White Paper

Creating New Revenue Streams with Location Intelligence

Executive Summary

Mobile operators have spent a significant amount of time and effort trying to find the best way to manage and optimize networks to meet the changing needs of subscribers. The same intelligent platforms now being deployed to optimize networks also have the ability to provide location intelligence information on how subscribers live their lives. This is important because companies want to get into the minds of subscribers, and their potential customers, to see what topics matter to them and what types of products and services they might be willing to buy.

Operators hold the key to this information because they capture vast sets of data drawn from their wireless networks as people and machines move from one location to another and use various apps throughout a day. Once it is mined by intelligent platforms, this data reveals large-scale movement patterns and trends that can benefit all sectors in need of reliable – and precise – information about the population and what matters most to those people. This information is a valuable commodity that creates new revenue opportunities for operators.

This paper will discuss three main opportunities for new revenue: market research, advertising, and public safety. However, many other industries, including: transportation, banking, insurance and tourism, have a need for this information. As operators become more familiar with location intelligence, additional opportunities for creating revenue will become evident.

Introduction

Knowing the location of subscribers and what they are doing with their devices is of great importance to mobile operators. This information is critical for managing and optimizing networks, but has even more value in the additional revenue it can provide as operators bridge the gap between the digital and physical lives of subscribers for third parties. Third parties could include any business that has a need for the movement patterns of subscribers, such as banks trying to assess the best location for a new ATM machine, retailers trying to attract potential customers in an area, or governments trying to enhance public transportation options, among others.

Mobile networks hold a tremendous amount of data on where people go throughout their day, which applications they use, and the topics that matter most to those people at any given time. Until now, this data was unused as there was too much of it to mine to get to the valuable information. That has all changed with platforms that can take that raw data and find the knowledge needed to turn it into a valuable commodity. This knowledge, called location intelligence, will become the driving force of revenue for mobile operators in the years to come.

Two thirds of the global population are now mobile subscribers*

72% of the global population is covered by cellular technologies*

*Source: GSMA

A recent VIAVI Solutions® study of 1.6 million subscribers spread over a representative area of a Tier 1 mobile network found that over 50% of data is consumed in less than one percent of the network area and over 90% of data is consumed in less than five percent of the area. The study also found that residential areas make up 48% of the total data usage areas. This means that operators can mine focused areas of their networks to create the location intelligence needed and that consumer information makes up a significant portion of the potential for new revenue streams.

But it takes an intelligent platform to accurately extract the right data at the right time and turn that data into useful information. Knowing where a subscriber is currently located is useful to a certain extent, but analyzing the historical data of where that subscriber has been combined with their current location is much more valuable. In addition, more granular location accuracy that says which cell site a subscriber is close to is needed to deliver true value.

With this information, accurate predictions can be made as to where subscribers will go next, where they will go later in the day or even next week. Once an operator can predict where someone will go and combine that with the topics that matter to that subscriber, an unprecedented opportunity arises for the operator to sell that information to interested parties. It is the patterns and trends provided by the data that help mobile operators leverage the insight they can extract from their networks.

Location intelligence is better than the information provided by social media companies that use check-in, GPS, and WiFi to gather information on a population. While social media companies use sensors and signals of mobile devices to try and glean some sort of awareness of user actions, location intelligence can provide much more certainty of user trends and patterns based on hard data provided directly from an operator's network. There is simply much more information within a mobile network than could ever be obtained by social media check-in, GPS, or WiFi alone.

Privacy

This leads to the question of privacy and protecting the subscriber's personal information such as name, address, and contact information. Certain social media companies have recently run into trouble with several governments for gathering identifiable information on their users and selling that information to third parties. As privacy regulations become stricter, the methods used by these companies to gather information will likely become outlawed in most countries.

More than Just Connectivity
Imagine the Possibilities

Enhance customer service and loyalty

Drive incremental ad services and sales

Identify operational bottlenecks

Provide venue wayfinding

Foster personalized experiences

This creates an opportunity for mobile operators to become the main source of subscriber information in the form of location intelligence. The guiding force behind location intelligence is that the data it gathers is aggregated and anonymized. So, rather than looking at targeting individuals, operators are analyzing trends and patterns across groups of subscribers.

Going well beyond just Cell-ID, location intelligence uses artificial intelligence and algorithms to see patterns and make predictions on future actions. Because of this, location intelligence meets the new, stricter General Data Protection Regulation (GDPR) standards for privacy and is safe for subscribers. This opens up almost unlimited ways that location intelligence can be used to create new revenue streams, but the most immediate opportunities include market research, advertising and public safety.

Market Research

Companies want to get into the minds of potential customers to find out what they are interested in and what they are willing to pay for certain products and services. Much of market research tries to answer these questions by gathering people, either paid or volunteer, and asking them a myriad of questions of what they might be willing to do and might be willing to pay for solutions. The biggest problem with current market research is the word might. Most participants are biased in their answers, either because they are being paid and want to please the research team, or because they are answering the questions based on an ideal situation in their minds.

The true disconnect is the answers participants give in the ideal digital world where most market research happens today and the realities of the physical world. A participant might say that they would be willing to buy the company's solution at a certain price, but the reality of that participant's life may be that they have very little time or money to pursue that solution. This makes current market research a guessing game that doesn't match with the realities of the physical world.

Location intelligence eliminates traditional market research and moves toward a continuous update in the movement of target customers as a group. Using machine learning and artificial intelligence, platforms can develop a location graph to determine where potential customers live, where they work and the types of stores they frequent – all based on location intelligence. The stores are important because it not only indicates the types of products or services they are interested in, but also if customers are affluent or not based on the clientele the store caters to on a regular basis.

Location intelligence also shows the true movement patterns of people's daily lives. Do they commute by train? Do they ride share with other people? Do they regularly frequent places that have live music? Roaming details can often see where they are and what they are doing. Just as important, what applications do they use and for what purpose? This information can give companies a much better idea of people's daily lives, including all of the physical constraints they face, either in time or money, and what they are interested in at that time.

This provides companies a much better idea of the behaviors and patterns of potential customers, what they would be willing to buy and at what price based on trends and predictions created by location intelligence.

"Demand for location-based services will increase 200% by 2020."
– Gartner

Understand How People Interact in a Location

- Number of people by venue and zones
- Peak time in venue
- New compared to repeat visitors
- Common traffic patterns
- Where people spend time

Advertising

Once a company knows the behavioral and location patterns of potential customers as a group, they can create advertising campaigns targeting that group with a much higher probability of success. Because of this, Geo Marketing has stated that budget allocated to geo-targeted advertising is expected to rise from $12.4 billion in 2016 to $32.4 billion in 2021. A large portion of that spending could come to operators that take advantage of providing location intelligence solutions.

The potential for location intelligence in advertising can be broken down into two distinct scenarios: active and passive. For active advertising, let's take an example of people attending the symphony orchestra in a particular city. Location intelligence knows where they came from, how far they traveled and how those people got to the event. It also knows if they are from an affluent area or not.

Advertisers are willing to pay for this information because they can then advertise to the group attending the symphony via social media in near-real-time. High-end restaurants in the area will want to advertise to attendees from affluent areas. Stores in the area will also want to draw in event attendees after the performance is over. What does the dispersal map look like after the event? Are people lingering in the area for 30 minutes or an hour or more? This is a chance for nearby advertisers to make a potential sale. Effective advertising can demand a higher price per transaction from advertisers.

Location intelligence can also help with passive or offline advertising. For example, a new apartment building is opening in a city and the building manager wants to know the best place to advertise to potential renters. The building is on the high end of rents in the area, but also has many new amenities for professionals that don't have time to do certain daily activities on their own such as going to the dry cleaners or walking their dog.

The building manager could work with an operator with location intelligence solutions to find out where upwardly mobile subscribers work and shop near the apartment building. They could also find out how often they are near the building and how long they spend in a certain proximity of the apartments. Also, how are subscribers passing by the building? Are they walking, in a cab or driving a car? What applications are they using while in the area and how long do they spend on those applications?

Location intelligence can provide the amount of detail needed to help the building manager place targeted advertising online and offline to best reach their ideal renter. The same analytical tools can then be used after the campaign happens to see how effective the advertising was for the apartment building. Location intelligence can see if subscribers went into the building and how long they stayed there.

The property manager can then match the location intelligence with their own records of people renting to determine the effectiveness of the advertising campaign. This gives advertisers a definite number regarding return on investment for their campaigns – something that has never been possible before.

Public Safety

Potential operator revenue streams are not limited to companies that want to sell something to customers. Governments are willing to pay to get the same location intelligence information for public safety. Again, there are two possible scenarios – active and passive.

Active public safety might be in the form of emergency services needed at a specific location. Location intelligence is able to see that subscribers are stuck in traffic in a certain area. Other subscribers in that same area are mentioning a traffic accident between a bus and a car on their social media accounts. Emergency services could use location intelligence to pinpoint the location of the accident and get the closest emergency services to the scene.

Law enforcement could also use location intelligence to actively pursue a suspect. Location intelligence can look at past location data and the applications that the suspect frequents to make a determination of what they will do next. The habits and patterns that the suspect follows in life will continue to some level even during a crisis such as running from law enforcement. This behavioral information can help law enforcement figure out the locations with the highest probability of apprehending the suspect.

Passive public safety could come in the form of homeland security. Location intelligence can play a vital role in monitoring places such as large arenas and airports by seeing where people are going, at what times, and for how long. It can also use roaming data to see where subscribers are from in order to conduct a potential threat assessment.

Location intelligence could also be used for passive public safety for something more pedestrian. Are walking subscribers spending a lot of time during their commute standing at a certain intersection waiting to safely cross? Is this due to traffic congestion or is it a problem with driver visibility of the pedestrians? Location intelligence can determine this by seeing if driving subscribers regularly sit in traffic at the same intersection or merely slow down as they pass through due to visibility concerns. This could tell a local government that they need a pedestrian bridge across the intersection.

5G

Location intelligence will become even more important with the advent of 5G. Machine-to-machine communications such as the Internet of Things (IoT) and autonomous cars will need location intelligence as verification of what is happening in the physical world.

Doctors will use IoT to monitor a patient's vital signs while the patient is on the way to the hospital. If the vital signs become critical, the doctor can use location intelligence to determine the location and progress of the ambulance. If the doctor is on call and not at the hospital, it might make more sense to intercept the ambulance along its journey to the hospital. In this example, location intelligence plays a critical role in saving the patient's life.

For autonomous vehicles, location intelligence will work alongside GPS to determine the location of a car and where it is going. The car might be responding that it is receiving directional information and is working properly, but location intelligence might reveal that the car's driving pattern does not match its past performance. The car may be on the correct path to its destination, but nearby subscribers are reporting through social media that an autonomous car is driving erratically and endangering other cars and pedestrians. This location intelligence could be sent to the computer operating the car so that it can disable the car for everyone's safety.

Where data is gathered in a network will change with 5G. For low latency services, the application server will be closer to the network edge meaning the data on application usage for those services may not be available at the network core. As 5G continues to deploy, more revenue opportunities using location intelligence will present themselves such as monitoring IoT sensor devices. There will be billions of devices connected to a network, and knowing where they are and how they are connected will provide more insights into behavior and patterns than any other location technology can provide.

Analytics with VIAVI NITRO Mobile

VIAVI NITRO Mobile provides the intelligent platform needed to capture, locate and analyze every mobile event to create a rich source of insight. This data not only transforms the effectiveness of operations and performance engineering, it creates a true understanding of customer and service activity, enabling the monetization of unique intelligence. Correlating RAN and core data allows VIAVI to deliver location intelligence that is app-aware, allowing mobile operators to unlock the power of their network and create new revenue streams.

Conclusion

Mobile operators have a valuable resource in the form of subscriber data that can be mined and monetized for a variety of applications based on the location of subscribers and their movement patterns as a group. Location intelligence solutions can make operators the leading source of consumer data while also providing much more detailed and accurate information. This can be used to create a clearer picture of the behaviors of subscribers and give a much more accurate idea of what they will do in the future.

Location intelligence can create a level of attribution in advertising that has never been seen before. With detailed numbers regarding return on investment of any advertising campaign, advertisers will be willing to pay a premium for location intelligence services. Operators could sell this information outright or create an ongoing revenue share model with advertisers where the operator gets a portion of the revenue from each sale that results from the advertising campaign.

The GEO marketing and analytics provided by location intelligence can be leveraged in multiple verticals beyond retail and public safety. Transportation, banking, insurance, and tourism will all have a need for these solutions as well. The verticals operators can pursue, and the possible revenue models make location intelligence one of the most important assets for future revenue streams. The platforms that make location intelligence possible must be implemented as soon as possible, as they not only create new revenue streams for operators, but also lay the needed groundwork to make network virtualization and 5G a reality.