The Idaho National Engineering and Environmental Laboratory

Overview of INEEL Real-Time Data Management Software, Excavation Monitoring System II (EMSII)

Ohio Cost Saving Group Meeting

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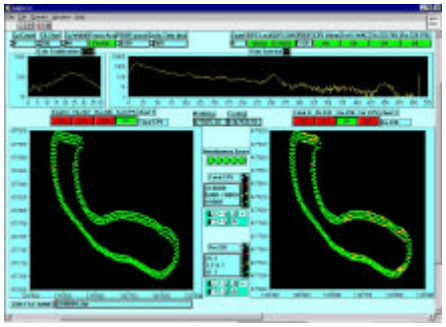
What is Real-time Data Management System?

- ***INEEL real-time data management system (RTMS) concept is one where the interplay between hardware, software, and sensors system elements can be manipulated to produce an optimal in situ measurement and monitoring management system***

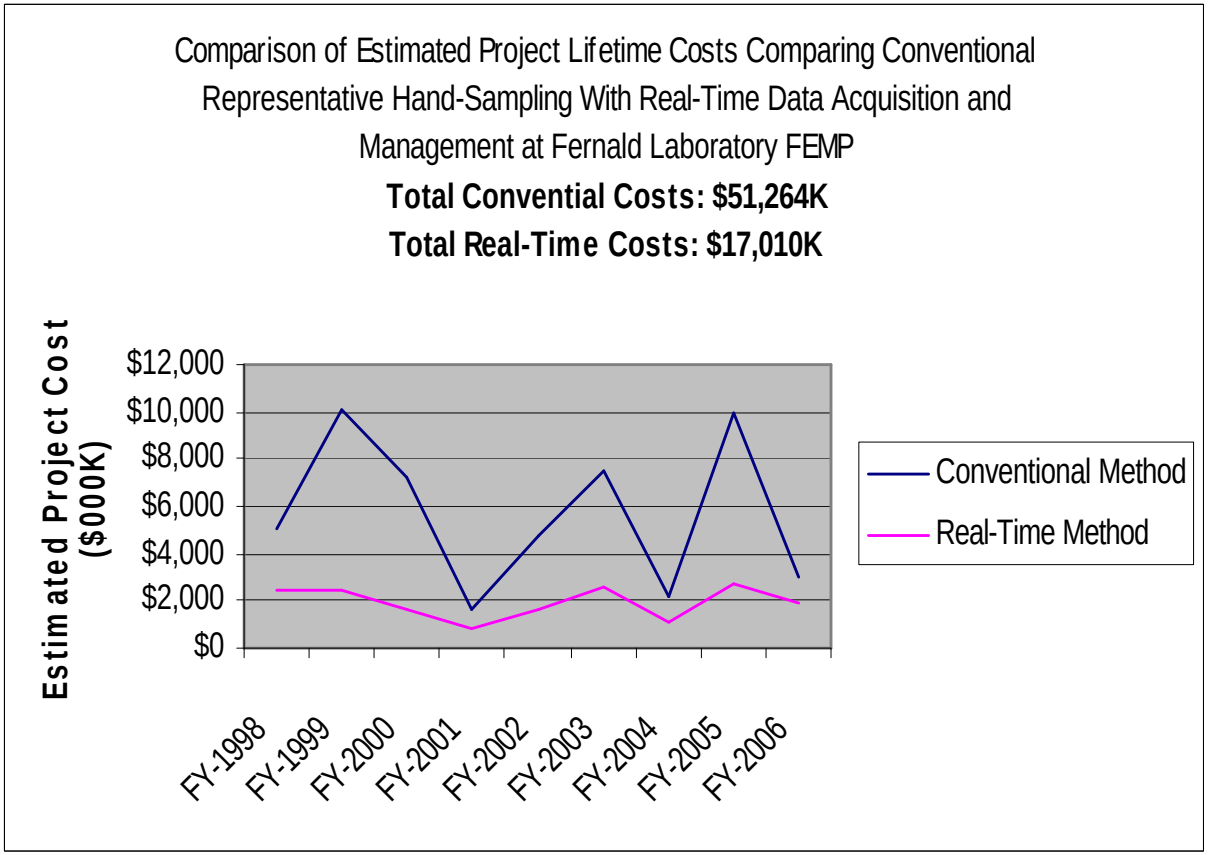
- ***Various components can be used at virtually any site, providing remote-sensing applications and real-time data management of remediation field screening activities. The EMSII is one example.***

- ***Utilization of RTMS enables ER sites to streamline operational activities resulting in substantial cost savings***

Examples of Systems Utilizing RTMS



- ***Impact of Real-time System Concept on Operational Costs***



What is the EMSII?

- *The EMSII is an innovative deployment system or platform used to place detectors and sensors in close, repeatable proximity to areas under investigation that possess characteristics that discourage direct human sampling activities.*

- *EMSII utilizes the RTMS*

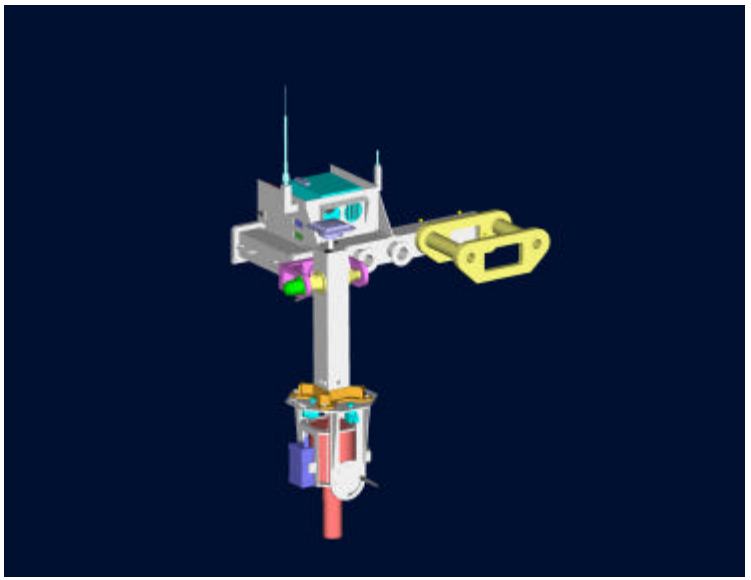
- *EMSII deployment scheme enables the rapid collection of in situ measurements that provide virtually 100% coverage for each horizontal "lift" of the excavation.*

What is the EMSII? (cont..)

- *EMSII system eliminates the need for typical baseline methods of characterization and monitoring during excavation activities minimizing costs normally associated with baseline methods.*

INEEL-EMSII

- ***"Re-inventing" the Old EMS (Warthog) Prototype System***
  - ***Lighter, built of low weight quick-coupling components***
  - ***More user friendly***
  - ***Two selectable positioning systems***
  - ***Advanced software executable***
  - ***Weather resistant***
  - ***Lower cost to produce***
  - ***Lower cost to operate***



•*Lighter, built of low weight quick-coupling components:*

•*More user friendly*

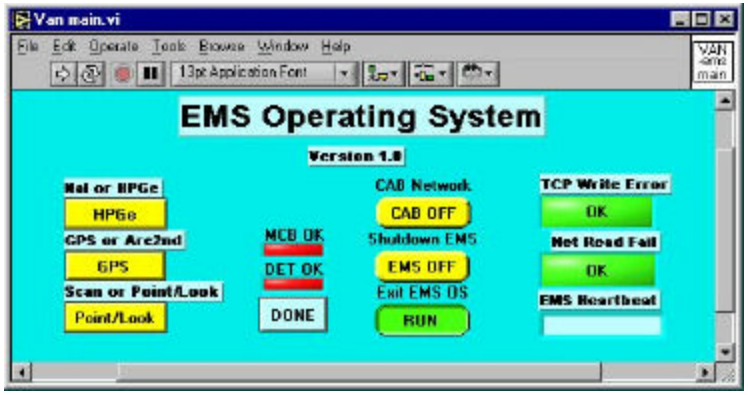
- ***Two selectable positioning systems***

GPS

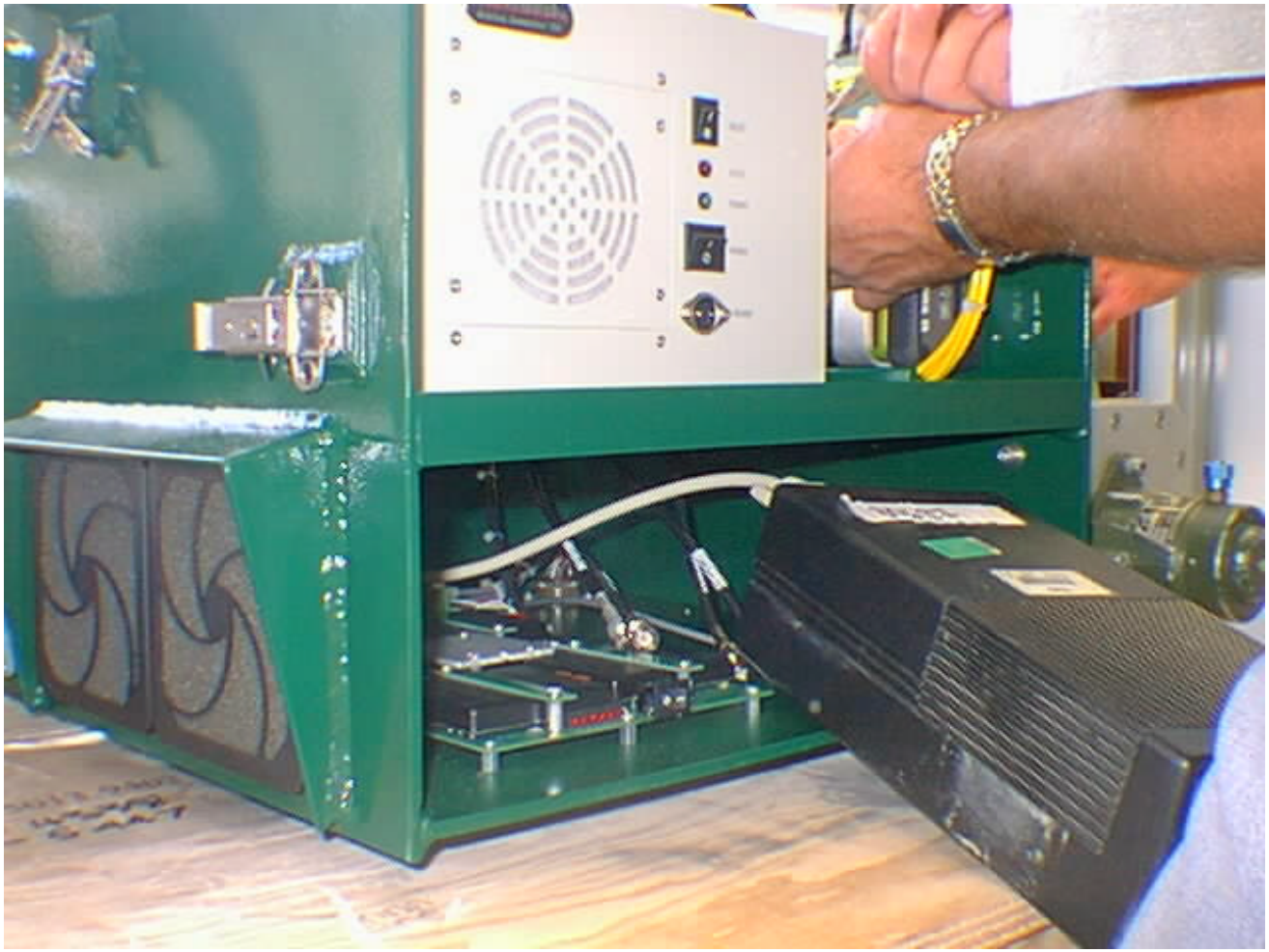
Laser

•*Advanced software executable (RTMS)*

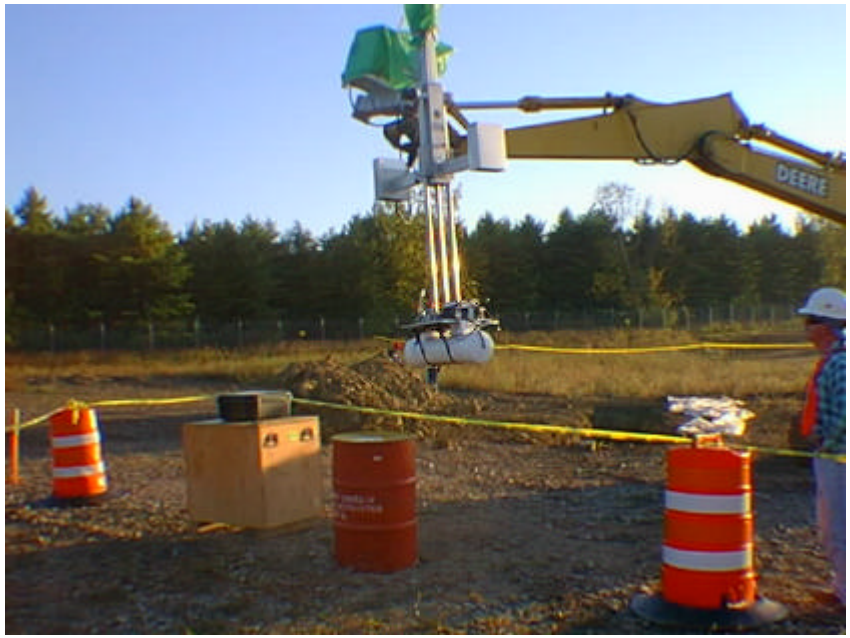
(Fernald NaI and HPGe Operating System-Version 1.1 developed by Lyle Roybal, INEEL)



- ***Weather resistant***



•*Low cost to produce and operate*



Old prototype system had complicated terrain-following system, heavy, outdated and costly one-of-a-kind electronics package, difficult to maintain, and possessed low reliability

EMSII is less costly to produce, simpler to maintain and operate, incorporates a highly reliable electronic integration package, and has mechanical and other enhancements that enable greater versatility in the field.

Sensor Technology

- ***The EMSII can be integrated with various off-the-shelf sensors and detectors***

- ***INEEL has developed and modified various detectors to address unique site needs:***
  - ***Calcium Fluoride (CaF_2) detector was built in 1997***
  - ***Was used at Miami-Erie Canal to assess its detection capability for Pu-238.***

CaF_2 Detector *(deployed at the Miami-Erie Canal)*

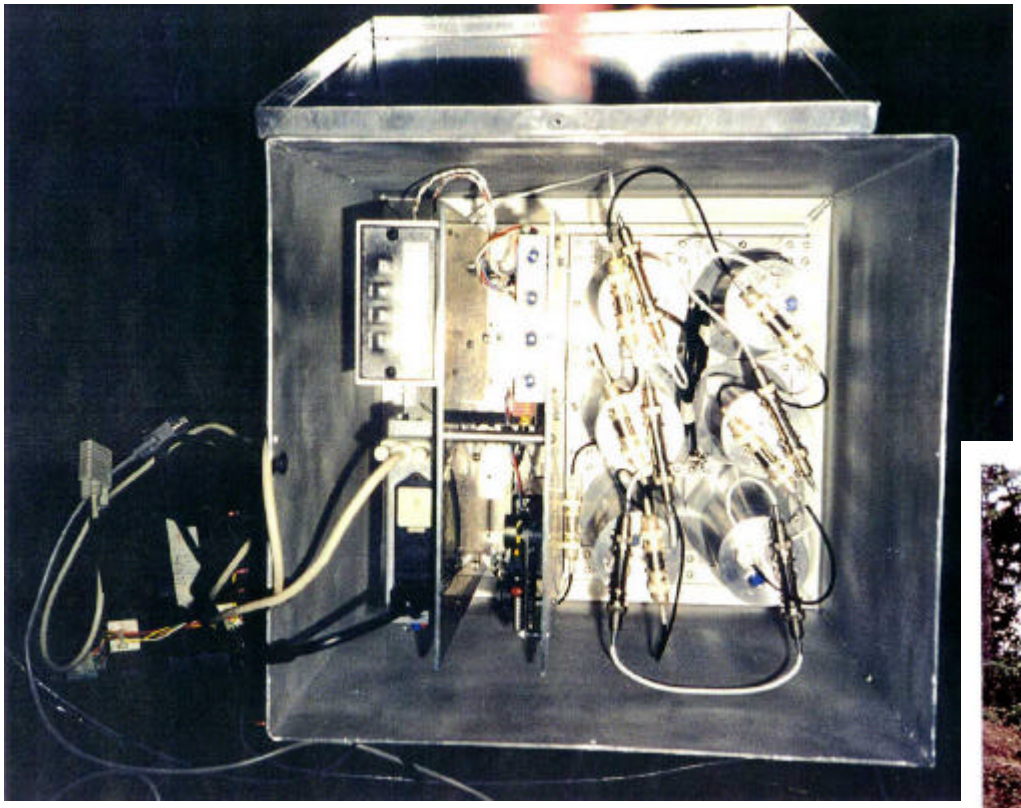


Figure 3. *Photo shows the Weathog Platform in operation at the Miami-Erie Canal during cleanup activities to remove Pu-238 contaminated soil in August 1997.*