Getting you there. Smarter.

Jon Newhard – General Manager
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Company Overview: Cubic & Trafficware

- Cubic (NYSE: CUB) billion dollar player in global transportation systems.
- Cubic ITS is the largest ITS player in North America incorporating Trafficware, GRIDSMART and Cubic brands.
- Trafficware designs, engineers, and manufactures every major component used to control an intersection, all in the USA.
- Reputation for technological innovation and high levels of quality and customer service.
- Most advanced software in the industry. Leaders in adaptive and connected vehicle.
- Large deployments at marque customers in the US and around the world.
- We do not create “technology orphans”
Coast to Coast Innovation
Technology Overview

Trafficware Cloud

ATMS.now
Central Management Platform

Data Warehouse

Database

Reports

Cabinets & Controllers

Dashboards

CUBIC PROPRIETARY | Overview
Experience

- Houston, Texas
- Santa Clara County, California
- Seminole County, Florida
- Baltimore, Maryland
- New Jersey Transit
- Oklahoma City
- Palo Alto, California
- Broward County, Florida
- Sugar Land, Texas
Overview of Rail and Traffic Signal Operations
Safety First

- Ensure Clearances
- Ensure No Conflicts
- Ensure Efficient Recovery
Rail and Traffic Operations

- Preemption Inputs
  - Some are Very Simple
  - Some or More Complex with Confirmation Circuits
- Clearance (Track) Phases
- Dwell Phases
- Exit Phases
Example

- Rail Crossing and Preemption at Rush Hour
- Signal Performs Clearance Routine
- Limited Service Operations During Train Crossing
- Signal Recovery
  - *Priority Movements*
  - *Resume Standard Signal Coordination*
  - *“Transition Period”*
- And Then Another Train
Traditional Traffic Signals

- Between 20,000-30,000 Settings in a Standard Traffic Controller
- Why Do Traditional Traffic Signals Struggle?
  - *Programming is Relatively Static*
  - *Optimization is Local, Instead of Global*
  - *Infrastructure is Outdated*
Solutions to Improve Traffic Operations Due to Rail Events
Goals

- Safety First and Foremost
- Optimize Traffic During Dwell and Exit Phases
  - Maximize Available Time and Space
  - Make Signals More Dynamic
- Quicker Recovery
- Better Reporting
Rail-Centric Traffic Signals

- Trafficware SCOUT Local Controller Software
- Features
  - More Phases, More Detectors, More Preempt Inputs
  - Custom Logic Lines
  - Peer to Peer Logic
  - Dynamic Exit Routines
  - Dynamic Recovery Modes
- What does this mean?
  - Faster Traffic Signal Synchronization After a Train Exits
  - Traffic Returns to Normal Faster
  - More Features and Options for Improving Traffic
Adaptive Signal Control Technology

- Automatically Adjusts Signal Timing in Real Time
- Able to Vary Green Times, Coordination Patterns and Sequences
- Technology has Gained Momentum in the Past Decade
- Applications in Various Traffic and Operational Scenarios
- Designed to Maximize Available Time and Space
What you Need

- Accurate Detection Technology
- Reliable Communications
- Processing Power
Benefits

- Faster Recovery After a Rail Preempt Event
- Dynamically Serve Delayed Movements First
- Create Custom Logic to Handle Unique Situations
- Maintain Operations at Unimpacted Locations
- Added Benefits
  - *Lower Travel Time and Delay under Normal Conditions*
  - *Capacity to Handle Complex Operations*
  - *Reduced Emissions*
Performance Metrics

- Dashboard of Current Operations
- Quantitative Performance Metrics
- Reports and Graphics
- Real Time and Historical Measures
- Reports Designed for Various Disciplines
Reporting
Final Thoughts
Closing Thoughts

- Rail Crossing and Preemption Are Necessary to Ensure Safety
- Traffic Disruption Can Be Minimized with the Right Tools
- Solution is Likely a Combination of Solutions
- Most Traffic Issues will be Addressed Using a Holistic Approach
- Reporting Tools are Critical and Lead to Informed Decisions
- Agencies are Embracing New Technologies
- Be Creative and Think Differently
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