Damage Prevention Through High Accuracy Mapping

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EXCAVATION DAMAGE - ROOT CAUSES

**CGA, Natural Gas Analysis 2015**

- **2009:**
  - Excavation practices not sufficient: 34%
  - Notification NOT made: 10%
  - Miscellaneous root causes: 40%
  - Locating practices not sufficient: 4%

- **2010:**
  - Excavation practices not sufficient: 31%
  - Notification NOT made: 12%
  - Miscellaneous root causes: 40%
  - Locating practices not sufficient: 4%

- **2011:**
  - Excavation practices not sufficient: 26%
  - Notification NOT made: 47%
  - Miscellaneous root causes: 40%
  - Locating practices not sufficient: 4%

- **2012:**
  - Excavation practices not sufficient: 25%
  - Notification NOT made: 50%
  - Miscellaneous root causes: 50%
  - Locating practices not sufficient: 4%

- **2013:**
  - Excavation practices not sufficient: 30%
  - Notification NOT made: 50%
  - Miscellaneous root causes: 50%
  - Locating practices not sufficient: 4%

- **2014:**
  - Excavation practices not sufficient: 30%
  - Notification NOT made: 50%
  - Miscellaneous root causes: 50%
  - Locating practices not sufficient: 4%

- **2015:**
  - Excavation practices not sufficient: 34%
  - Notification NOT made: 10%
  - Miscellaneous root causes: 40%
  - Locating practices not sufficient: 4%

**CGA, Annual Report 2015**
LOCATE PRACTICES NOT SUFFICIENT - ROOT CAUSES

• Inaccurate maps
• Unlocatable pipe
• Poor marking techniques
LOCATE PRACTICES NOT SUFFICIENT - SOLUTIONS

• Inaccurate maps – Improved mapping practices during construction and operations
• Unlocatable – Enhanced visualization and locating technologies
• Poor marking techniques – Training and quality oversight

Accurate maps are the basis of damage prevention
IMPROVED MAPPING & LOCATING TECHNOLOGIES

• Accurate maps
  • High accuracy GPS during construction
  • Data collection throughout operations
  • Depth (z-coordinate)

• Visualization and locating technologies
  • GPS + RFID
  • Visualization during first and second party excavation
  • Visualization of accuracy
CHALLENGES

• Practical challenges of GPS in urban areas
• Standardized data collection
• Depth and depth of cover
CHALLENGES

• Ease of use
  • “I want this to work like my fish finder”

• Integration into existing workflows
  • Construction
  • Operations - locating, repairs . . .

• Distribution to other stakeholders
  • Locators, emergency response, contractors

• Cost and scale
R&D NEEDS

• Improved GPS in urban areas
  • Software data processing techniques
  • More accurate and less complex laser range finders

• RFID and related technologies
  • Greater depths
  • Smaller
  • Cheaper
R&D NEEDS

• High accuracy GPS for non-experts
  • Integration into existing workflows – construction, operations, locating
  • Software data analysis for quality feedback
  • Secure and timely distribution to other stakeholders
  • Scalable and lower cost technologies

• Data model standards for GPS as-builting
R&D NEEDS

• Other ideas?