



Physical Source Tracking Program for Mobile Sources

September 8, 2020

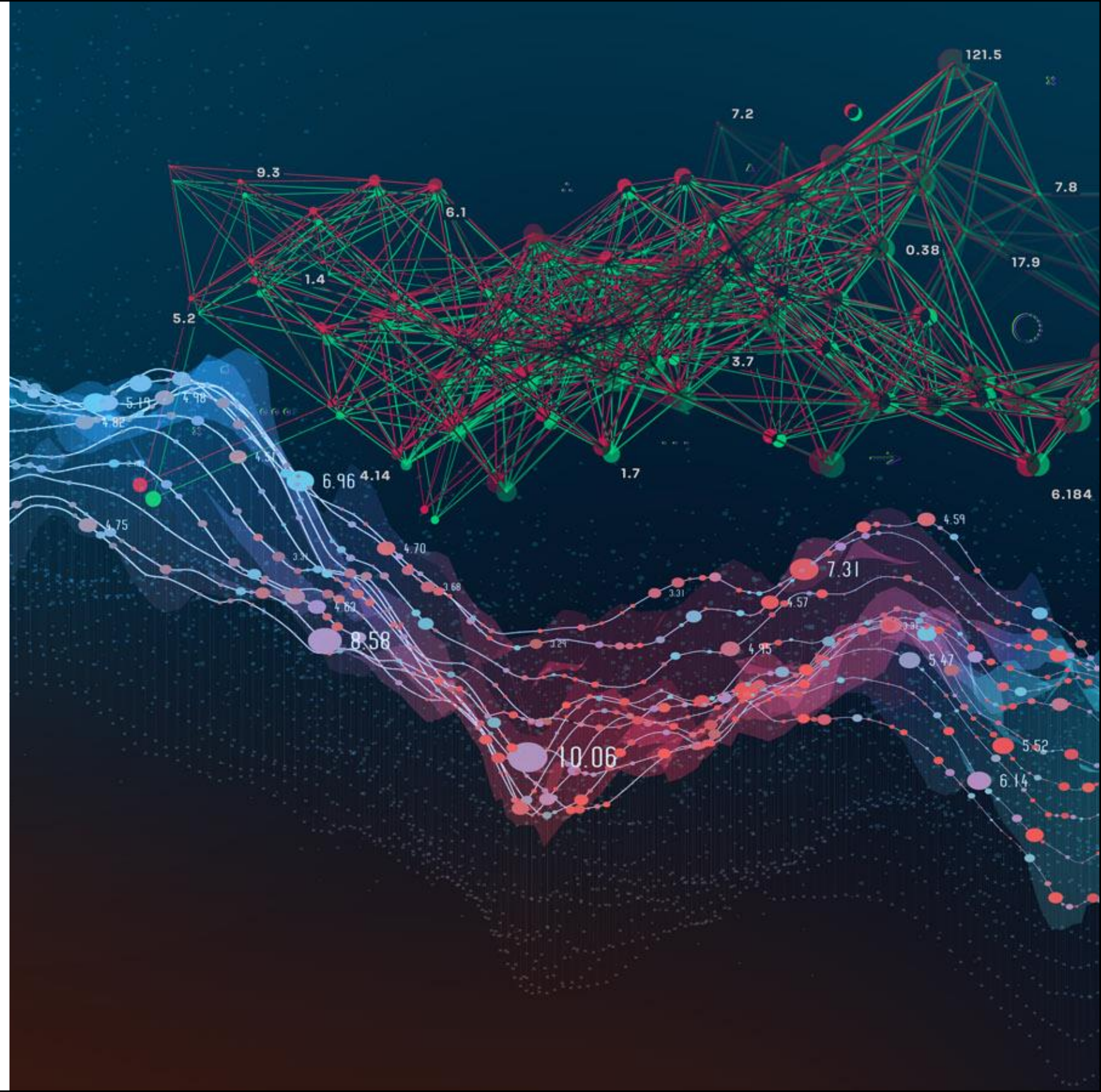
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Prepared for National Academies of Science
Radioactive Sources: Applications and Alternative Sources



PNNL is operated by Battelle for the U.S. Department of Energy

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Office of Radiological Security

- Mission: ORS enhances global security by preventing high activity radioactive materials from use in acts of terrorism

PROTECT

PROTECT radioactive sources used for vital medical, research, and commercial purposes



REMOVE

REMOVE and dispose of disused radioactive sources



REDUCE

REDUCE the global reliance on radioactive sources through replacement with viable non-isotopic alternative technologies



Mobile Radioactive Source Risks and Threats

Worldwide 10,000
commercial mobile
sources in use



Portability increases the
vulnerability of devices during
transport and field use



Number of
"incidents" involving
mobile sources since
2012 (RadTrax)

>55



Mobile Radioactive Source Risk

Developing an Effective Solution

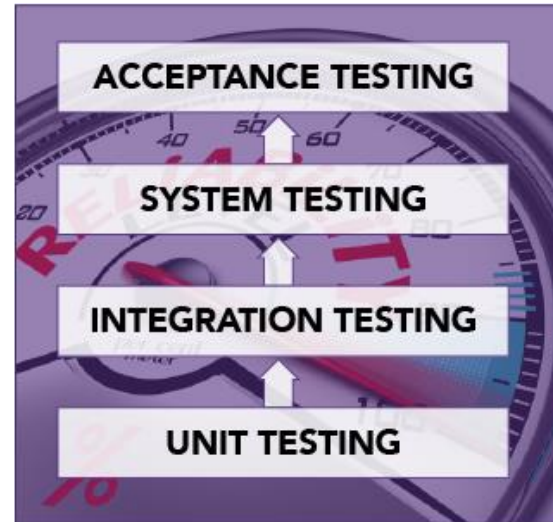
**Enhanced Security
of Device**



Cost Effective



Reliable & Robust



**Alert/Alarm
Communication**



Characteristics of an Effective Solution

Reducing The Risk With Technology



Improve Security



Enhance Situational Awareness



Real-Time Event Monitoring

Refined by Industry Needs



WELL LOGGING

INDUSTRIAL
RADIOGRAPHY



Technology Refinement

Needs Analysis

Trade Studies

Field Studies

User & Site Visits

User Feedback

Mobile Source Transit Security (MSTS) Solutions

- Industrial Radiography Source Tracking Technology
- Well Logging Source Tracking Technology

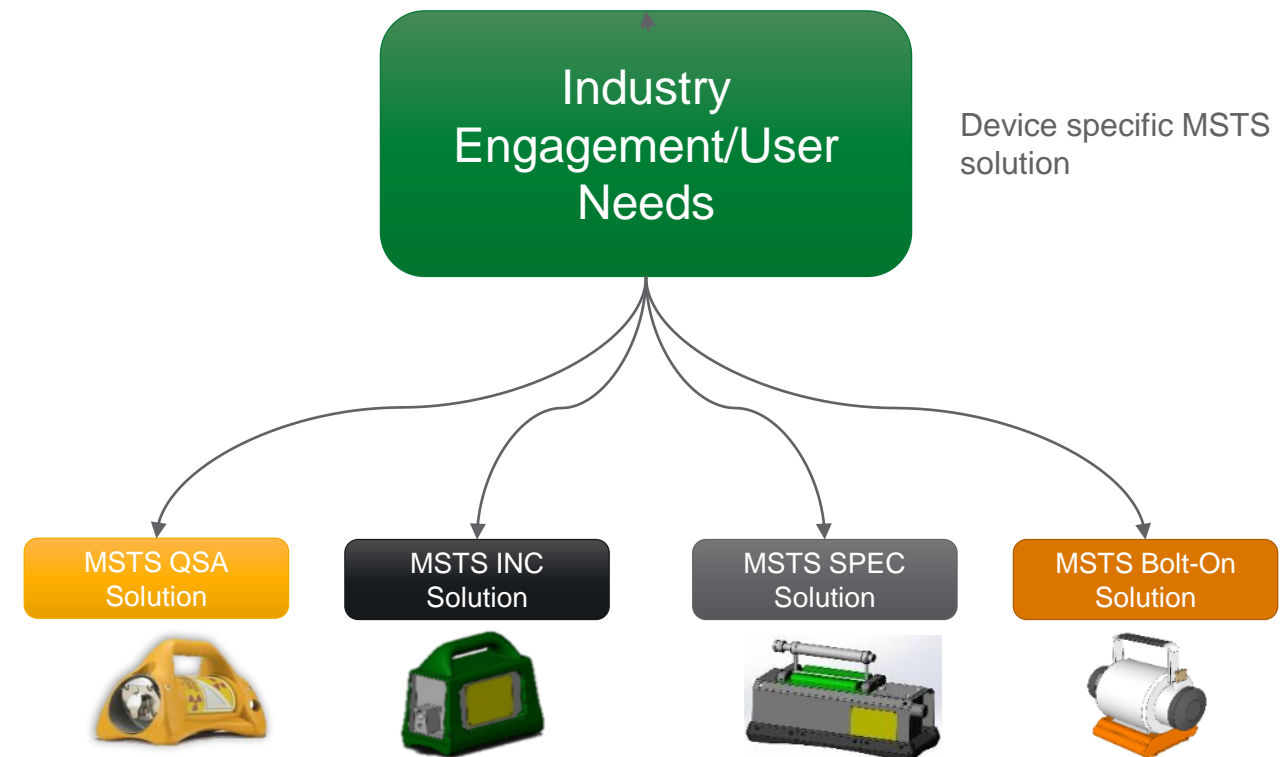
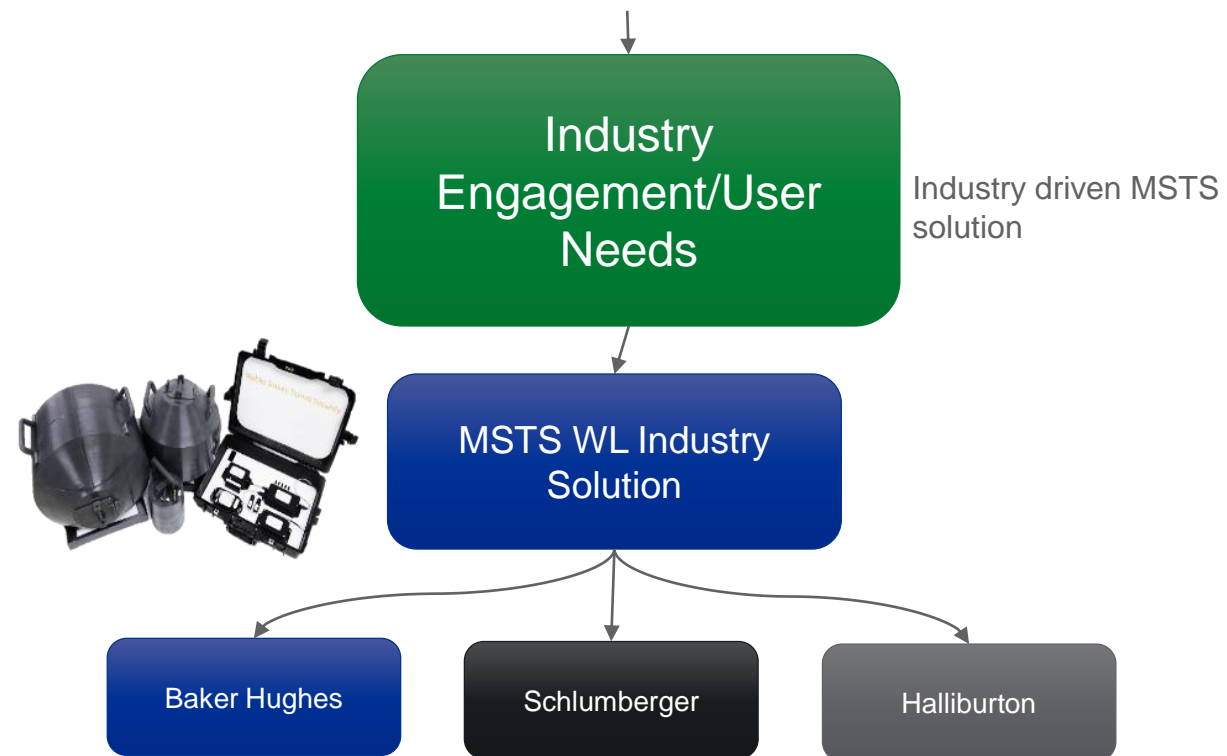
Mobile Source Transit Security Solutions



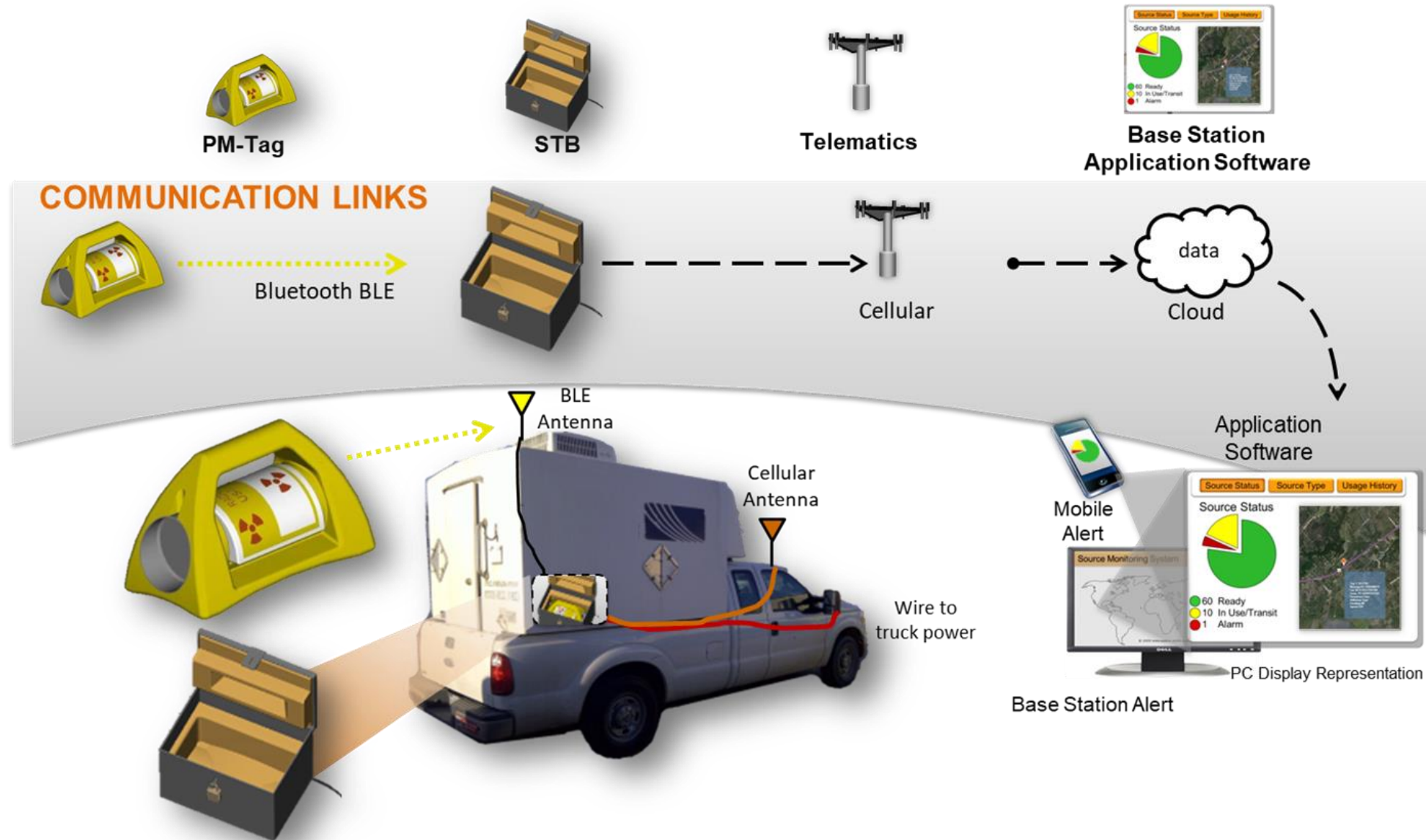
Well Logging



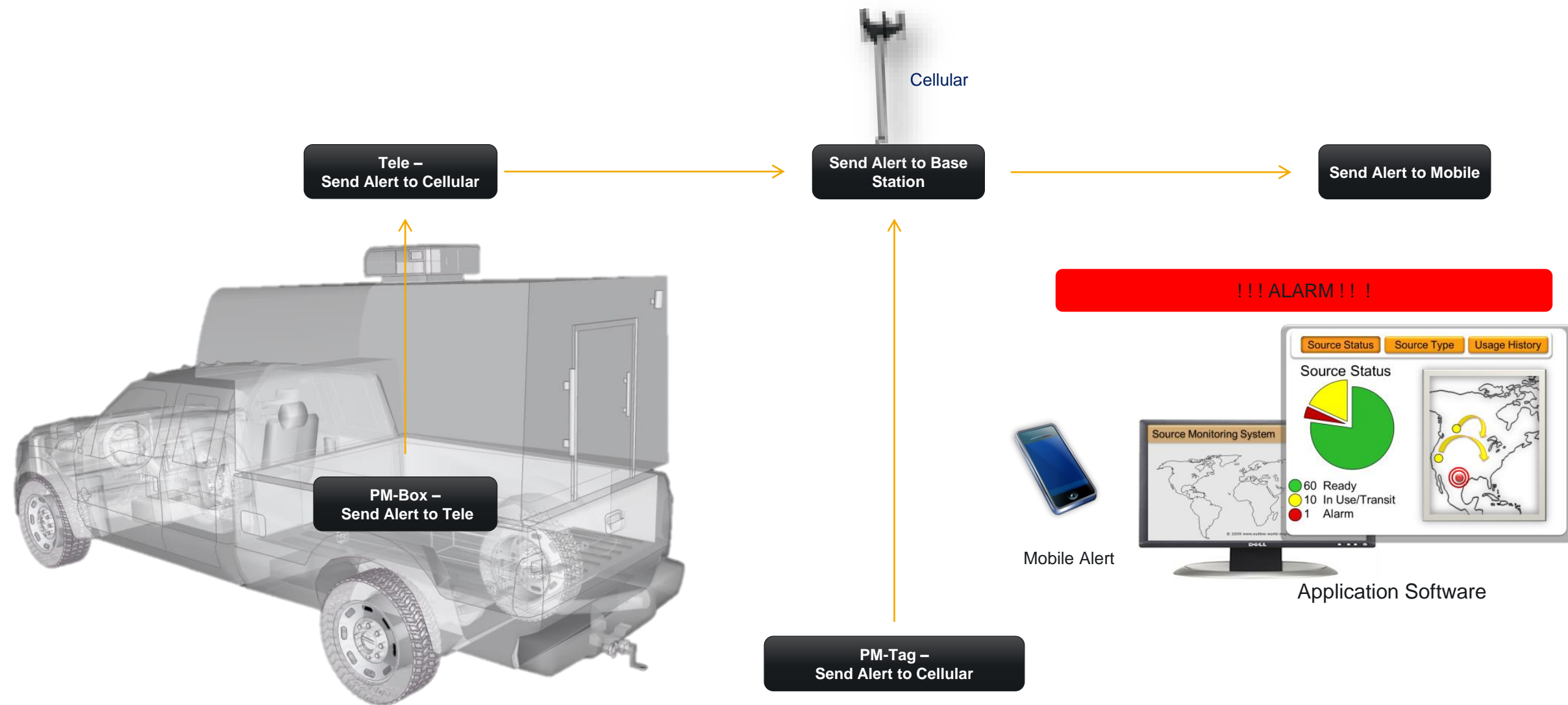
Industrial Radiography



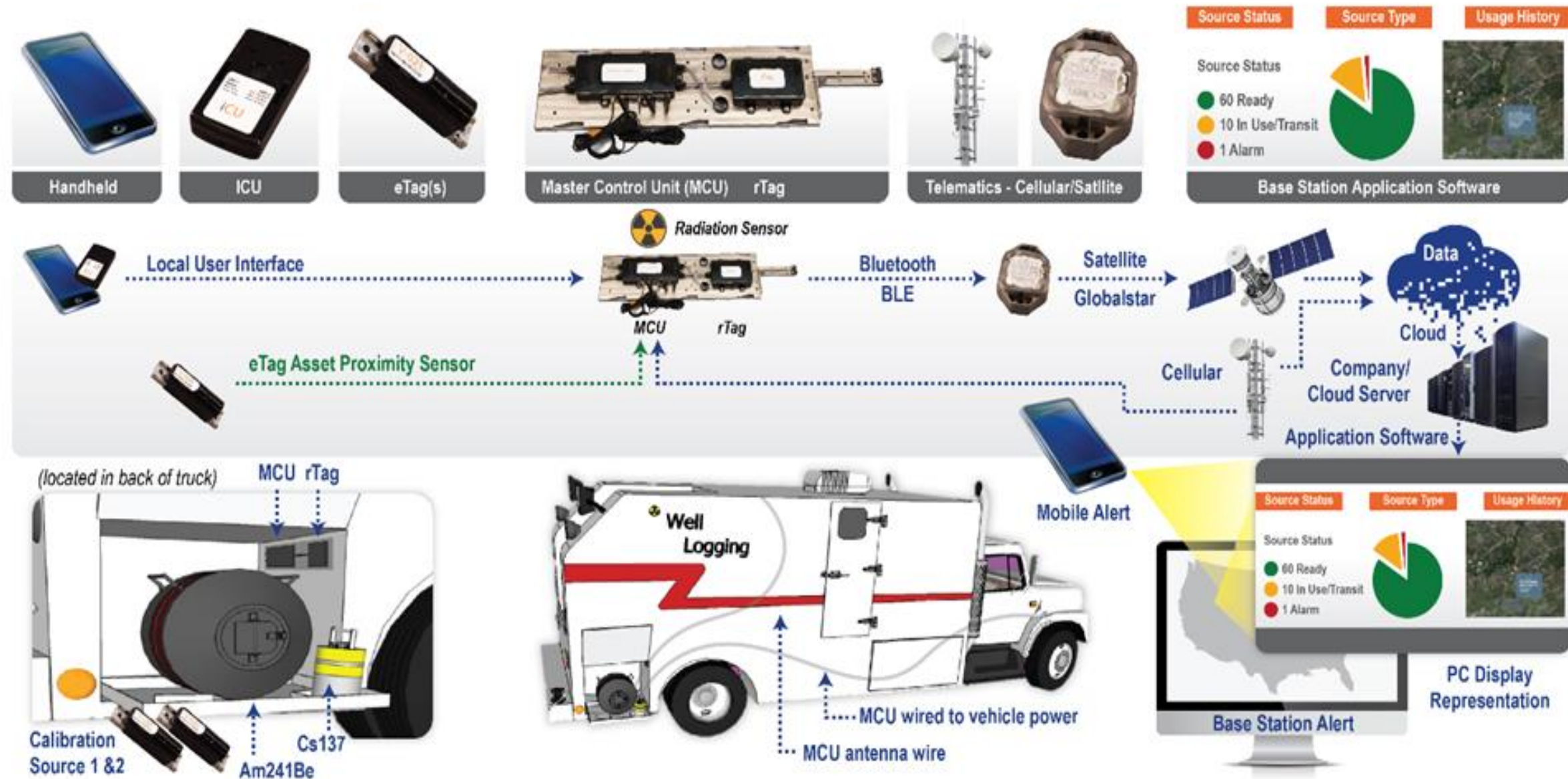
Industrial Radiography Source Tracking Technology



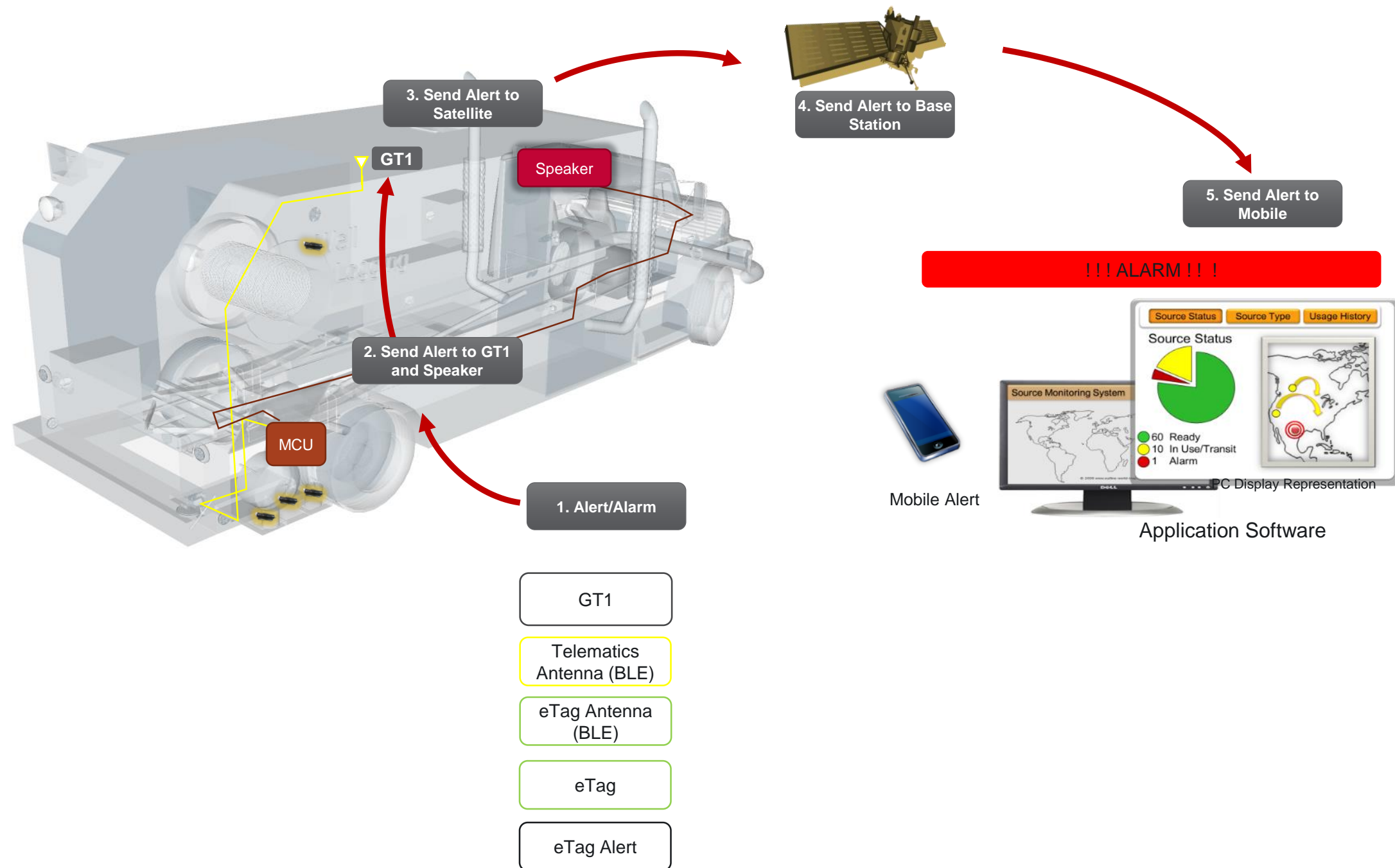
IR Alarm Communication Link



Well Logging Source Tracking Technology

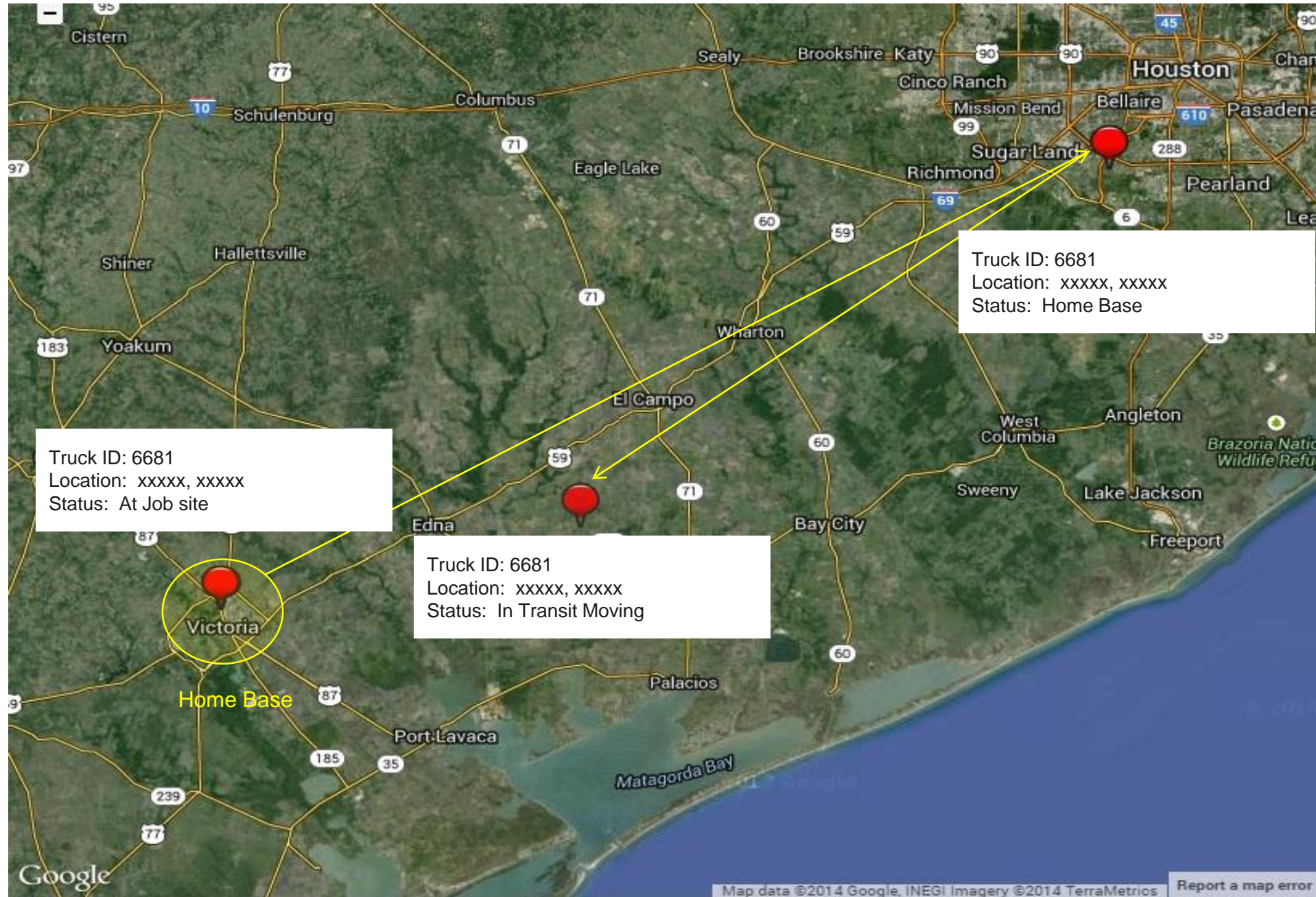


WL Alarm Communications Link



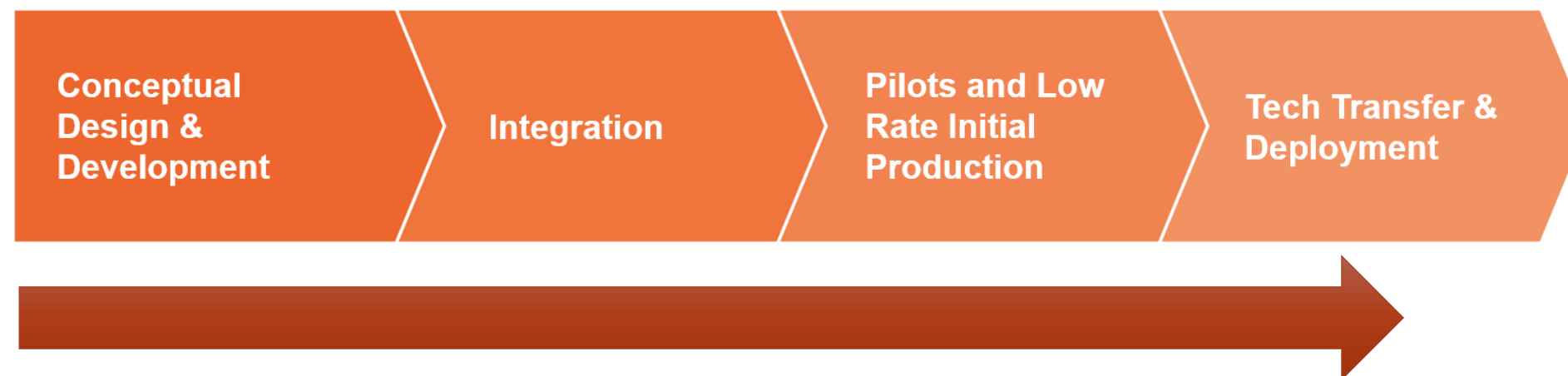
MSTS Reports

Vehicle Location and Source Status



Transitioning from System Development & Testing to Tech Transfer and Deployments

- Establish commercial partners
- Implement an overall manufacturing and distribution plan
- Determine responsibilities
 - Manufacturing, integration, site assessment, installation, data management, user training, quality control, maintenance, sustainment



Summary

- Mobile sources and their use create unique technological, operational, and security challenges.
- Mobile sources continue to be at risk of loss or theft.
- The MSTS solution improves security of mobile sources through enhanced situational awareness.
- Industry adoption of MSTS will reduce likelihood of this material ending up in the wrong hands and used for malicious intent

