ITERIS®

Data Collection Applications

TexITE Fall meeting, 2014

Waco, TX

Data vs. Detection

- Current Practice (Common)
  - Presence detection
    - Designed in the 1970's for use with traffic signal controllers

Data vs. Detection

- The rest of the story
  - Presence Detection is not enough
  - More information is needed to get an accurate picture of what is happening on the road
- Measures of effectiveness (MOEs) are tell the whole story

Measures of Effectiveness (MOEs)

- **What are MOEs and what are they used for?**
  - Measures of Effectiveness are data collection elements that can describe the characteristics of traffic movement or congestion
  - Can be collected for intersection and mid-block deployments on arterials or highways
  - Data types are typically counts, speed, occupancy, and travel times for individual lanes, approaches, or links

The need for MOE Data

- Moving Ahead for Progress in the 21st Century Act – "MAP 21" increased the need for MOEs
- Establishes a performance based program
  - Provides a means to more efficient investment of Federal transportation funds by focusing on national transportation goals
  - Increases the accountability and transparency of the Federal highway programs
- Establishes National Performance Goals for the Federal Highway Program

MAP 21 – Goals

- **Safety -** To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
- **Infrastructure condition -** To maintain the highway infrastructure asset system in a state of good repair
- **Congestion reduction -** To achieve a significant reduction in congestion on the NHS
- **System reliability -** To improve the efficiency of the surface transportation system

MAP 21 – Intent

- States and local agencies establish Goals
- Federal government will monitor performance measurements to see if agencies are working toward their goals.
- Monitoring the condition of roadway system is a requirement

Who is interested?

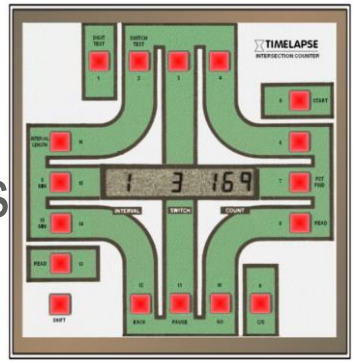
- Engineering and Operations Community
  - Operating Agencies
  - Planning Agencies
  - Transit Agencies
  - Tolling Agencies
  - Traffic Engineering Consultants
  - Bridge and Tunnel Agencies

What Is It Used For?

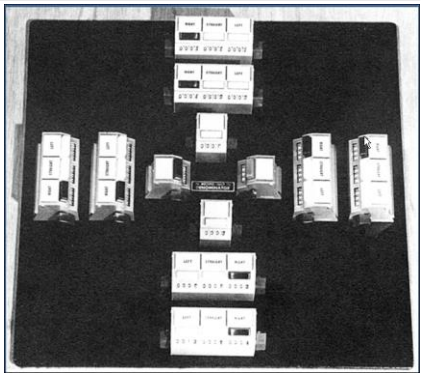
- **MOE data is the root information for various studies and analysis**
  - Traffic planning for agencies and developers
  - Warrant studies
  - Red light running studies
  - And other studies that can benefit from collected data

How is Data Typically Collected

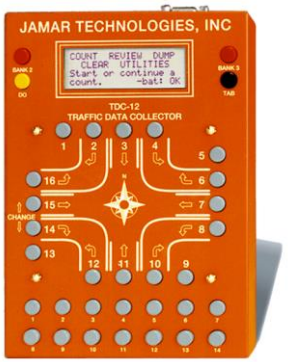
- **Agencies / consultants typically hire people to conduct manual counts**
  - On an annual or as-needed basis
  - During peak traffic periods only
  - Usually for only motor vehicles and not bicycles
- Floating car studies



Timelapse



Denominator



Jamar

How does Iteris fill the need?

A Variety of tools

- Vantage
- Vector
- Abacus
- Velocity

How does Iteris fill the need?

- Vantage
  - Volume, Speed, Occupancy
  - Turning Movement Counts
    - Why the TS2 IM
    - Not just for TS2
      - SDLC Cable can be connected directly into a TS1 (TS2 Type 2) controller
- Vector
- Abacus
- Velocity

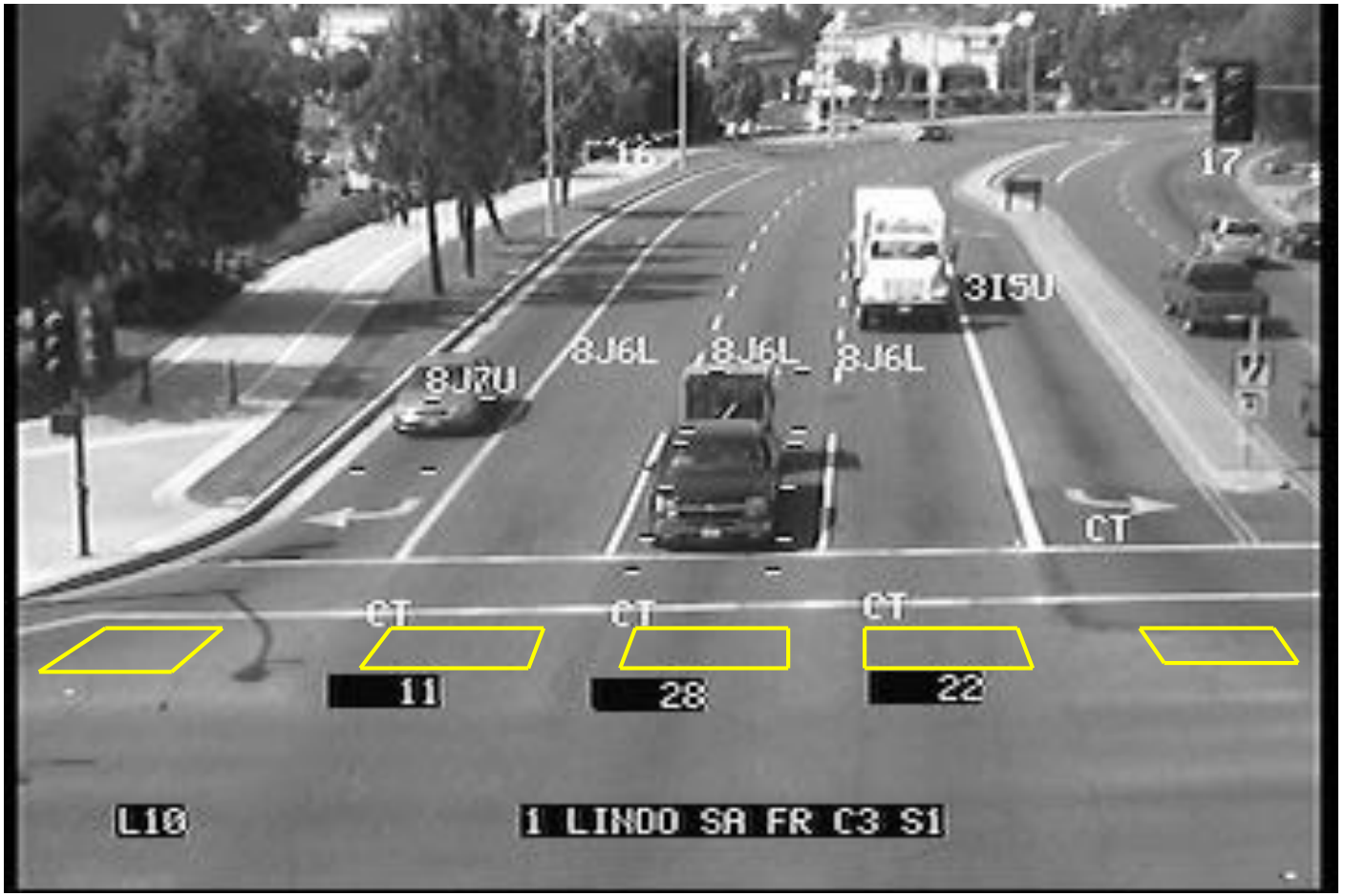
Vantage Data Capabilities

- Takes advantage of existing infrastructure
- Turning movement counts
  - Agencies already pay for this service (typically every 3 years per location)
  - Our standard equipment can provide counts that are greater than 90% accurate
  - Increased accuracy by use of the TS2 IM (in TS1 Cabinet as well as TS2)
  - Data available in standard formats
- Provides counts 24/7
  - Data can be gathered after an incident to plan for next time
- Count budget already exists
  - Agencies can leverage other budgets

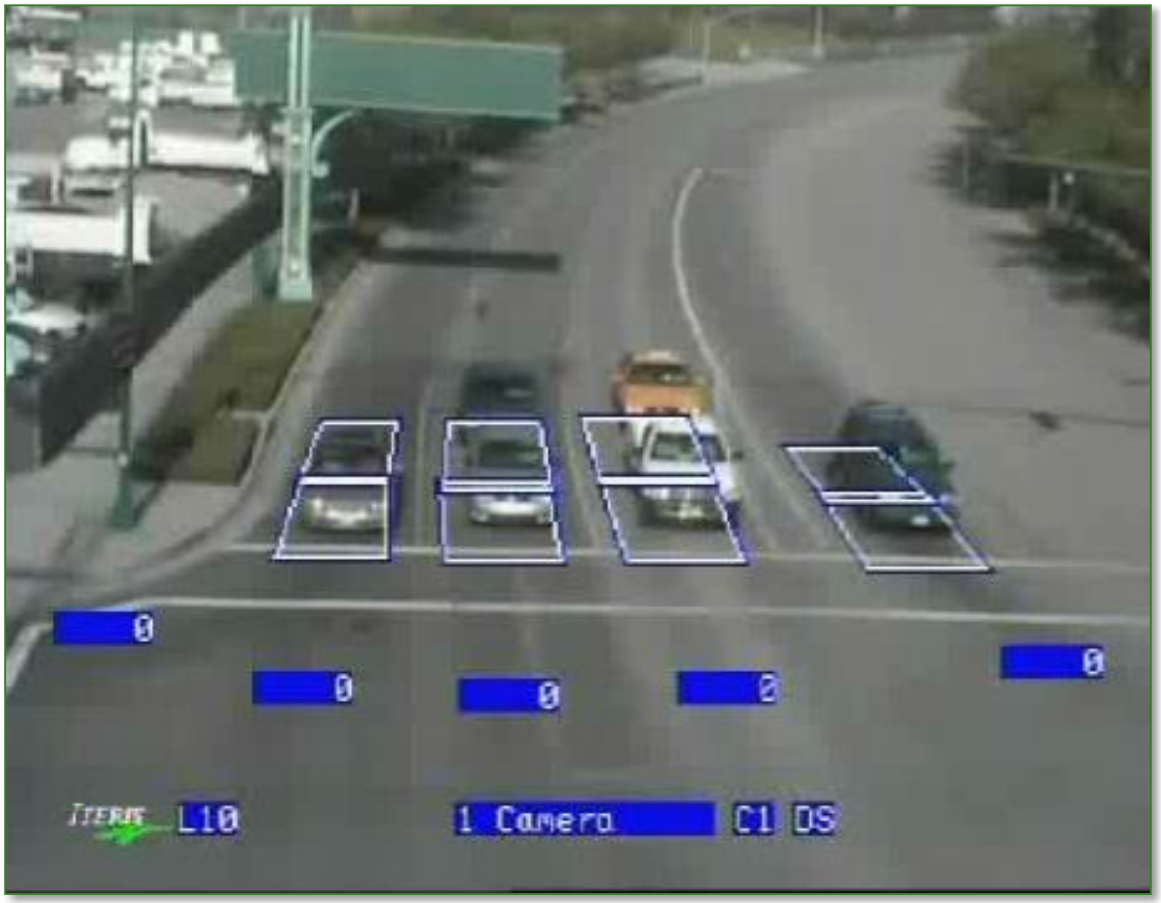
The three most important factors for good data

- Location
  - » In front of oncoming traffic (limits adjacent lane occlusion)
- Location
  - » As close to the camera as possible (limits same lane occlusion)
- Location
  - » In unique travel paths

Count Zone Placement



Sample Video



Bike Differentiation Example

Accuracy Of Vantage MOE Data

- Depends on camera placement, zone placement, and camera angle

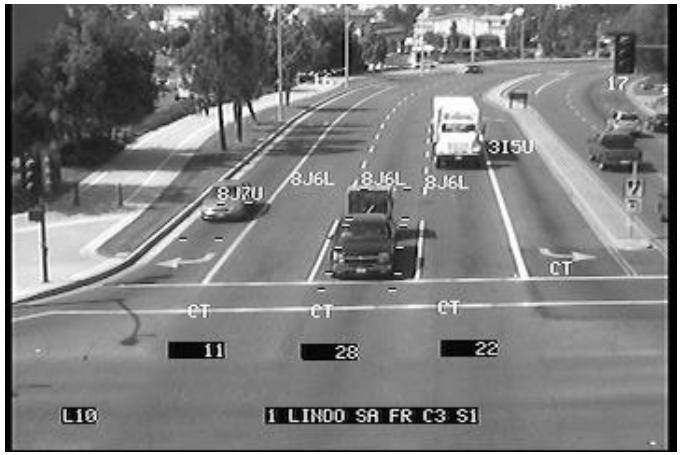
Data Elements	Accuracy
Counts	+/- 5%
Average Speed	+/- 3 MPH
Occupancy	+/- 3%
Classification	+/- 5 ft.

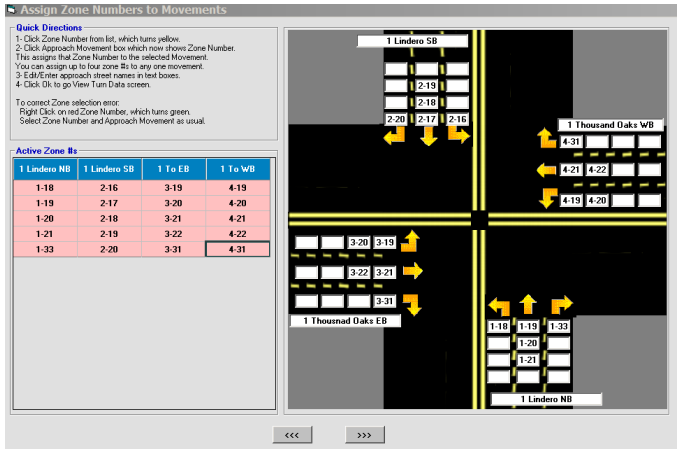
How To Retrieve MOE Data

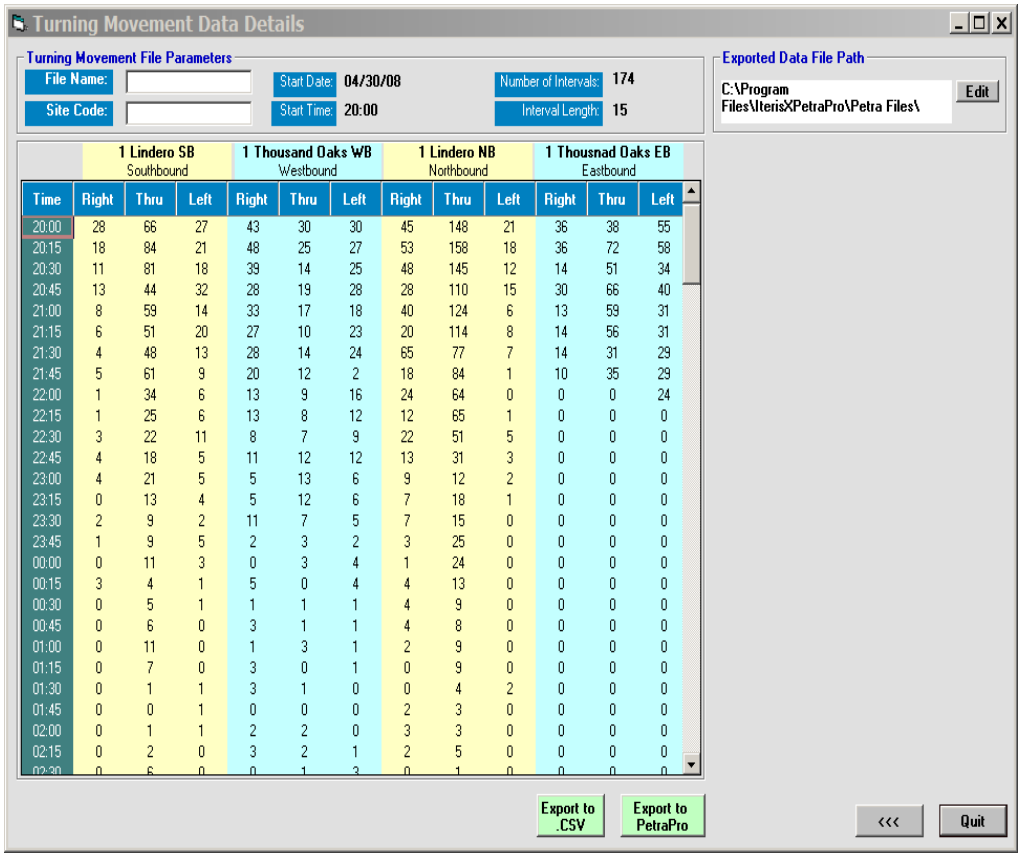
- **Typical communication method used**
  - Null modem cable attached to a computer
  - GDI serial modems over twisted pair
  - Broadband wireless modems
  - Broadband wireless services
    - i.e. AT&T, Verizon

Iteris XPetrapro Software

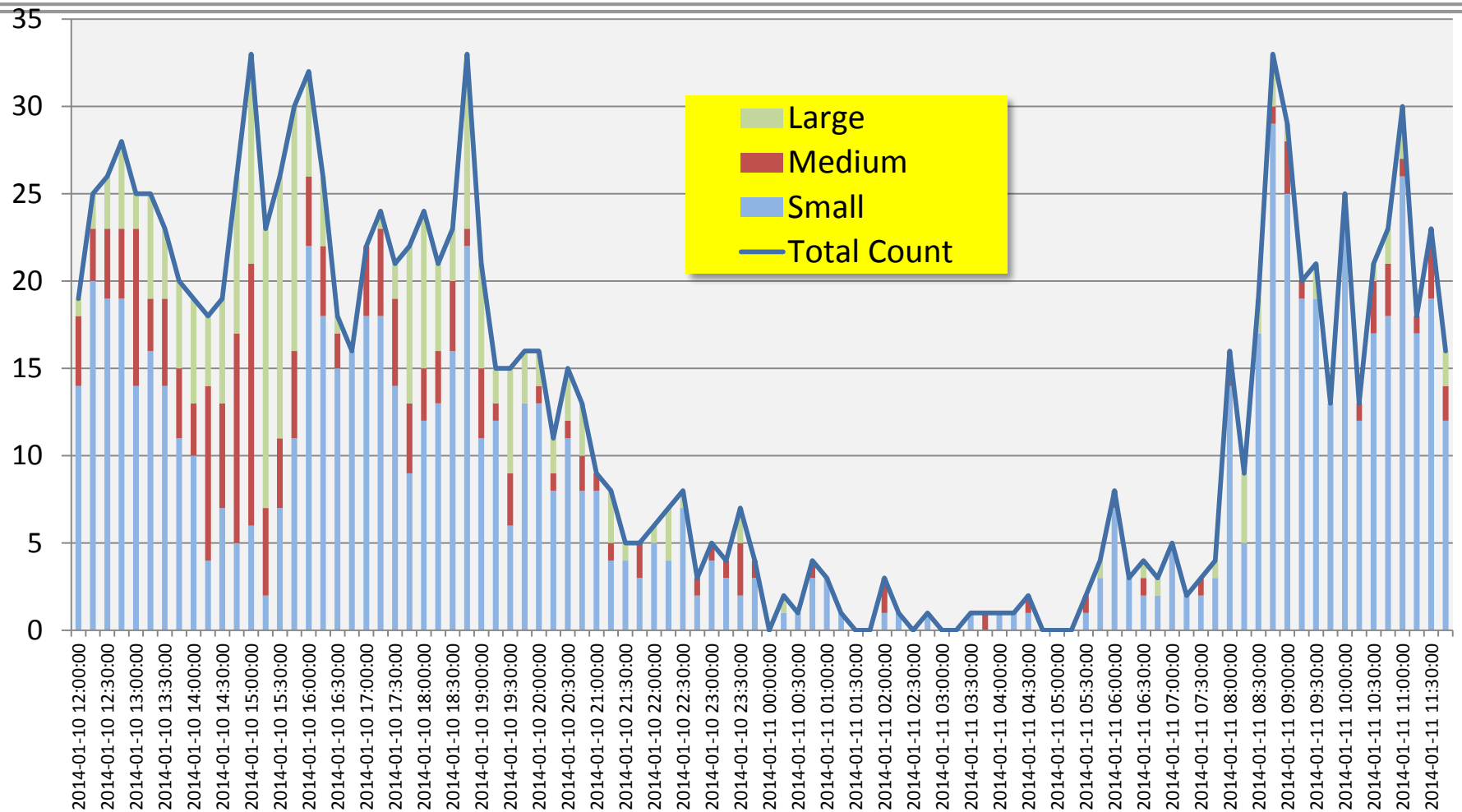
Turning Movement Counts in a format that engineers expect



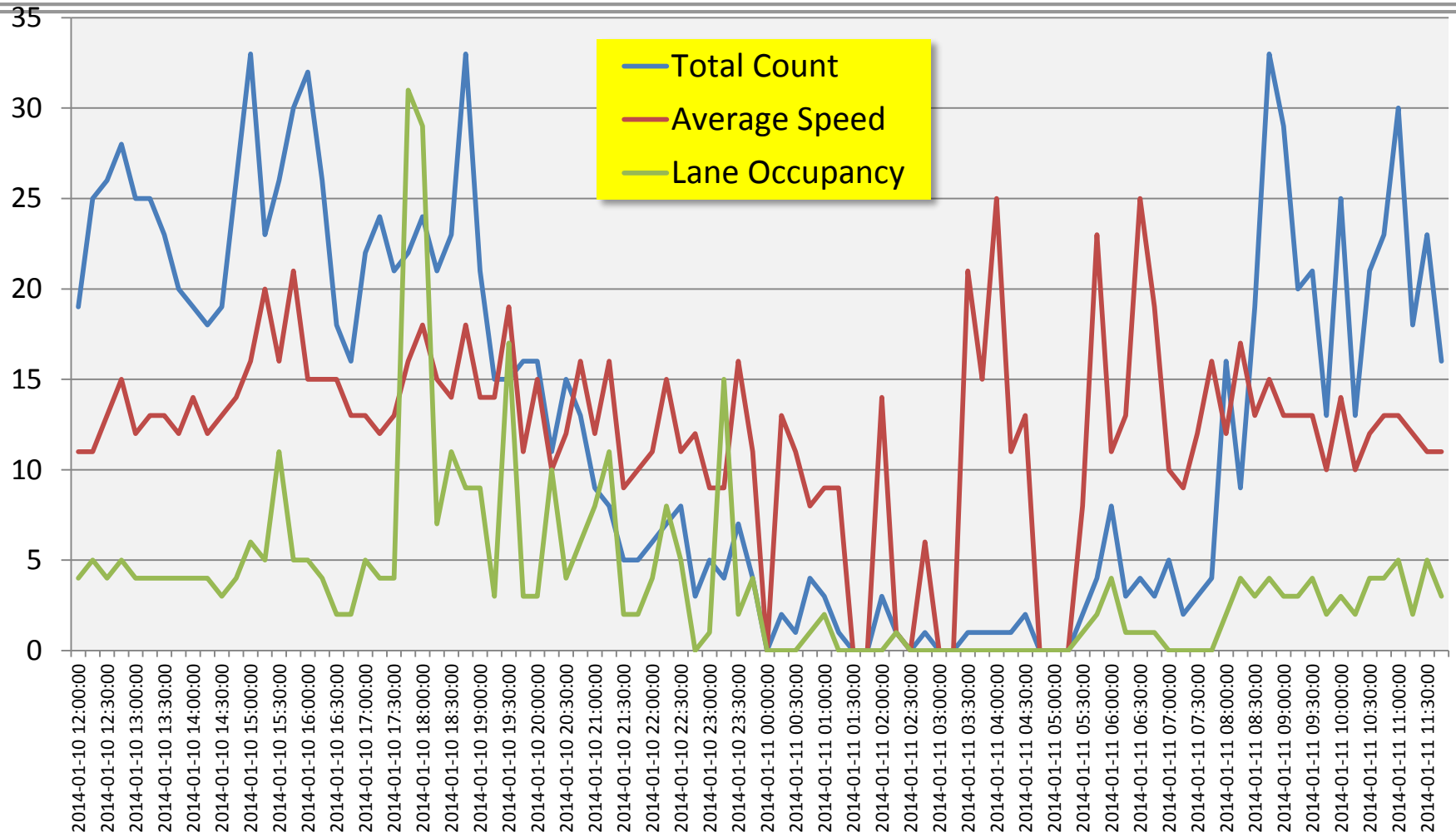




Sample Count / Classification

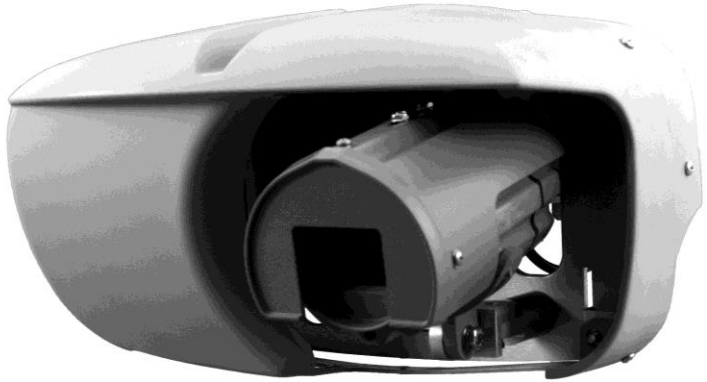


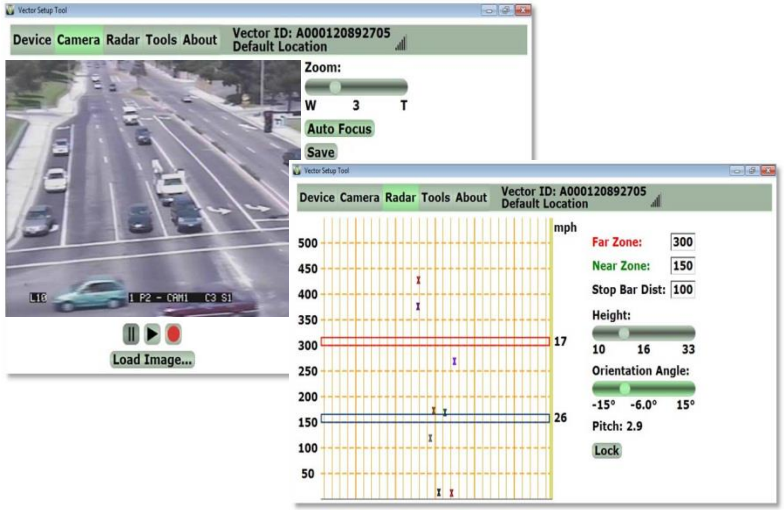
Sample CSO Chart



How do we fill that need?

- Vantage
- Vector
  - Volume, Speed, Occupancy
  - Turning Movement Counts
    - Why the TS2 IM
    - Not just for TS2
      - SDLC Cable can be connected directly into a TS1 (TS2 Type 2) controller
  - Individual Vehicle Speed
- Abacus
- Velocity





How do we fill the need?

- Vantage
- Vector
- Abacus
  - Takes advantage of existing infrastructure
  - Multiple functions
    - Collects Data 24 / 7
      - Per Lane Volume
      - Vehicle speeds
    - Incident Detection
  - Wrong way vehicle identification
- Velocity

How do we fill that need?

- Vantage
- Vector
- Abacus
- Velocity
  - Travel Times
    - Freeway
    - Arterial
    - Routes

Applications of Velocity

- Planning Agencies:
  - Input to the Congestion Monitoring Process
  - Planning model calibration
  - Origin-Destination studies
- Transit Agencies:
  - Fleet Tracking
  - Next Bus Arrival
- Multi-agency Leveraging – one reader, many uses
- Traffic Engineering / Consultants
  - Travel Time Studies
  - Delay Studies

Travel-time Technology Development

- Utilizes either Bluetooth or Wi-Fi
- Based on experience with AVI, a new ***read & process*** method was developed to increase efficiency and accuracy
- Asynchronus I/O – The Velocity Advantage
  - As soon as a MAC address is read it is uniquely sent for processing and time stamped (or stored locally)
- More Data
- More Accurate

Velocity – What is the Difference: Synchronous vs. Asynchronous

Synchronous: 8-10 second cycle (default process)

Asynchronous (unique to Post Oak)

Summary: Performance Measures with Iteris Data

- Tracking performance has become a requirement
- The need for data is greater than ever!
  - Iteris provides a variety of tools to meet these needs
    - Vantage
    - Vector
    - Abacus
    - Velocity
- The key to success – The right tool for the job