

the Energy to Lead

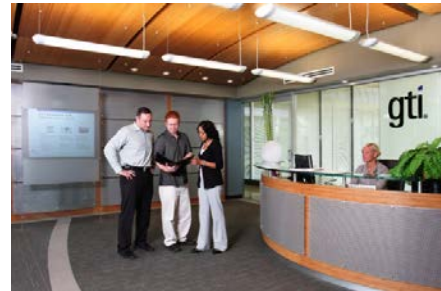
Program Overview
**Asset Lifecycle Tracking &
Traceability**

New England Council of Public Utility Commissions
June 9, 2015
By: Paul Armstrong

GTI Overview

ESTABLISHED 1941

- > Independent, not-for-profit company established by natural gas industry
- > Providing natural gas research, development and technology deployment services to industry and government clients and gas consumers
- > Performing contract research, program management, consulting, and training
- > Facilities
 - 18 acre laboratory near Chicago
 - 200,000 ft² with 28 labs
- > Staff of 250
- > Wellhead to the burner tip including energy conversion technologies



Office & Labs



Training



Pilot-Scale Gasification Campus



Energy & Environmental Technology Center

Motivation

> Distribution Integrity Regulations

- System Knowledge
- Threat Identification
- Risk Mitigation

> Pipeline Integrity Regulations

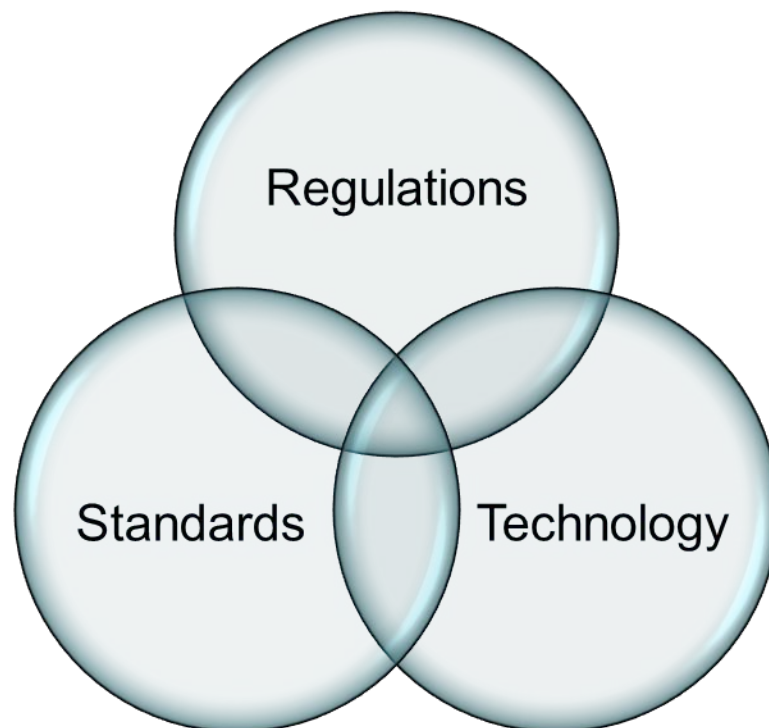
- Traceable, Verifiable and Complete Records

> Industry Standards

- ASTM F2897

> Technology

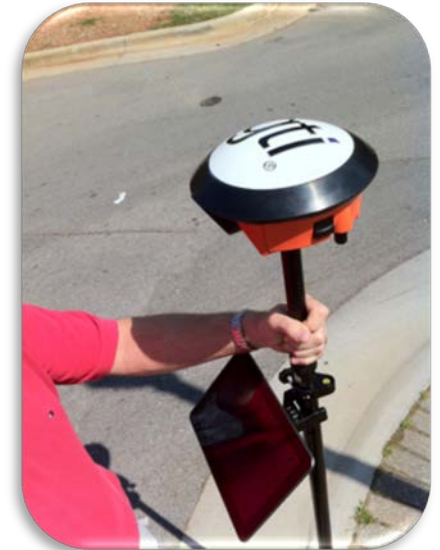
- Mobile GIS, tablets, GPS, barcode scanning, cloud computing



Mobile GIS for Mapping, Tracking & Traceability

> Objectives

- Develop **mobile GIS** technology that creates **digital as-builts** with complete **tracking and traceability** information of pipes, fittings, and fusions
- **Eliminate back-office** post-processing and GIS integration as well as traditional mapping functions
- Utilize recent advances in GIS, tablet computers, high accuracy GPS, barcode scanning, and cloud computing to **improve the quality and efficiency** of data collection



Natural Gas Distribution

> Algorithm and ASTM Standard

- Unique identifier for distribution asset tracking and traceability
- ASTM F2897-11a
- Manufacturer implementation through barcoding
- ~50% vendor compliance

Information	Mfg. Values
Lot Number	1234567
Production Date	1/4/2010
Material Type	PE2708
Component Type	Electrofusion tapping tee with a stab outlet
Component Size	2" IPS SDR 11 x 1" IPS SDR11



Character Number	Source	Description of Information	Character	Information
1	www.componentid.org	Name of component manufacturer	A	Corresponds to list on www.componentid.org
2			C	
3	Component Manufacturer's lot code	Information which can help ascertain relevant traceability information upon request	5	Corresponds to the mfg lot number input of 1234567
4			b	
5			a	
6			n	
7	Component production date code per 5.3	Date of manufacture of given component	0	Corresponds to production date of 1/4/2010
8			6	
9			C	
10	Component material type per Table 3	Material used for component	B	PE 2708
11	Component Type per Table 4	Component type	8	Electrofusion tapping tee with a stab outlet
12			F	
13	Component size per 5.6	Component size	2	Corresponds to size code of 2" IPS SDR11 x 1" IPS SDR11
14			m	
15			X	
16	www.componentid.org	Reserved for future use	0	Default value

Purchasing Specification Guidelines

- > Purchasing Specification Guidelines for Barcode Marking of PE Gas System Components
 - Marking techniques (ink, labels, tags, etc)
 - Marking format (1-D, 2-D)
 - Readability (barcode and alphanumeric code)
 - Durability
 - Placement (longitudinal and circumferential spacing)
 - Quality control
- > Developed by a working group of manufacturers and utility companies

Mobile GIS Technology

- > Technology for tracking and traceability with ASTM F2897:
 - Tablet with mobile GIS data collection software
 - High accuracy GPS receiver
 - Barcode scanner
 - Application to convert barcodes into asset attributes to auto populate the GIS
 - Disconnected editing capability
 - Fusion tracking and traceability



High Accuracy GPS

- > Integrated external **high accuracy GPS receivers with tablet computers**
 - Sub-foot quality data in real time
 - Various correction techniques (satellite, internet, RTK)
 - GPS hardware agnostic (Trimble, Navcom, Geneq . . .)



GTI's Fusion Traceability Technology

- > Captures operational information for QA/QC
 - Fusion operator and OQ status
 - Interfacial pressure, heat plate temperature, soak time, other essential parameters
- > Integrates with automated machines to extract select fusion parameter data via Bluetooth
- > Manual data entry when necessary
- > Converts parameter data into a barcode
- > Print barcode label with 50 year life
- > Data archived in GIS along with field label



Asset Lifecycle Tracking & Traceability

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Create GIS Features in the Field

Post to Enterprise GIS

Integrate Data into GIS System of Record

Value

- > Enables component level traceability with high accuracy GPS to locate specific fittings (manufacturer & lot #)
- > Captures critical fusion parameters
- > Captures pictures and other relevant installation data for complex configurations
- > Streamlines operations
 - Gets data back into the GIS in real-time to eliminate mapping backlogs
 - Eliminates GPS post-processing
- > Enables regulatory compliance
 - “Know Your System”
 - Traceable, Verifiable, Complete Records





Supporting Implementation

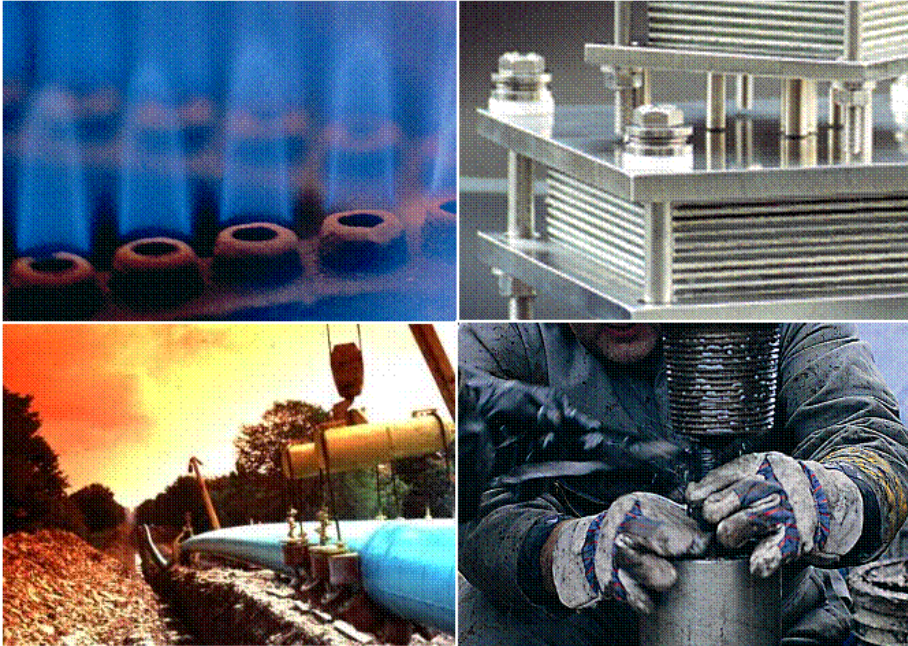
- > GTI spinout, LocusView Solutions, created to provide implementation services for advanced geospatial technologies
- > Provides field tested, customer validated, commercial products
- > Turn-key implementation services including hardware, software, hosting, training, and IT support

Implementation Path

> Pilot projects and production implementations ongoing ...



GTI is a company that solves important energy challenges, a company that truly has...



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