



---

STRAIGHTPATH<sup>SM</sup>

---

SPECTRUM

# SPS's Nationwide Spectrum Holdings

## COVERAGE

Most of U.S. and U.S. Virgin Islands, covering 300 million residents (>90% of US)

## SCOPE

- Over 500 MHz of Spectrum in 24 of the top 25 EAs in the US, with over 1,350 MHz in NYC
- At least 2 EA licenses, or 200 MHz of Spectrum, in virtually every U.S. market

## CONFIGURATION

All Spectrum in 100 MHz contiguous blocks

Service Area	Population	Grand Total	Total MHz
New York-No. New Jer.-Long Island	26,663,330	7	700
Los Angeles-Riverside-Orange County	19,800,937	5	500
Chicago-Gary-Kenosha	10,758,118	9	900
San Francisco-Oakland-San Jose	9,759,108	5	500
Dallas-Fort Worth	9,092,705	8	800
Boston-Worcester-Lawrence-Lowell-Brockton	8,228,930	7	700
Philadelphia-Wilmington-Atl. City	7,735,541	7	700
Houston-Galveston-Brazoria	6,949,709	9	900
Detroit-Ann Arbor-Flint	6,827,726	7	700
Atlanta	6,690,595	7	700
Miami-Fort Lauderdale	6,291,880	10	1000
Minneapolis-St. Paul	4,895,391	9	900
Seattle-Tacoma-Bremerton	4,686,669	8	800
Denver-Boulder-Greeley	4,685,203	7	700
Cleveland-Akron	4,583,408	6	600
Orlando	4,562,642	6	600
Phoenix-Mesa	4,351,644	8	800
St. Louis	3,690,263	9	900
Indianapolis	3,335,590	7	700
Portland-Salem	3,311,677	7	700
San Diego	3,095,313	6	600
Pittsburgh	2,912,497	7	700
Nashville	2,856,296	6	600
Tampa-St. Petersburg-Clearwater	2,783,243	10	1000
<b>Total - Top 25 Markets</b>	<b>168,548,415</b>	<b>177</b>	<b>17,700</b>
<b>Other Markets</b>	<b>130,681,202</b>	<b>438</b>	<b>43,800</b>
<b>Grand Total</b>	<b>299,229,617</b>	<b>615</b>	<b>61,500</b>

## LICENSE

Unlike other >3 GHz spectrum, Straight Path's Spectrum is 100% licensed for flexible use across U.S.

## SUBSTANTIAL SERVICE

Requirement is met until 2020.

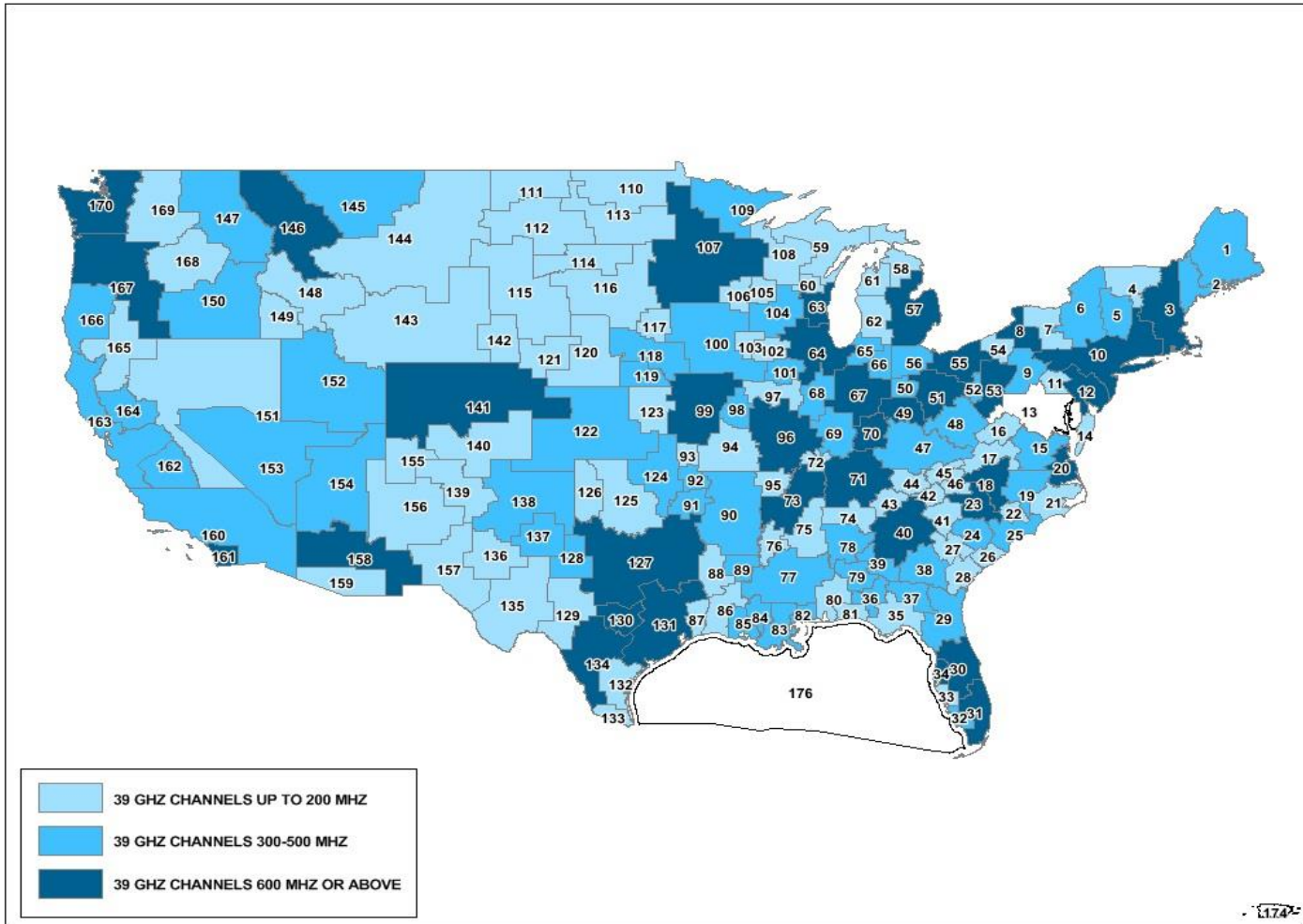
Use of Spectrum is permitted for microwave, pico cells, and others.

## 28 GHz HOLDINGS

Straight Path Spectrum holds fifteen 28 GHz LMDS licenses, including licenses in key markets such as NYC, San Francisco, and Orlando.



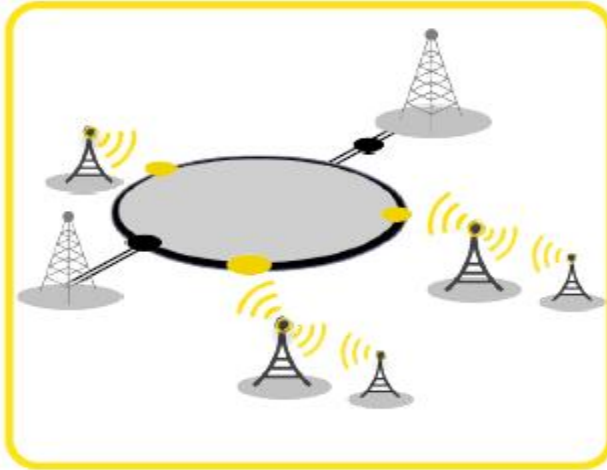
# Straight Path Spectrum's 39 GHz Coverage



# Key Aspects of Straight Path's Spectrum

- **Broad Coverage:** Straight Path Spectrum holds 615 39 GHz licenses, covering 171 economic areas
  - Straight Path Spectrum holds fifteen 28 GHz LMDS licenses, including key markets such as NYC, San Francisco, and Orlando
- **Ease of Use:**
  - Fast-track Registration - Links approved by the FCC in 1-2 days
  - Predefined Coverage - Area-wide licenses in both 28 GHz & 39 GHz
  - Low Interference - Few license holders and uncongested use
  - Cost effectiveness - Lower cost than fiber and other spectrum
- **Regulatory Assurance:** Straight Path has satisfied substantial service for all of its 28 GHz and 39 GHz licenses
  - Substantial service has been satisfied for all SPS's 39 GHz licenses covering a population of nearly 300 million
  - Straight Path can utilize its licenses until at least 2020

# Straight Path's Spectrum Serves a Range of Use Cases



## Wireless Backhaul

Optimized 4G roll-outs

Backhaul using 39 GHz can be an essential complement to fiber backhaul

- Fastest time to market
- Best coverage scope
- High asset re-usability
- Very high capacity



## Pico Cells

Flexible & pervasive pico cell deployment

Pico backhaul is best served through a wireless solution using spectrum like Straight Path's

- Licensed use means boundless number of uses without further regulatory weigh-in
- Very high pico cell density can be served using links that use different parts of 39 GHz spectrum, w/o site engineering.



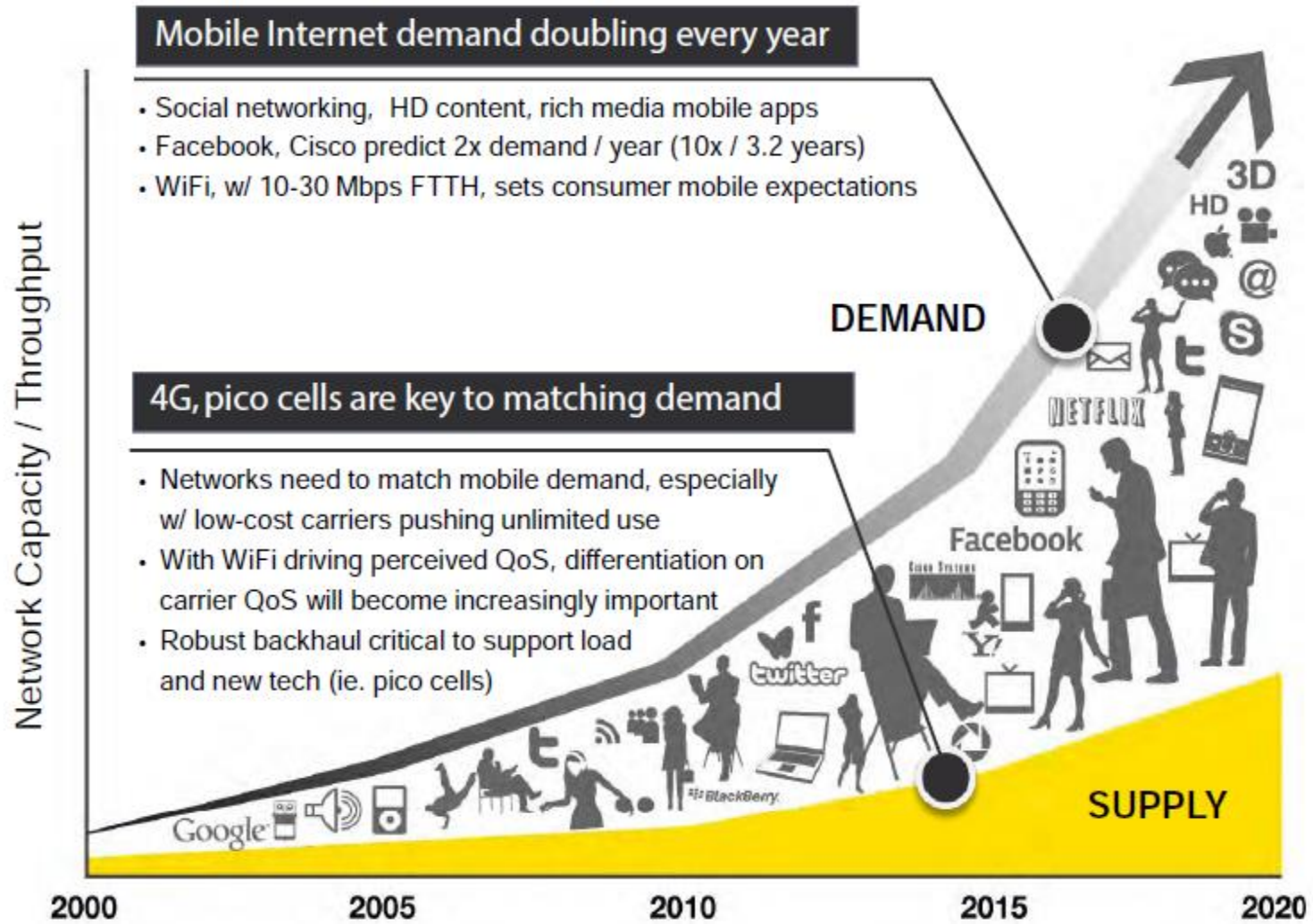
## Next-Gen

Flexibility for alternative uses

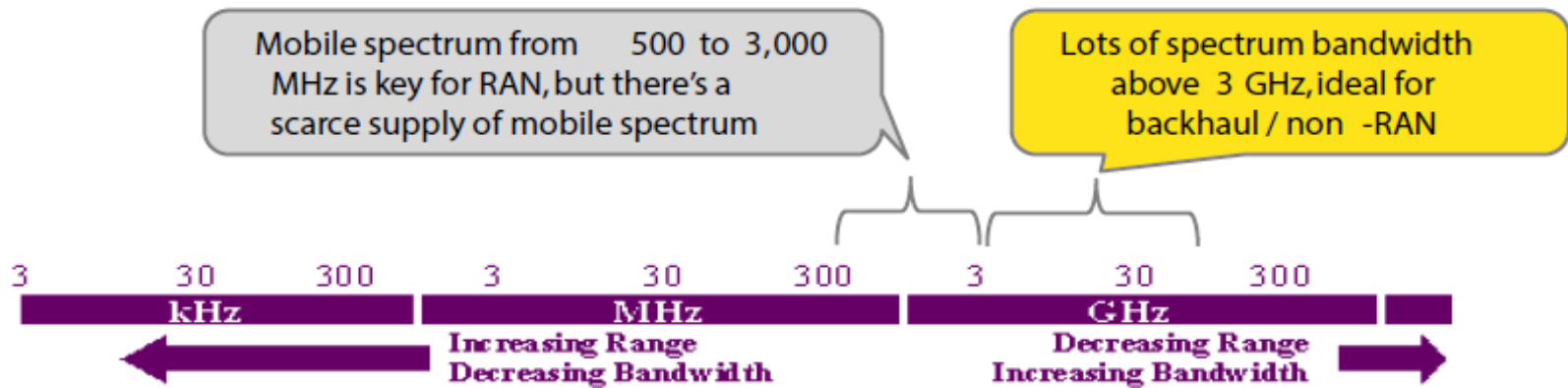
39 GHz affords flexibility for new uses w/o sacrifice of RAN spectrum

- Device-to-device short-range communications
- Point solutions for emergency response or ash capacity situations
- High capacity equals lots flexibility

# Mobile Internet Use is Exploding, Pushing the Limits of Wireless Networks

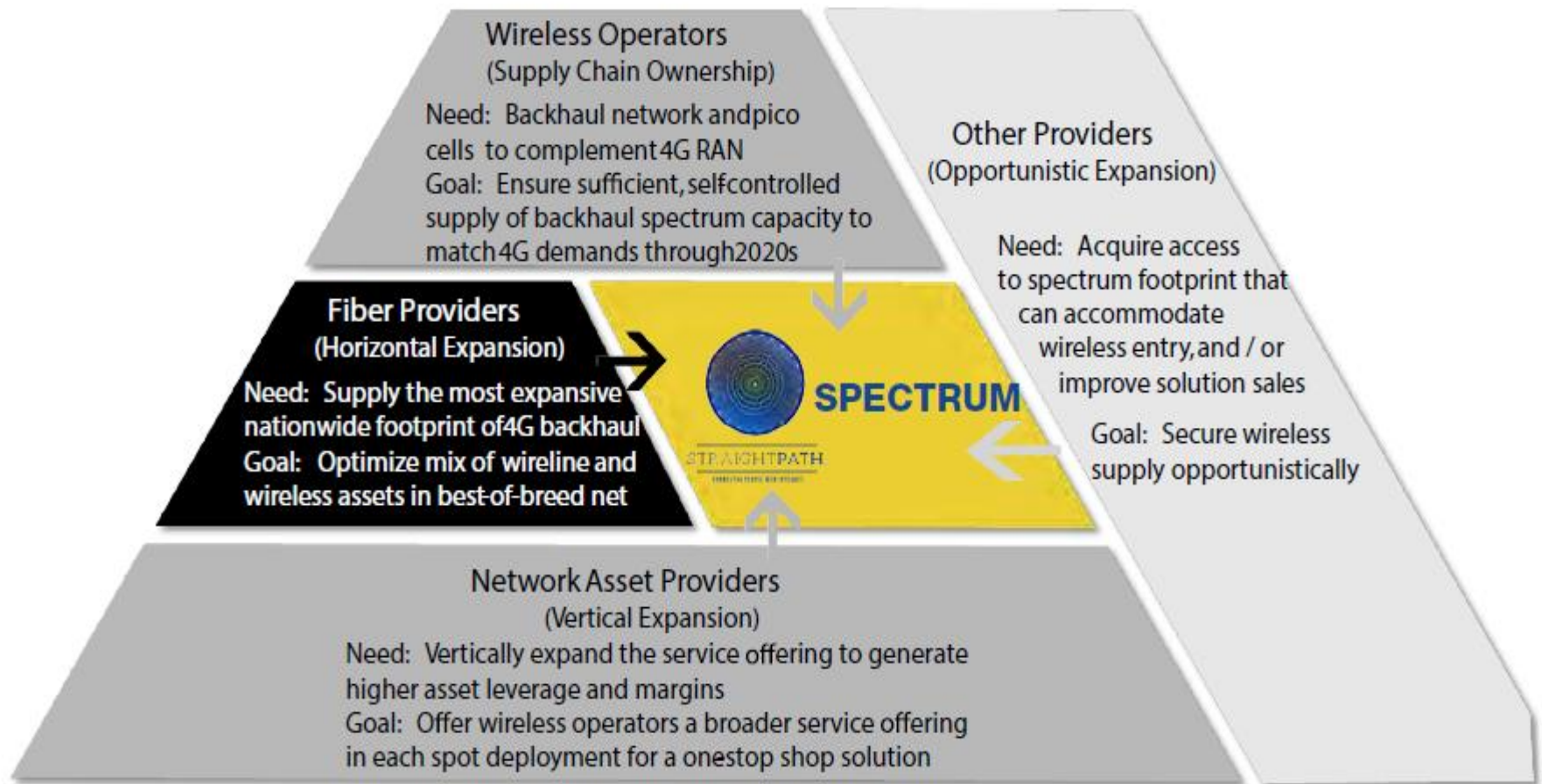


# Alternative Network Technologies & Assets are Key to Optimizing 4G Roll-outs



- Unlike 2 or 3G networks, 4G network operating models require both: a) much more extensive RAN resources than are deployed today, and b) new backhaul approaches including a substantial mix of microwave since insufficient deployed links for 4G.
- Unlicensed spectrum suffers from interference/contention & inflexibility of deployment.
- Licensed high-frequency assets open a great opportunity for very large amounts of spectrum, with flexible availability for use, to serve as a complement to mobile spectrum.

# Straight Path's Spectrum Helps Address Goals Throughout Tech Supply Chain



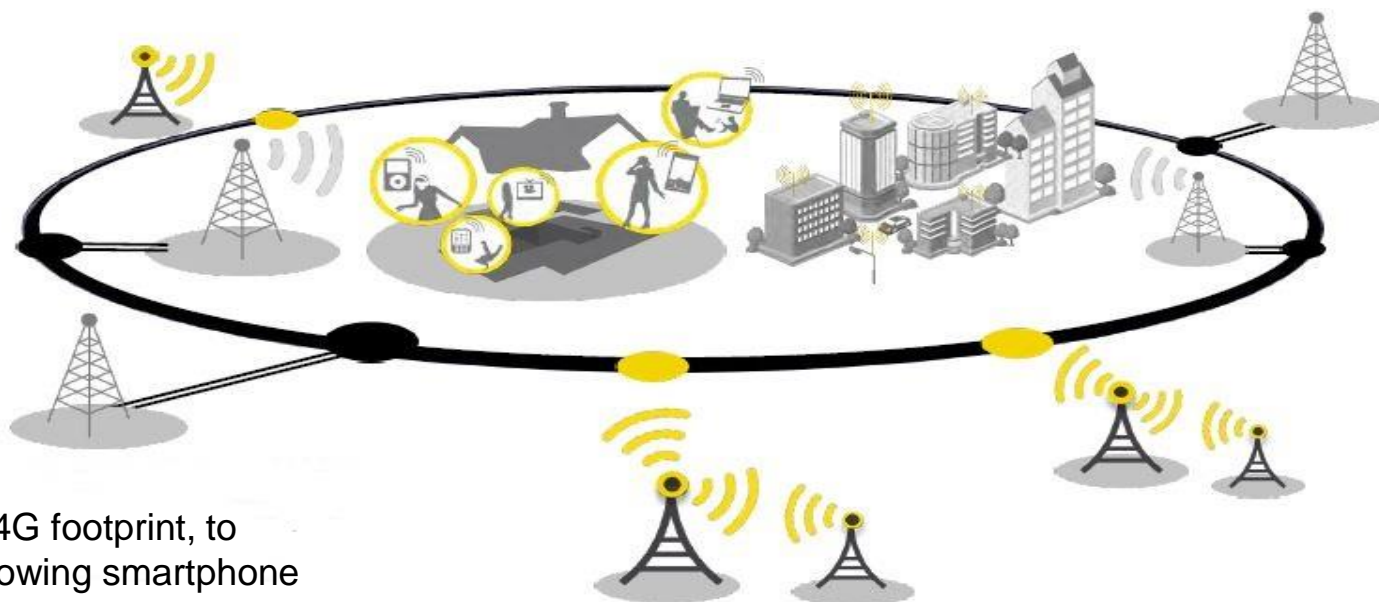


---

# Straight Path Spectrum Value Proposition

---

# Value Proposition to Wireless Operator



## Your Goal:

Deploy a nationwide 4G footprint, to support the rapidly growing smartphone and tablet wireless Internet demand, with capacity comparable to FTTH on a ubiquitous level

## Requirements:

- Backhaul network to complement the 4G RAN
- Sufficient spectrum for the myriad of next-gen solutions to complement the traditional micro / macro cell RAN

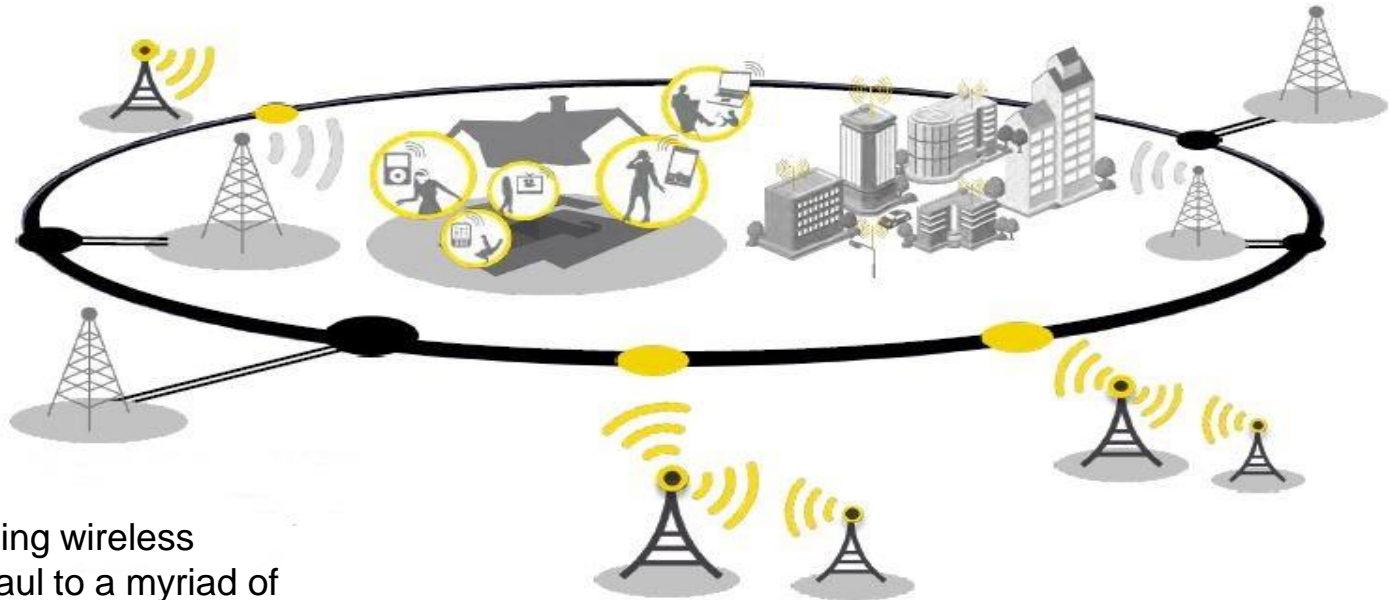
## Solution:

Acquire 39 GHz spectrum to ensure robust supply of tower and pico-cell, high-bandwidth backhaul spectrum to compliment RAN spectrum supply and match 4G demands through 2020s

## Opportunistic:

Explore use of 39 GHz for other potent uses including D2D offers and FTTH -like service offerings in homes

# Value Proposition to Fiber Operator



## Your Goal:

Supply the burgeoning wireless industry with backhaul to a myriad of wireless sites, in order to effectively support the rollout of nationwide 4G networks, across all markets

## Requirements:

Additional “spoke” deployments to branch out of the rings, while minimizing the amount of additional time and money required to deploy new plant

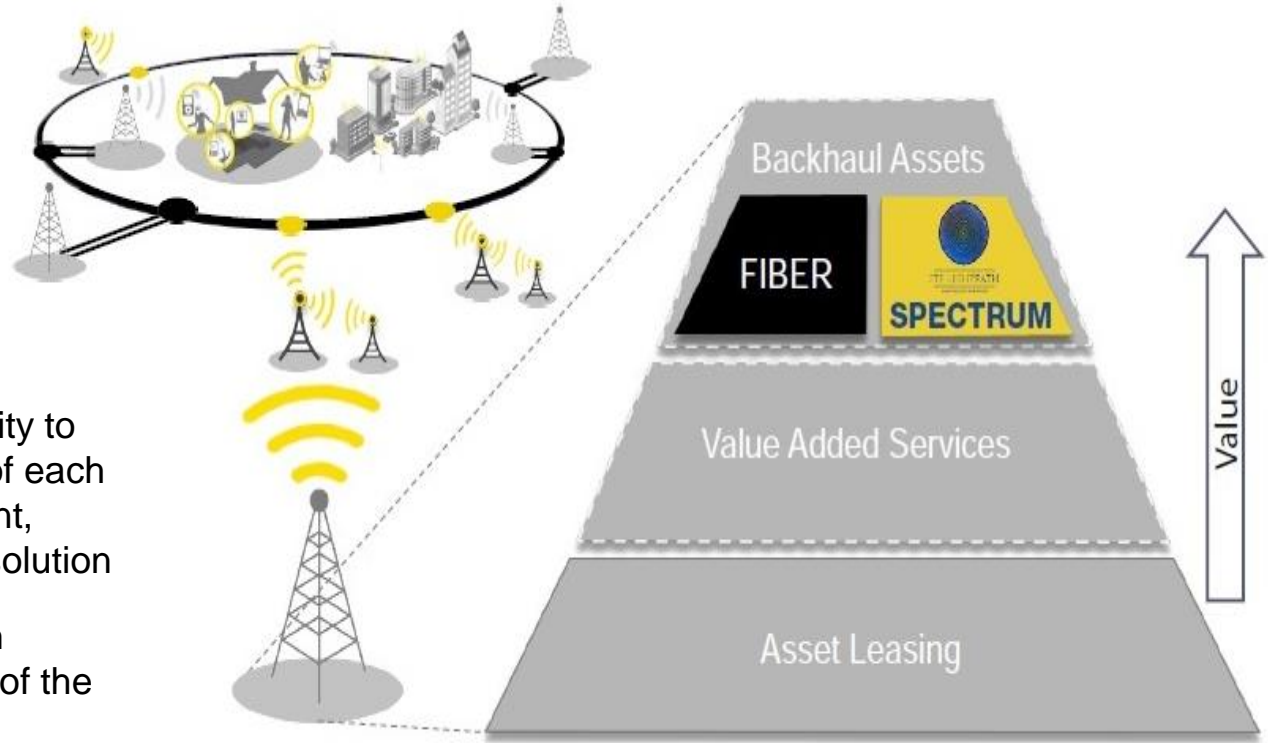
## Solution:

Acquire 39 GHz spectrum to ensure high bandwidth and easy and-fast-to-deploy microwave backhaul complement to fiber backhaul – backhaul for both tower and pico cell deployments

## Opportunistic:

Building out new spokes/pico cell deployments using microwave first, and then build-out fiber underneath where the cost / benefit equation warrants, while re-deploying microwave

# Value Proposition to Network Asset Provider



## Your Goal:

Offer wireless operators ability to get maximum leverage out of each touch-point with your footprint, delivering a one-stop-shop solution

Maximize the return on each footprint touch point, in light of the consolidating market

## Requirements:

A vertically integrated offer of utility and tower asset and backhaul spectrum so the turn-up of each point is hassle-free and can extract maximum dollars

## Solution:

Acquire 39 GHz spectrum and have available a high bandwidth supply of backhaul capacity, that a wireless operator can activate w/o extra plant to bridge tower with fiber loop

# 39 & 28 GHz Equipment Vendors

**ERICSSON** 

**HUGHES** Connect to the future.®

**SAMSUNG**

  
**DragonWave**

**JRC** *Japan Radio Co., Ltd.*

 **CERAGON**  
networks®

**CCS** 

 **Cambridge  
Broadband  
Networks**

 **Xalt**

 **COMMScope**®

  
**RADIO WAVES**  
smths microwave

 **SAF**

# Next Steps

For information regarding  
Straight Path Spectrum leasing options,  
please contact

Straight Path Spectrum, Inc.  
5300 Hickory Park Drive, Suite 218  
Glen Allen, VA 23059 USA

Toll Free: 1-855-321-7284 Tel: 804-433-1522

email: [info@spathinc.com](mailto:info@spathinc.com)