Imagine driving to work using only the rearview mirror. Sounds dangerous, scary and impossible. But that is what many businesses do. Instead of looking forward through the windshield, analysing and acting upon the nuances of the road, weather conditions and traffic in real time, some organisations rely on historic data and traditional analytics solutions to guide real-time decision making.

Unfortunately, for many companies, 'moving forward by looking backward' is the only choice. Traditional analytics solutions, focussed on aggregating and understanding static transaction data from last month or the last five years, aren't designed to process and react to the last 90 seconds of data. By the time the analysis is complete, the opportunity to affect an outcome is often lost.

Revenue opportunities from Position Facts

The past two decades have seen massive investment in sensor technology. Billions of existing sensors, GPS-enabled cell phones and other devices stream a massive torrent of information called Position Facts (an object's time-stamped position (location) and movement characteristics such as speed, and state/ condition information such as temperature, pressure, humidity, fluid level as well as still and video imagery). There is an innovation imbalance – these billions of devices and sensors create more information than the current generation of analytics software can realistically or economically manage.

This flood of data creates a green field opportunity to create new products and services that

Cashing on real-time position facts

Traditional analytics solutions are tailored to focus on historic data and are incapable of managing the torrent of live position facts generated by sensor technology. However, a new breed of technology solutions has emerged that transform position facts into business intelligence, enabling effective and timely action

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extract and monetise information from Position Facts. This new products and services opportunity is far richer than analysing "where is it now?" location information.

Position and movement analytics defined

A new class of software and enabling technologies and processes called Position and Movement Analytics has emerged to address these scenarios. Position and Movement Analytics compares current position with historical patterns to detect and adjust to anomalies or opportunities as they occur. Position and Movement Analytics facilitates effective action from the statistical analysis of real-time, time-stamped position and movement characteristics with state or condition facts.

For organisations bringing new products and services to market, Position and Movement Analytics creates a number of significant opportunities to monetise high-value assets, supply chain resources and mobile people. Defined, these are:

- High-value assets – any asset, with high-value, that is mobile or being shipped, which needs to arrive on time, can benefit from pre-emptive exception management – if there is a predicted delay, and safe and complete return of the asset is required by their owner supplier.

- Supply chain resources – any resource (e.g., unfinished or finished goods, raw materials, or natural resources) that is shipped, often in a smart (geo-located) container, that can report condition of the resource or raw material

(temperature, pressure, humidity, exposure, and so on), that optimising manufacturing or delivery can benefit from tighter, real-time, predictive management which can help optimise manufacturing or delivery.

- Mobile people – individuals associated with GPS-enabled smart phones, or other tracking devices who opt-in to participate as a population resource for a variety of business, safety or other monitoring initiatives (e.g. social media, marketing research, health monitoring, military or police personnel deployment, elderly or teen driver locating, and so on).

Across these three areas, there is a common revenue opportunity involving processing and computing on real-time Position Facts and state or condition at the sensor. The common theme extends further into statistically correlating Position Facts with other data or analysing through pattern recognition and comparing with known movement patterns or conditions – resulting in valuable intelligence for decision-making and identifying new sources of revenue.

Real-life scenarios that can be monetised using Position Facts

- Analysing a consumer's reaction to an experience within seconds then adapting the experience before it is complete.
- Computing on Position Facts in correlation with other data (demographics, prior locations, directional movement, convenient meeting points etc.) creates a much richer opportunity for social media to be an asset for B2C companies to reach targeted consumers.
- Municipal transit can optimise operations and offer advertising targeted to dynamic rider demographics to increase revenue. Based on location and ridership, advertising space can be sold, and served.
- Teen driver safety and driving habits can be recorded, and security monitored with onboard video – all in real time.

Position and Movement Analytics facilitates effective action from the statistical analysis of real-time, time-stamped position and movement characteristics with state or condition facts.

Shortcomings of traditional analytic tools

For decision-makers trying to monetise position facts, it is important to understand the limitations of common analytics platforms for enabling Position and Movement analytics.

Traditional analytics platforms focus on analysing historical (last year or last five years) business and industry performance information. While these applications have come a long way to generate information in the form of isolated tables, reports, charts and graphs that provide a decision maker with content upon which to make a decision for the future, they fall short in five critical areas:

- SPEED – The analysis takes too long and is often out of date or irrelevant. "Predictive" guidance in a dynamically changing world must be current and relevant.

- STATISTICS-BASED – Most analysis (reports and charts and graphs) is trend-based, not primarily statistics-based, and lacks probability and standard deviation measures to quantify decision direction.

- NOT REAL TIME – Traditional analytics is not real-time analysis on real-time data. The data required to make decisions in real time that can affect a business' competitive advantage in real-time should be real-time data.

- TIME AND POSITION INFORMATION LACKING – Historical analytics lacks position and movement information recorded over time as a component to enrich and visualise state and condition of a business, its

assets, resources, and customers.

- SPATIAL INTERACTIVITY – Outside of thematic maps (geospatial charting) analytics systems today lack real-time, dynamic and spatially conveyed interactive statistics.

Further, commercial mapping solutions are not designed for statistical analysis, or the analysis of dynamically updated state and condition facts (e.g. temperature, pressure, activity, inertia, tank level, and so on). These consumer mapping tools are further unable to effectively and dynamically correlate these facts to position and movement of that asset, resource or person over time represented by the navigation path, or push-pin location.

Traditional analytics systems cannot analyse a consumer reaction to an experience within minutes of the customer experience. Current tracking technology and initiatives focus on where something is, not where it's been, or likely to be and thereby misses a massive data play for analytics software to collect data, assess patterns of interest, and extract value from the data it collects.

Market trends shaping real time analytics

Transforming position facts into dynamic information and intelligence is now technically possible thanks to three mega market trends:

- The explosion of unprocessed real-time location information resulting from social media, the Internet, and movement of people, the supply chain and other assets.

- The exponential proliferation of low-cost industrial and consumer GPS products, GPS-enabled smart phones and other location-sensing devices.
- The acceptance of cloud computing for mission-critical applications.

The combination of the cloud as a computing platform, the explosion of unprocessed real-time location information and the proliferation of low-cost GPS enabled products and other location-sensing devices creates a green field opportunity for new products and services that monetise the last 90 seconds because these products can now identify and respond to a "right now" customer opportunity.

The last 90 seconds of Position Facts contain exceptionally valuable static information which becomes increasingly more valuable when there are powerful analytics tools available to analyse that static data or recent periodic streams of the data, in real-time.

This new products and services opportunity is far richer than analysing "where is it now?" location information. The true market opportunity lies in immediately reacting to and extracting value from Position Facts creating a whole new form of real-time predictive decision-making

Position and Movement Analytics create a number of significant opportunities to monetise high-value assets, supply chain resources and mobile people.

efficiency and effectiveness which can be used to optimise business processes and drive specific outcomes based on the last 90 seconds of position fact data.

The growing billions of wireless sensors and smart devices deployed world-wide enables an environment where everything and everyone is context-aware in terms of location, status, situation and predictable outcomes; all in real-time right now.

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