Notable Mentions

- Winner, Top Ten Inventions of 2008, *Popular Science* magazine
- Featured in November, 2008 INC. magazine article

## Key Events

### Timeline

- April, 2006, Patent filed
- April, 2008 PTO Notification of Allowance
- July 2008, Patent awarded
- July 2008, Alliance discussions with Draper Labs are underway and progressing
- September 2008, Ohio approves \$793K Innovation Ohio Loan and Investment Tax Credit (TITC) status
- November 2008, Successful underground test of Draper system
- January 2009, Patent for Blast Shield filed
- May 2009, First pilot system to be installed

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