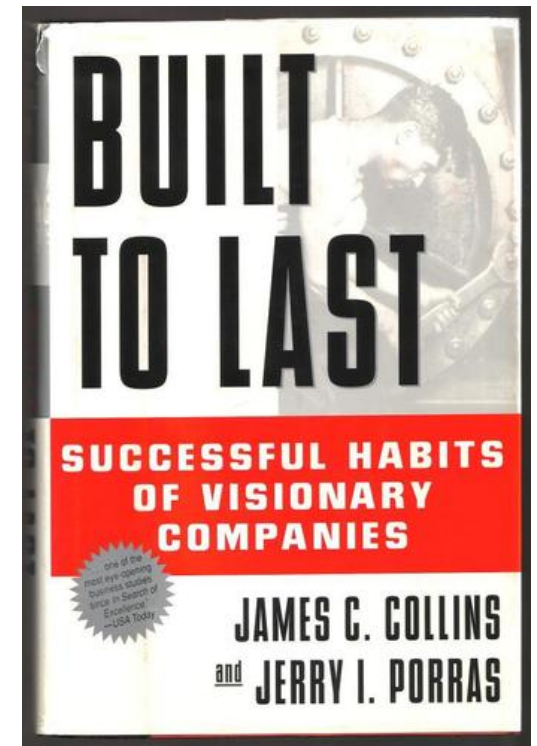# DELIVERING VALUE IN TRANSPORTATION

Steve Wooledge

Sr. Director, Big Data Marketing

October 30th, 2012

TOPICS

- Big Data Has Two Parts
  - > Preserve the core: Bring Order to Big Data
  - > Extend; Enabling New Business Discovery

- <u>DHL Express</u>: Bringing Order to Big Data

- <u>Telematics</u>: Enabling Business Discovery

- Q&A

BUILT TO LAST

SUCCESSFUL HABITS OF VISIONARY COMPANIES

JAMES C. COLLINS and JERRY I. PORRAS

Big Data Comes with BIG HEADACHES

" Even free software like Hadoop is causing companies to spend more money...Many CIOs believe data is inexpensive because storage has become inexpensive. But data is inherently messy—it can be wrong, it can be duplicative, and it can be irrelevant—which means it requires handling, which is where the real expenses come in. "

THE WALL STREET JOURNAL.

" Through 2015, 85% of Fortune 500 organizations will be unable to exploit big data for competitive advantage. "

Gartner

Sources: The Wall Street Journal. "CIOs' Big Problem with Big Data". Aug 2012
Gartner. "Information Innovation: Innovation Key Initiative Overview". April 2012

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DHL EXPRESS

- Operations in 220 countries and territories
- More than 285,000 employees
- More than 4,700 facilities worldwide
- 420 aircraft operating on behalf of DHL
- 72,000 vehicles
- No. 1 in European express and ground transport
- Road, rail, and combined transportation of shipments
- Various offers: less than truck load, full truck load, customs services, special transports

Costing and Profitability Analytics
DHL Express

S T R A T E G I C   I N T E L L I G E N C E

Global Costing: Insights to Profitability and Transfer Pricing

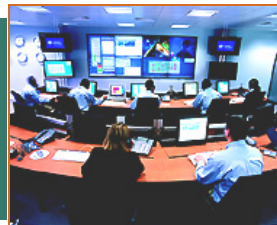**Global Finance: Transparency to detailed P&L's across the enterprise**

Improve Operational Performance and Profitability

Validation of data quality, cost drivers, agreement on transfer pricing

Checkpoint, sorting, transport, and facility data

Profitability by shipment, facility, customer

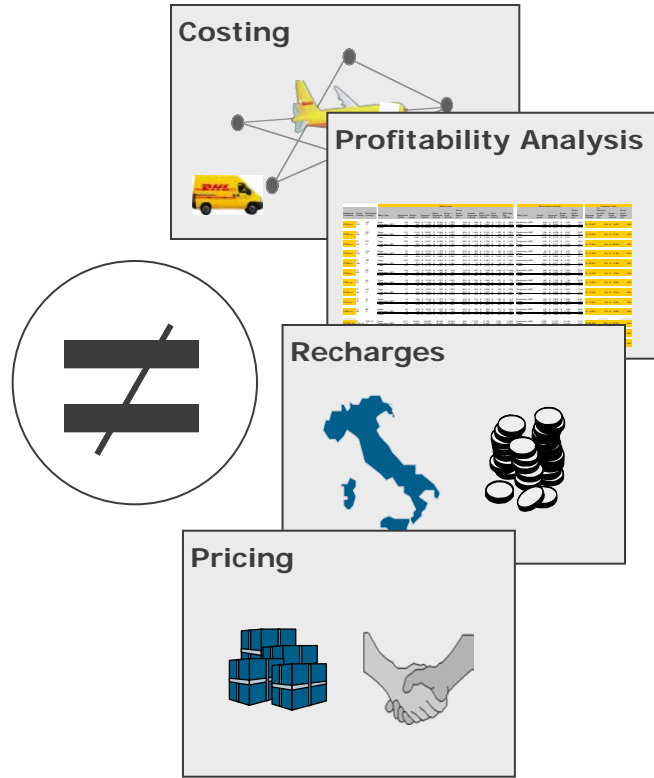**Local Operating Teams: What are the costs by facility & activity?**

Pricing Teams: How should we price strategic accounts?

O P E R A T I O N A L   I N T E L L I G E N C E

TERADATA. THE BEST DECISION POSSIBLE

Costing / Profitability Analytics DHL Express

The numbers just didn't add up...

GL & Corporate Reporting

Planning
➢ Growth

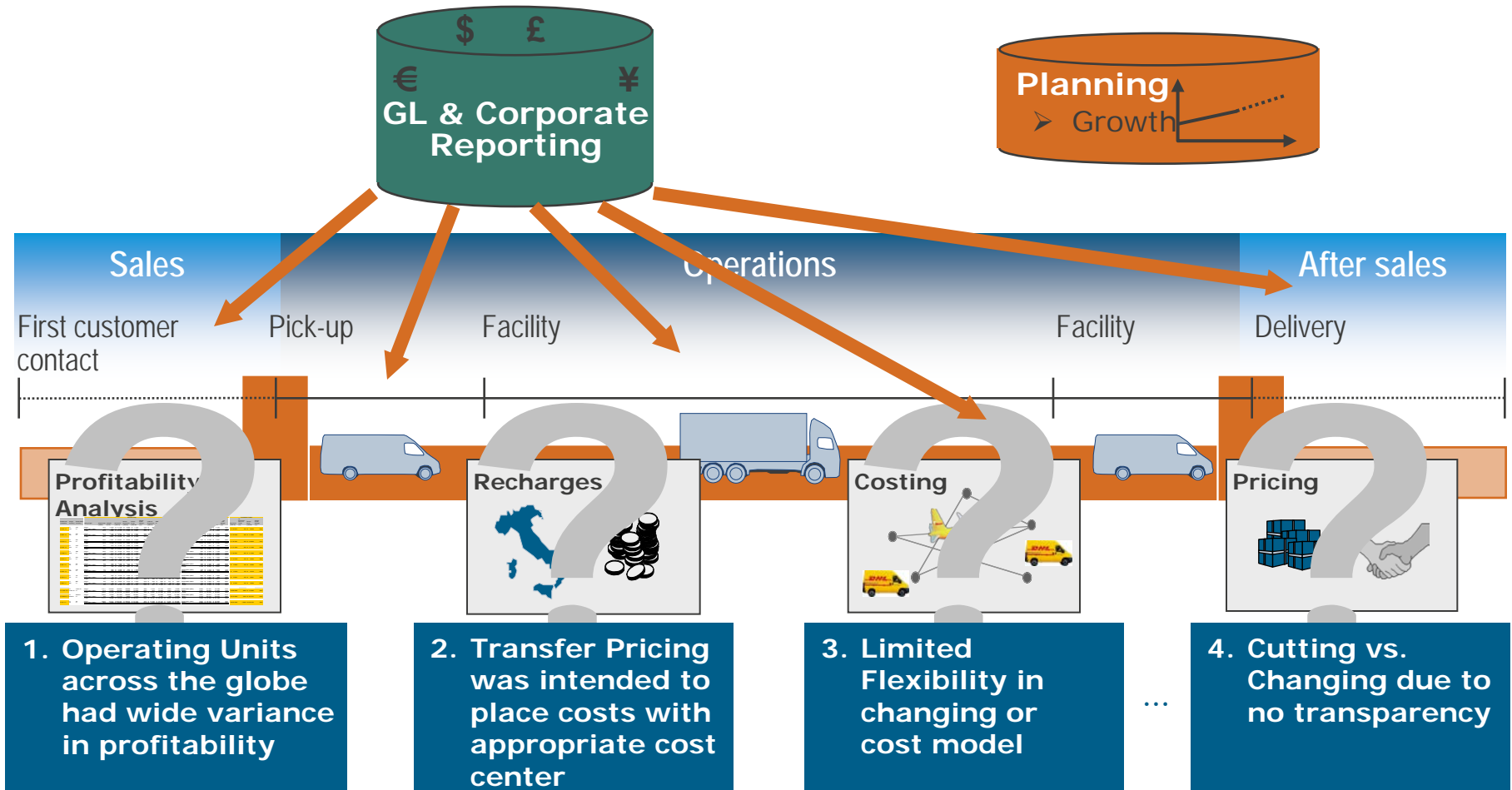Costing

Profitability Analysis

Recharges

Pricing

Key issues :

- Financial systems were not integrated and produced different versions of the truth

- Cost models were 12-24 months out-of-date not relevant for decision making

- Profitability analysis did not match the P/L (~10 percentage points variance)

- Non-standard measures and definitions

- Recharges did not incentivise the right cost management and commercial actions

- Cost and revenue plans were developed without unit cost or profitability development

- The costs to maintain the costing and profitability infrastructure was high

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Before:
Top down, averages, and static cost drivers

Lack of visibility to operating margins and customer profitability

| | 1. Operating Units across the globe had wide variance in profitability | 2. Transfer Pricing was intended to place costs with appropriate cost center | 3. Limited Flexibility in changing or cost model | 4. Cutting vs. Changing due to no transparency |

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Costing / Profitability Analytics DHL Express
After Scenario

From the Board Room to the Operating Units

GL & Corporate Reporting

$ £ € ¥

Data Integration

Costing

Planning
➤ Growth

Costing

Profitability Analysis

Recharges

Pricing

Sales	Operations				After sales
▪ Bookings	▪ Shipment data ▪ Record of pick up ▪ PU Checkpoint	▪ AF Checkpoint ▪ Handling Checkpoints ▪ DF Checkpoints	▪ AF Checkpoint ▪ Handling Checkpoints ▪ DF Checkpoints	▪ AF Checkpoint ▪ Handling Checkpoints ▪ DF Checkpoints	▪ Record of arrival ▪ Record of delivery ▪ OK Checkpoint

Sales — First customer contact

Operations — Pick-up — Facility — Facility

After sales — Delivery

Business Impact

With Teradata, Powered by Detailed "Big" Activity Data

- Handle data management of over 70 million shipments per month
- New costing model resulting in >150 rules across 13 profit object types
- Increased accuracy of costing and transfer pricing, all tied to GL
- Business Units and Regions focus on improving process and operating efficiencies vs. arguing about transfer pricing and costing numbers
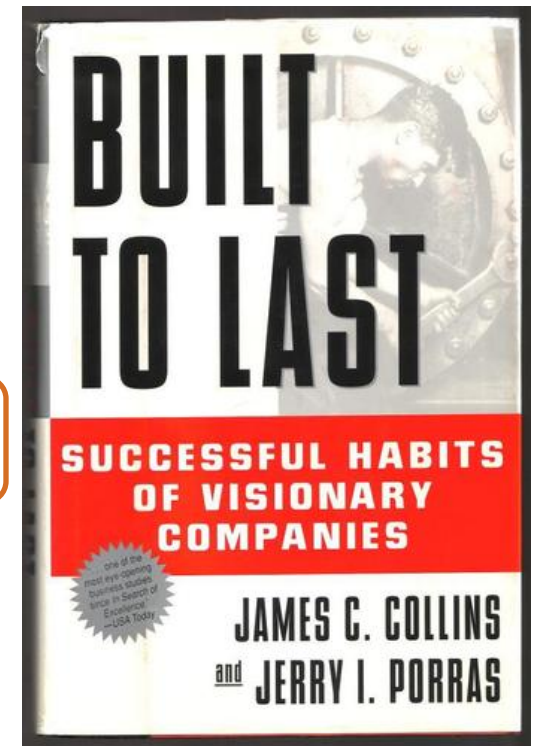
Cost Benefit

- Operational cost reductions from the legacy systems being switched off
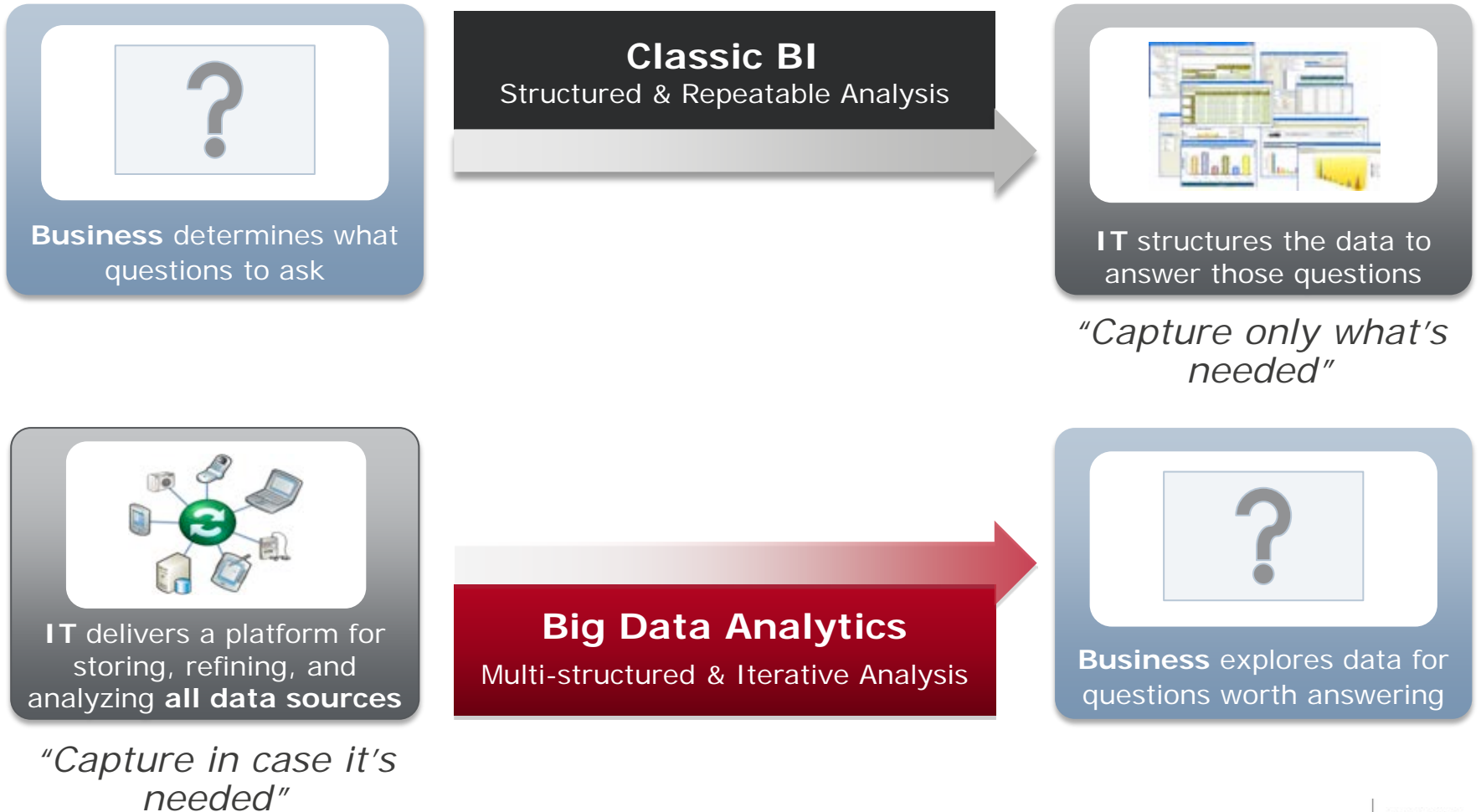- Improved pricing - increased revenue and profitability impacting EBITDA

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TOPICS

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Big Data: See Your Business in High-Definition

Big Analytics & Discovery Unlocks Hidden Value

Classic BI
Structured & Repeatable Analysis

Business determines what questions to ask

IT structures the data to answer those questions

"Capture only what's needed"

IT delivers a platform for storing, refining, and analyzing **all data sources**

Big Data Analytics
Multi-structured & Iterative Analysis

Business explores data for questions worth answering

"Capture in case it's needed"

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The Lytro and Big Data

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"Interactive, Living Pictures"

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Why is Insurance Telematics Important?

Telematics has arrived. Its speed of deployment will continue to accelerate...the fastest, most complete route to telematics adoption will produce a competitive advantage.
Cognizant, The Telematics Advantage, 2012

...usage-based insurance offerings have quietly caught on and now insurers and service providers are betting on growth.
Insurance & Technology, 2011

Telematics is projected to grow at an annual rate of 22.2% through 2017. iSuppli, 2011

Progressive leads rollout with 39 active states. 2011

At least five top 10 personal auto insurers and 4 of the top 10 commercial auto insurers have implemented programs to insureds implemented in at least one state.
Towers-Watson, 2011

Customer Profile and Telematics Data
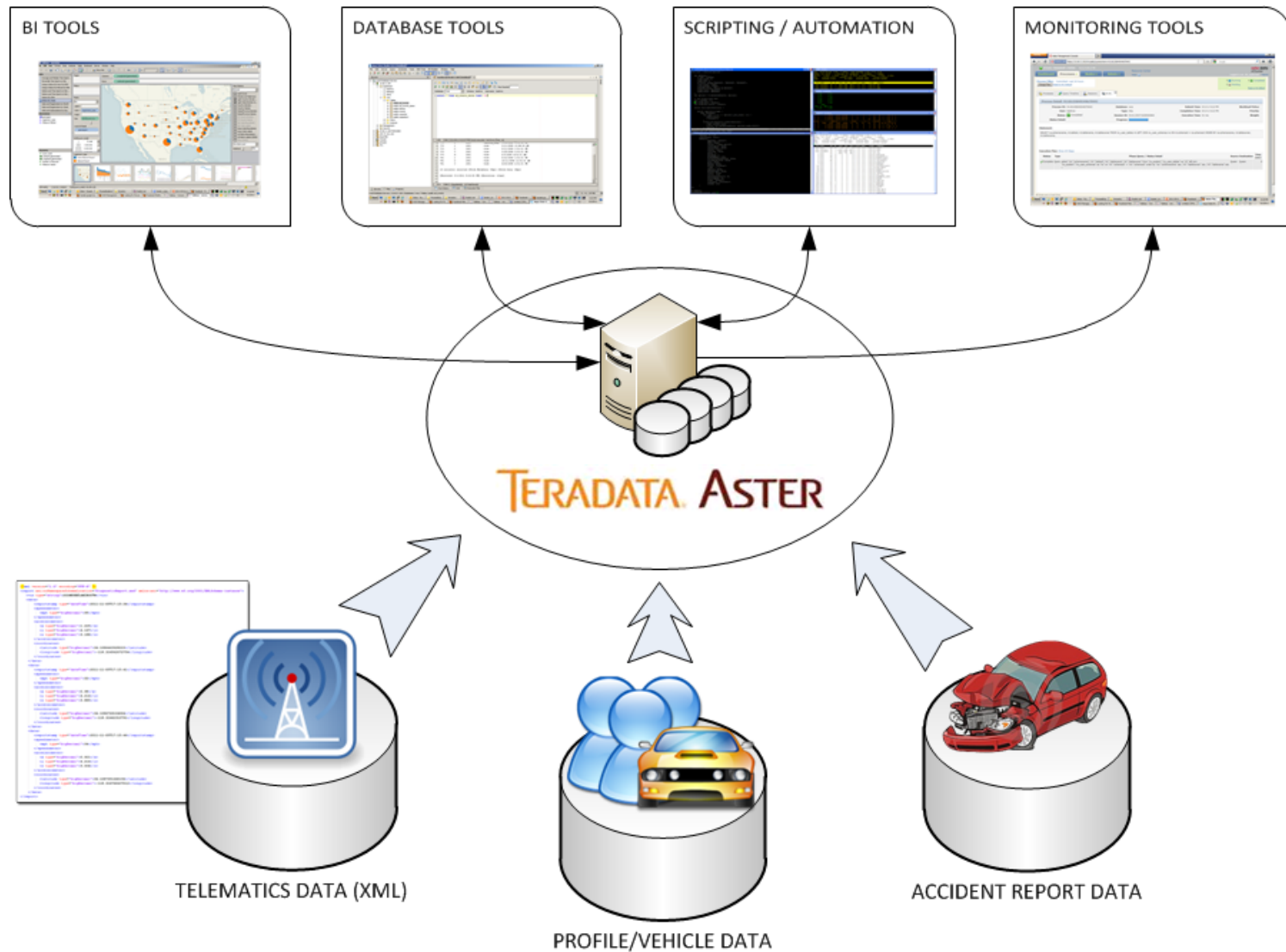
Telematics Data is Messy and Hard to Decipher
Identifying **Driving Patterns** with Time Series Data

Business Challenges

- Identify aggressive driving behaviors

- Create expanded risk segmentation to match driving patterns with pricing

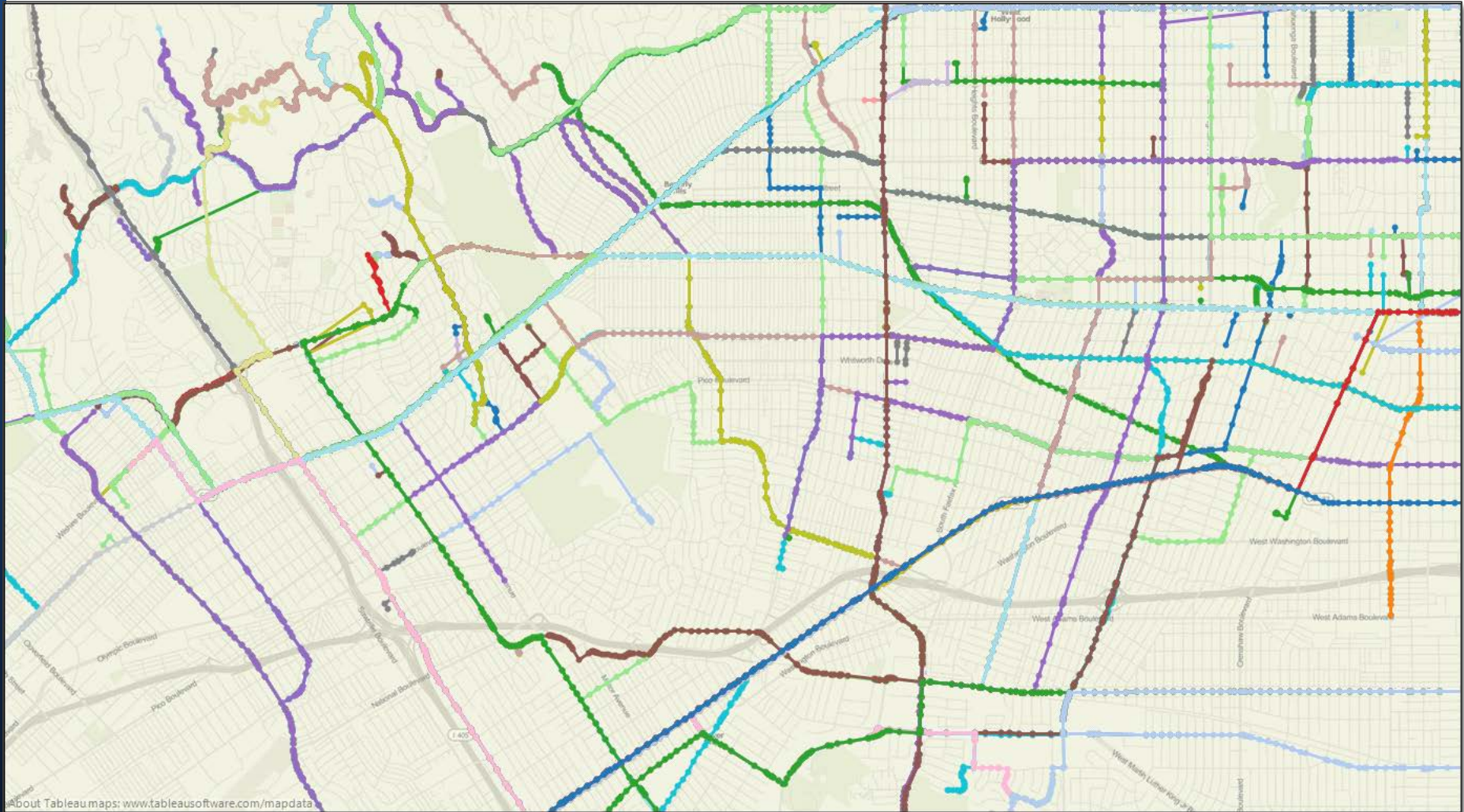- Provide customers with risk messaging to improve driving behavior

Data Challenges

- Telematics data is unstructured and voluminous depending upon transmission frequency and scope of tracking

- Patterns vary by individual and span multiple time periods

- Transmissions can be real-time (sub-second) or in batch

- Data capture can vary across programs

- Difficulty identifing real data from noise

- Data varies by vehicle manufacturer

JH4NA1157MTOO1832||08:01:00 120711||6373||33.1||-0.008 -0.002...
1FALP62W4WH128703||8:01:00 120711||14378||13.0||-0.003 +0.130...
1G1FP22PXS21-00001||08:01:00 120711||6531||45.8||0.02-0.003||...
JH4NA1157MTOO1832||8:01:10 1208011||98323||81.5||+0.21 +0.033...
1FALP62W4WH128703||8:01:10 1208011||176323||61.0||+0.17 -0.002...
1G1FP22PXS2100001||8:01:10 120811||15643||22.4||-0.09 -0.001...
WVWAF93D058000675||8:01:10 120811||3738||45.3||+0.34 -0.111

JH4NA1157MTOO1832||08:01:01120711||6378||41.1||+0.21 +0.033...
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1G1FP22PXS21-00001||08:01:01120711||6532||39.8||-0.09; -0.001...
JH4NA1157MTOO1832||8:01:011208011||98327||90.5||+0.30 +0.023...
1FALP62W4WH128703||8:01:01 1208011||176325||62.0||+0.18 -0.001...
1G1FP22PXS2100001||8:01:01 120811||15644||11.4||-0.10 -0.002...
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WVGBC77L34D064567||8:01:01 120811||2346||24.4||+0.01 -0.02...
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JH4KB2F56BC000000||8:01:11 120811||12346||41.1||-0.19 − 0.11...
1G4GA5EC7BF000000||8:01:11 120811||65433||21.4||+0.03 +0.03...
1G6DA5EY3B000000||8:01:11 120811||100322||11.1||+0.11 -0.01...

…

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Customer Driving Paths (Los Angeles)

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Risk Based Traffic Routes Pricing Model
Combining Telematics Data and Traffic Accident Data

SUMMARY

- Import accident report data and combine this information with customer drive route data to identify individuals that are consistently driving on high-risk traffic routes.

- In the example below, multiple accidents have occurred involving drivers travelling for +¼ mile south on South Grand Avenue and then making a right turn onto Venice Boulevard. Customers driving this route during rush hour may be at a higher risk of involvement in an accident.

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THE BEST
DECISION
POSSIBLE
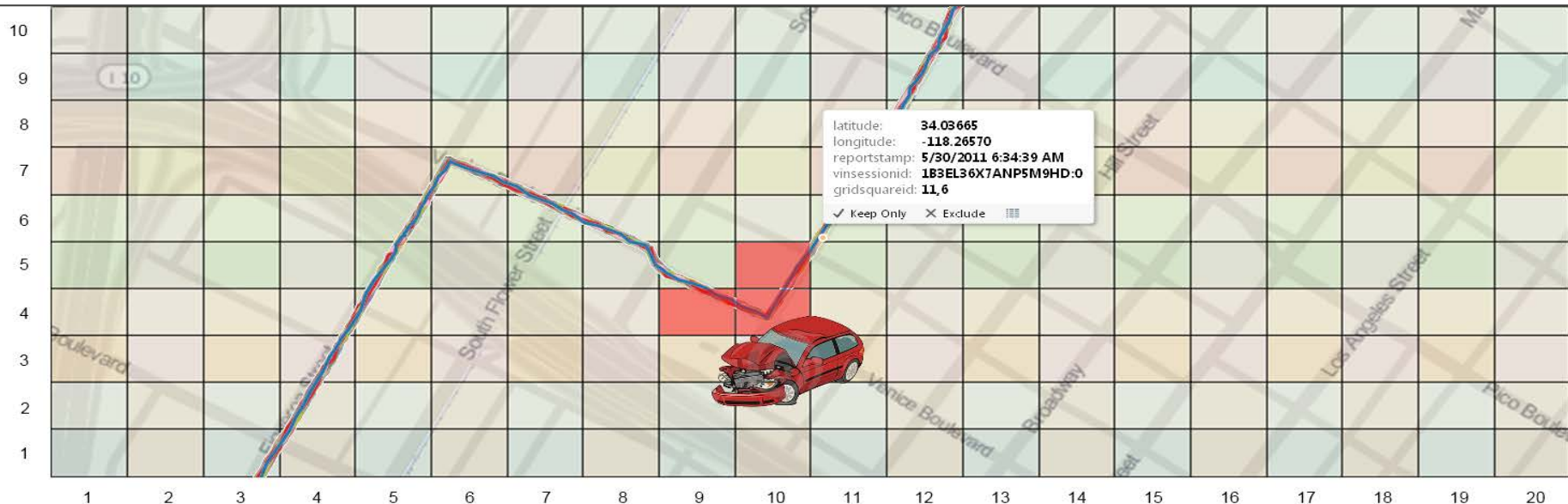
Identifying Driving Patterns with Time-Series Data

With Discovery Platform

- Pattern matching to identify premium costs and risk messaging based on driving attributes (comparisons can be done in multiple ways, e.g., by individual VIN, across class of vehicles, by garaging location, etc.)

Business Impact

- Expand pricing variables based on real driving
- Create right pricing for the right customer driver score
- Underwriting predictability
- Provide deeper analytics to create a carrier's secret sauce

X Axis: Forward/backwards acceleration/deceleration
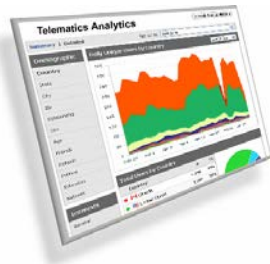
VIN	Model	Accelerometer	Time	...
JH4NA1157MTOO1832	BMW 328i	-0.008; -0.002	8:01:00 12/7/11	...
1FALP62W4W				
1G1FP22PXS2				

VIN	Model	Accelerometer	Time	...
JH4NA1157MTOO1832	BMW 328i	+0.21; +0.033	8:01:10 12/8/11	...
1FALP62W4WH128703	Toyota Camry	+0.17; -0.002	8:01:10 12/8/11	...
1G1FP22PXS21-00001	VW Passat	-0.09; -0.001	8:01:10 12/8/11	...

Y Axis: Accelerations/decelerations to the left or right, e.g., turning

Convert to nPath via SQL-MapReduce functions

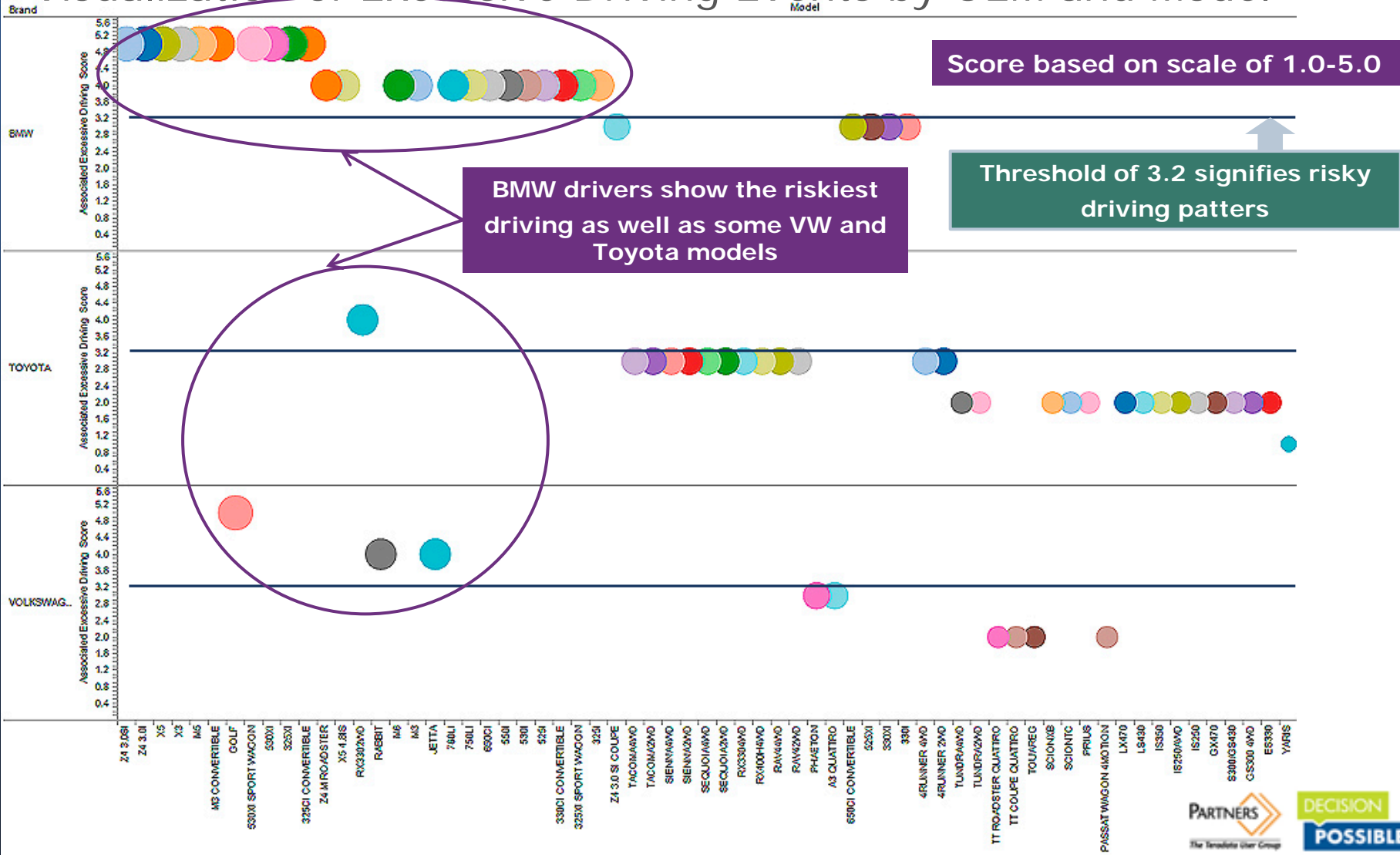| VIN	Model	Accelerometer 1st Reading	Time 1	Accelerometer 2nd Reading	Time 2
JH4NA1157MTOO1832	BMW 328i	-0.008; -0.002	8:01:00 12/7/11	+0.21; +0.033	8:01:10 12/7/11

Accelerometer 3rd Reading	Time 3	Accelerometer 4th Reading	Time 4
+0.044; +0.010	8:01:20 12/7/11	-0.10; -0.042	8:01:30 12/7/11

Accelerometer 5th Reading	Time 5	Accelerometer 6th Reading	Time 6
-0.041; +0.010	8:01:40 12/7/11	-0.10; -0.013	8:01:50 12/7/11

Fast Acceleration

Sudden Fast Deceleration

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Example: Telematics

Visualization of Excessive Driving Events by OEM and Model

Score based on scale of 1.0-5.0

BMW drivers show the riskiest driving as well as some VW and Toyota models

Threshold of 3.2 signifies risky driving patters

Thank You!!

- **Summary**
  - Big Data brings bigger data headaches
  - Preserve the core
  - Extend and test
    new business models, data, and analytics

- **Questions?**

- **Contact Information**
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  - steve@teradata.com
  - Twitter: @swooledge

- **Learn more**: www.TeradataAster.com

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