pitney bowes

Geospatial Innovation – Science and Technology

20 November, 2018

Data is Growing at Amazing Space…..

Sensors/RFID/ Devices
Mobile Web
User Click Stream
Web Logs
User generated contents
Social Media Interactions and Feeds
Spatial GPS coordinates
HD, Video, Images
Many more…

Zettabytes

Exabytes

Petabytes

Terabytes

GB

MB

Size of universal data doubles every 2 years

Increase Variety and Complexity of Data

Sentiment Analysis
Behavioral Targeting
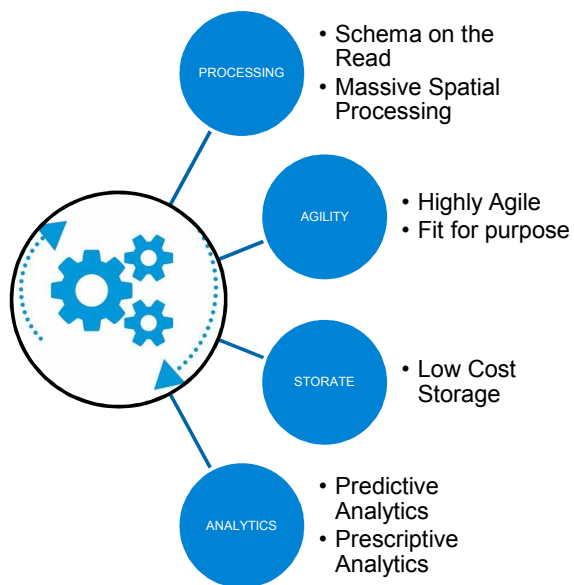Dynamic Pricing

GeoSpatial Data Lake - Introducing

Large amount of Spatial Data – Imagery, Vector, Drone Feeds, LIDAR,

Injest all data

Variety of Information embedded - Structured Data, Semi Structured and Raw Data

Store in native format

Mobile data feeds, Vehicle data, Variety of IoT/sensors data

PROCESSING
- Schema on the Read
- Massive Spatial Processing

AGILITY
- Highly Agile
- Fit for purpose

STORATE
- Low Cost Storage

ANALYTICS
- Predictive Analytics
- Prescriptive Analytics

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TELECOM USE CASE

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By Examining Massive Amounts of End-User Mobile Location Data with Other Wireless Network Observation Data, We Can Introduce Subscriber-Verified Coverage that Prove QOS, and Thereby Reduce Churn and Increase NPS.
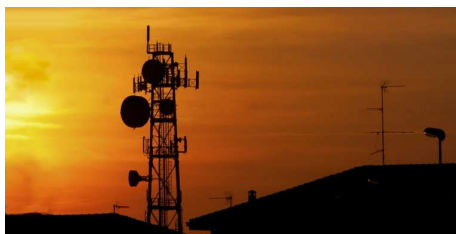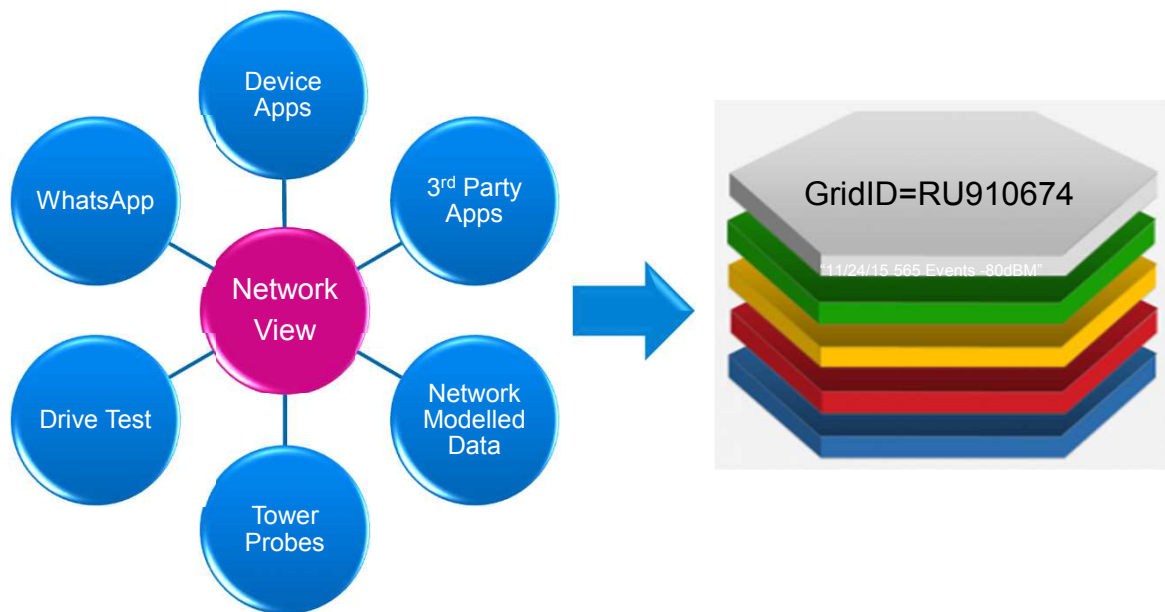
5

Telecom
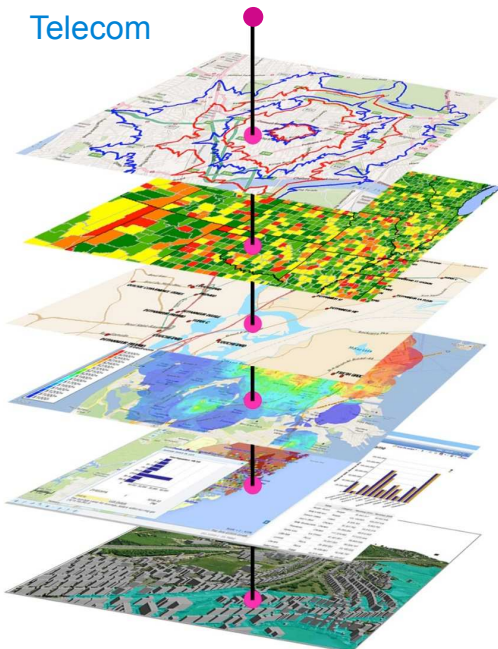
Capitalize on your coverage

- Network Optimization
- Data Monetization
- Customer Acquisition
- Customer Engagement

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Multi-Source Approach to Optimize Telecom Network Coverage

Multi-Source Approach to Optimize Telecom Network Coverage

Description- Improve Understanding of Network Performance by Collecting, Organizing, Enriching and Visualizing Device Driven Network Insights.

Data Sources- Device Collected Location Based Network Performance Data

Types of Analysis- Perform Spatial Processing via Vector and Raster Based Methods to Generate Map, Data Science and Business Intelligence Data Products That Deliver Network Performance Insights

Expected Business Outcomes- Through the Deployment of this Solution, a Wireless Providers can dramatically Improved ROI and Decision Making on Infrastructure Investments in New Spectrum, Small Cell and Tower Based Technologies.

Multi-Source Approach to Optimize Telecom Network Coverage
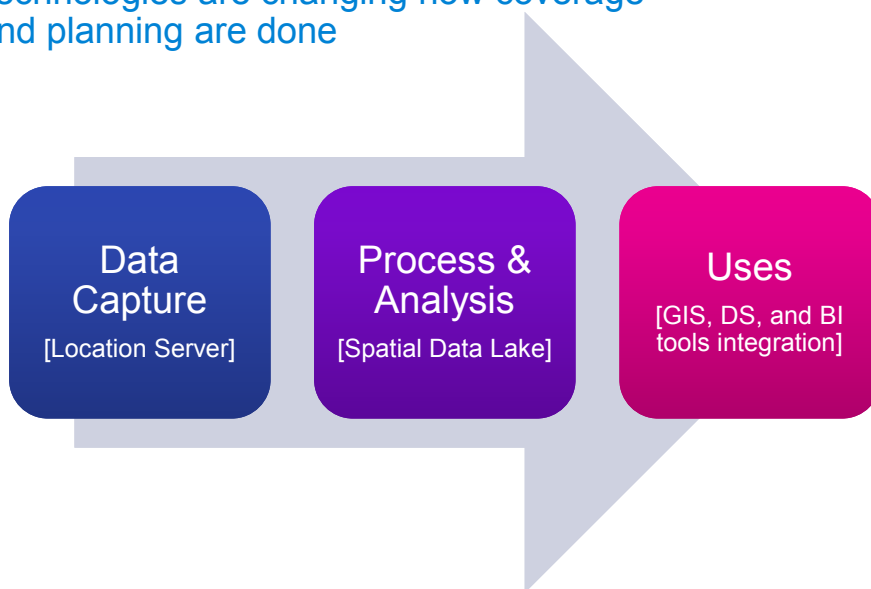
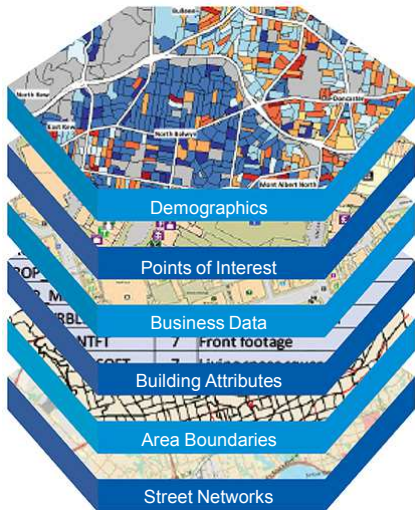**Old: RF Propagation Modeling**
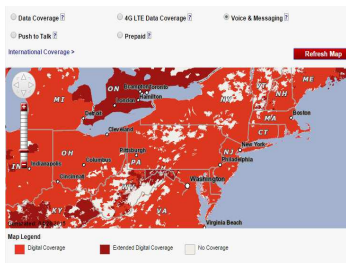
New: Big Data + RF Propagation Modeling

Perspective	Old	New
Accuracy	Model based	Verified with real users
Granularity	Coarse	High (60 m or lower hex)
Timing	Monthly or worse	Near Real Time
Information	Yes/No	Rich (e.g.network speed)

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Big Data technologies are changing how coverage analysis and planning are done

Data Capture
[Location Server]

Process & Analysis
[Spatial Data Lake]

Uses
[GIS, DS, and BI tools integration]

Each layer of location data adds new details and additional insight.

Demographics
Points of Interest
Business Data
Building Attributes
Area Boundaries
Street Networks
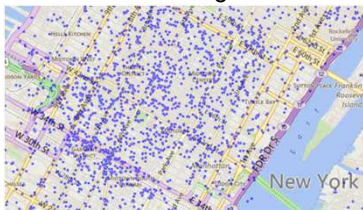
Location Insights
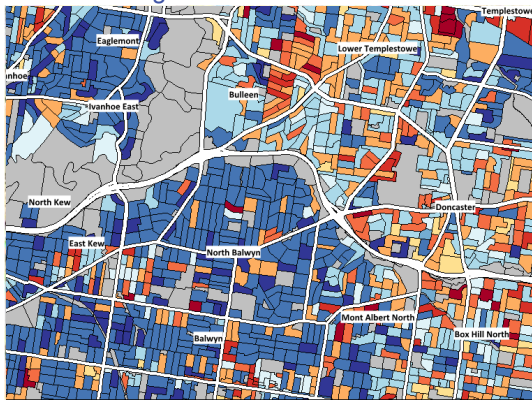
Complete location attributes by grid segment.

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Scalability & Performance
90 billon records in 30 min

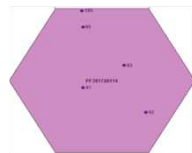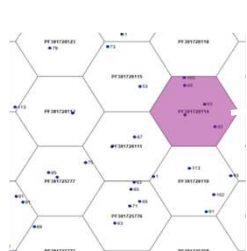Mobile log records
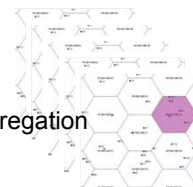

Hex level coverage map

Hex-binning

Verification

90 days aggregation

count: 5
rssi_mean: -93
Drop_call: 0
…

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Spatial Data Lake - Traffic Density
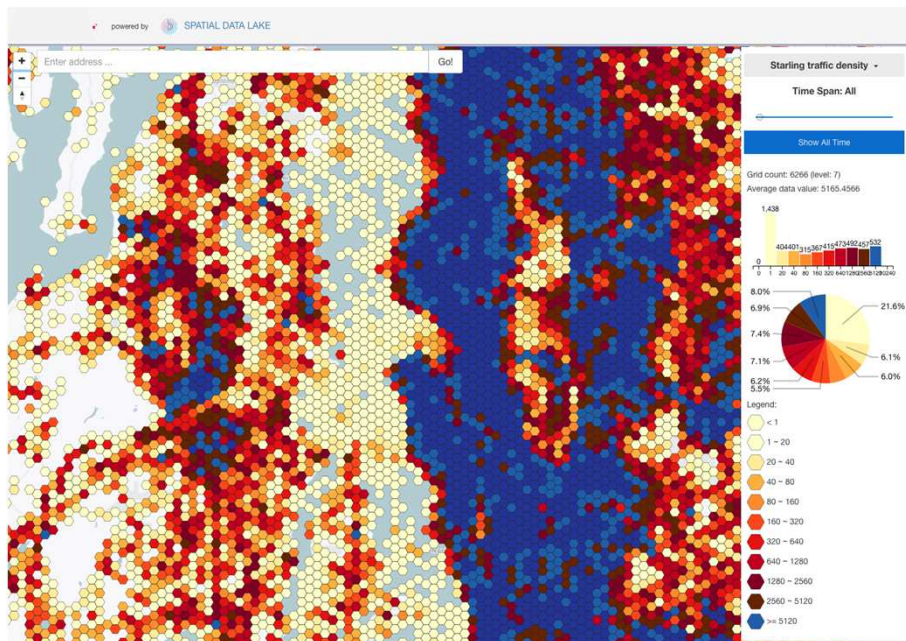
Big Data Driven Spatial Analytics and Visualization Engine