HERE Traffic
Visualizing Big Data for Performance Management

Mike Finn
HERE Connected Driving
HERE’s innovation leadership spans three decades

- **1985**: 1st map in online portal
- **1995**: 1st map in-car GPS NA
- **2000**: 1st map on mobile phone
- **2005**: 1st map to cover six continents
- **2010**: First Predictive Eco-Cruise
- **2012**: HERE Acquires earthmine
- **2014**: HERE Powers Mercedes Automated Vehicle

- **1985**: Navigation Technologies formed
- **1995**: NAVTEQ acquires Traffic.com, Map Network
- **2000**: HERE Acquires First Map-aided Adaptive Cruise Control
- **2010**: Nokia Acquires First Predictive Eco-Cruise

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Data, data, data
Where does it all come from?

HERE collects real-time probe data from a variety of sources:

- Connected Cars
- Mobile Devices
- Portable Navigation
- Commercial Fleet
- Sensors

HERE Processed
>650 billion probe points in real time in 2014

Exponential growth continues
Probe Data

Sample view of Chicago Loop
Probe Data

Sample view of I-90 and Ohio St interchange
Big Data turned into Useful Information: HERE Traffic

HERE Real Time Traffic
Continuous Dynamic Traffic Information, providing up to the minute data for 44 countries
- Real-time speeds and travel times
- Real-time incidents (accidents, construction)

HERE Advanced Analytics
Traffic Analytics
- A rich dataset of daily historical traffic speed and statistical information
- Sliced and diced on demand

NPMRDS
- Un-modeled research data set

Traffic Patterns
- Typical speeds & travel times by day/time based on historical data

HERE Predictive Traffic
Modeled real-time traffic forecasts for future time slots to help drivers, fleets, and road network operators make better decisions.
- Forecasted speeds and travel times
- 12 hours into the future

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Data enables powerful solutions for transportation management

Multi-Modal Guidance
enable comprehensive real-world maps built to galvanize travel, transport, safety and security of the system

Real-time and Predictive Information
enable accurate, insightful real-time traffic services and data

Analytics and Performance Measurement
enable easy access and integration of maps, traffic, incidents, to assess network performance

Connected and Automated Vehicles
offer next wave of mobility and safety enhancement
Traffic Analytics

1. Tell your story using a data driven approach
2. Show and prioritize where investment is needed
3. Quantify and measure network performance

- A rich dataset of daily historical traffic speed and statistical information
- Sliced and diced on demand

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Traffic Analytics

User defined historical data sets for performance measurement

A rich dataset of daily historical traffic speed and statistical information
Traffic Analytics

User defined historical data sets for performance measurement

A rich dataset of daily historical traffic speed and statistical information

Slice and dice on demand by user preferences (date/time, location, resolution, modeling)
Traffic Analytics

User defined historical data sets for performance measurement

A rich dataset of daily historical traffic speed and statistical information

Slice and dice on demand by user preferences (date/time, location, resolution, modeling)

Includes analytical details such as percentiles, standard deviation, gap filling and more
Traffic Analytics: Benefits over existing options

- Consistency over Time
- Granularity: Smallest road segments.
- Flexibility: Data constructed by user preferences.
- Usability: Manageable and customizable data sets.

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Traffic Analytics

Data can be visualized and analyzed for a number of use cases

• Analyze network performance
• Assess work zone impacts
• Before and after analysis of construction projects
• Demonstrate network operational improvements completed or needed
• Compare seasonal impacts on traffic
Traffic Analytics

Analyze network performance
Traffic Analytics

Analyze network performance
Traffic Analytics

Analyze network performance

- **Routes**: New York Ave, inbound, New York Ave, outbound

- **Graph**: Shows moving average of travel time ratio over time from 6 AM to 10 PM.
Traffic Analytics

Assess work zone impacts
Traffic Analytics

Compare seasonal impacts on traffic

Travel Time Index by Hour of Day

[Chart showing travel time index by hour of day across different months, with notable peaks and valleys indicative of seasonal traffic patterns.]

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Decipher travel patterns throughout the month or season
Decipher travel patterns throughout the month or season

Travel Time Index by Hour of Day

Month of DATE_STAMP
- January
- February
- March
- April
- May
- June
- July
- August
- September
- October

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Traffic Analytics

Compare travel times across passenger and freight

- I-285 EB approaching I-85 on North side of Atlanta
Traffic Analytics

Partner applications - Iteris

CONGESTED FREEWAY MILES (ALL)

Monthly Average (weekdays)

Region: Los Angeles

CONGESTED (%)

25.8%

This Month: 0.45
Previous Month: 0.38
Previous Year: 0.42

1 month change: +1.20%
1 year change: -0.50%
Data enables powerful solutions for transportation management

Automotive and Mobile Navigation

Traveler Information Applications

Performance & Operations Management

Enterprise and Fleet Optimization
Thank you!