



Adaptrum
SoVA
Innovation Center
TV White Space Broadband Development

Intro to TV White Space
December 12, 2018



Bob Bailey \ Executive Director

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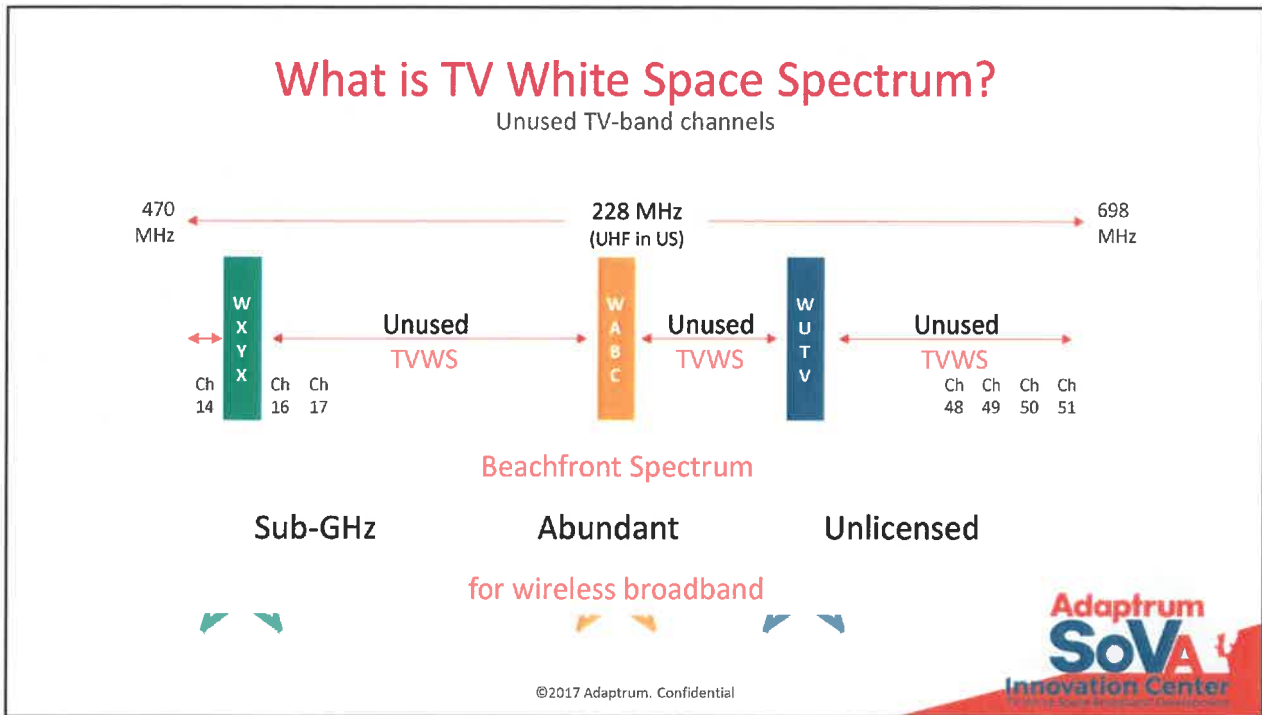
World's Biggest Connectivity Challenges

<p>Half of the world's population is unconnected</p> <p>4 billion</p> <p>Unconnected globally</p> <p>Lack of availability & affordability driving digital divide</p>	<p>Number of intelligent connected devices to exceed 50B by 2020</p> <p>50 billion</p> <p>connected IoT devices by 2020</p>	<p>Exponential growth in broadband traffic</p> <p>500 petabytes/day by 2020</p> <p>97% over wireless networks. Insufficient licensed & unlicensed spectrum to keep up</p>
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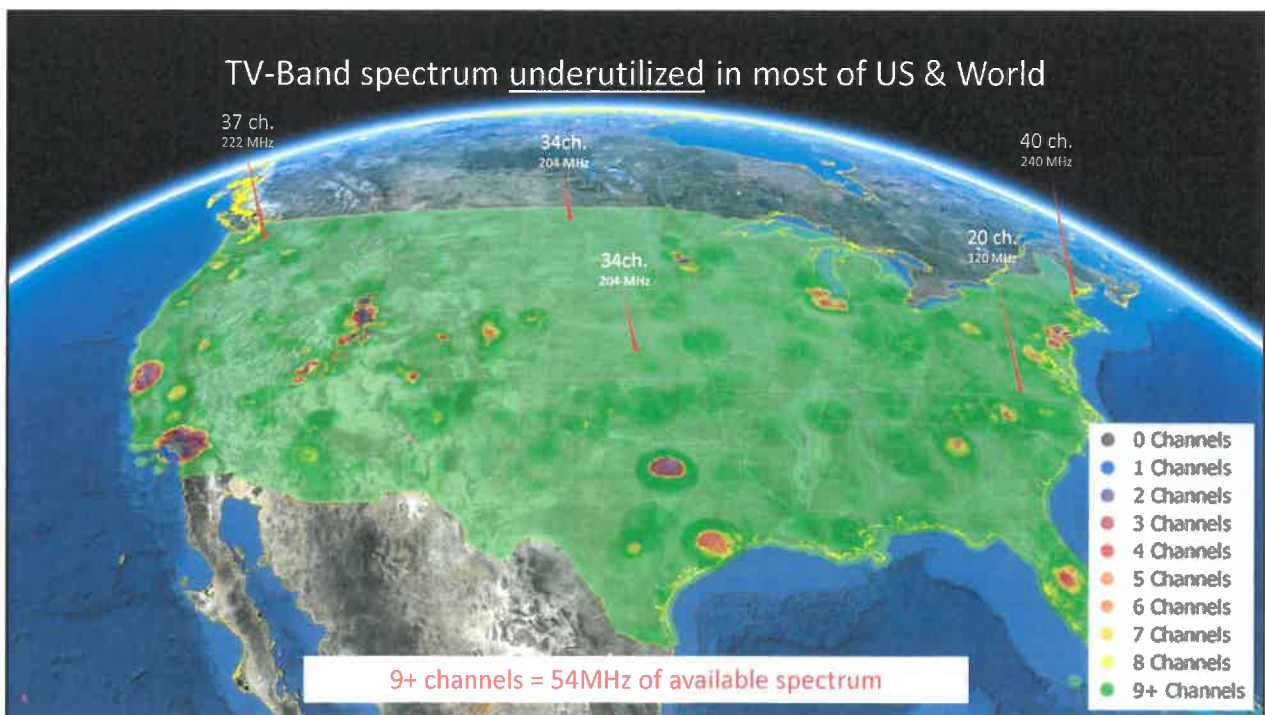
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Available Spectrum in Virginia

Bedford County (24551)
26 channels available (156 MHz)

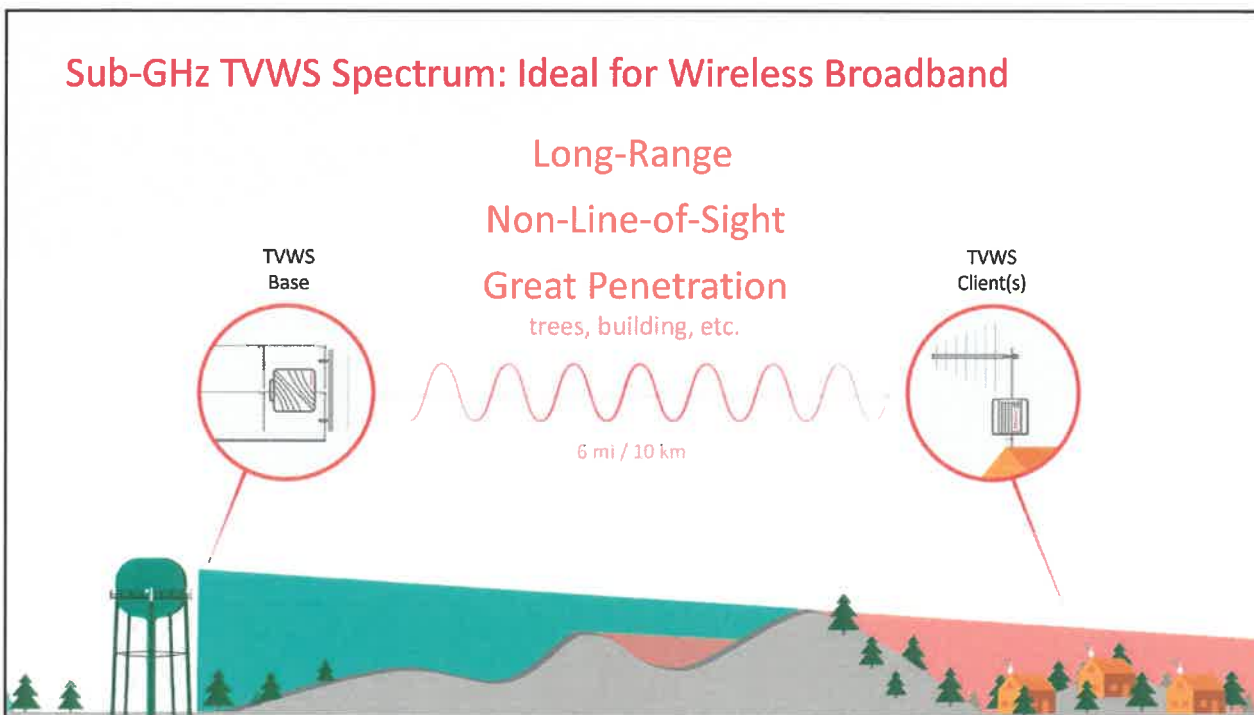
Amherst County (24551)
24 channels (144 MHz)

Campbell County (24528)
27 channels (162 MHz)

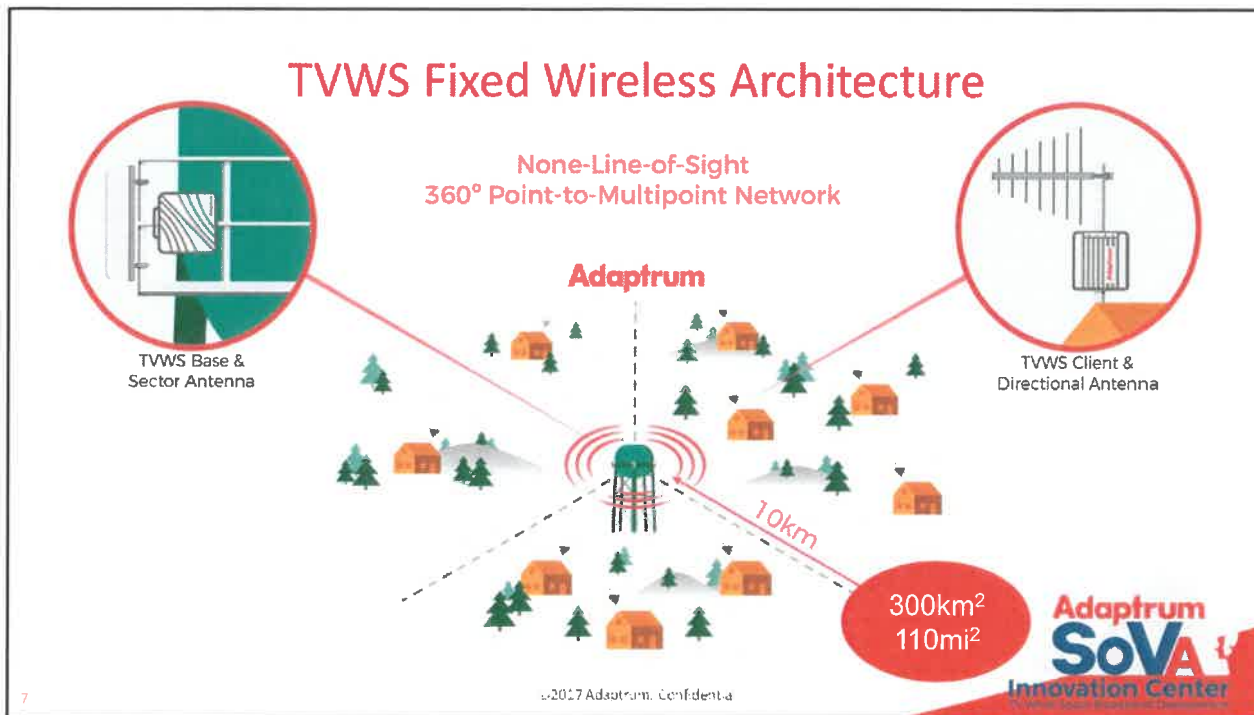
Appomattox County (24522)
22 channels (132 MHz)

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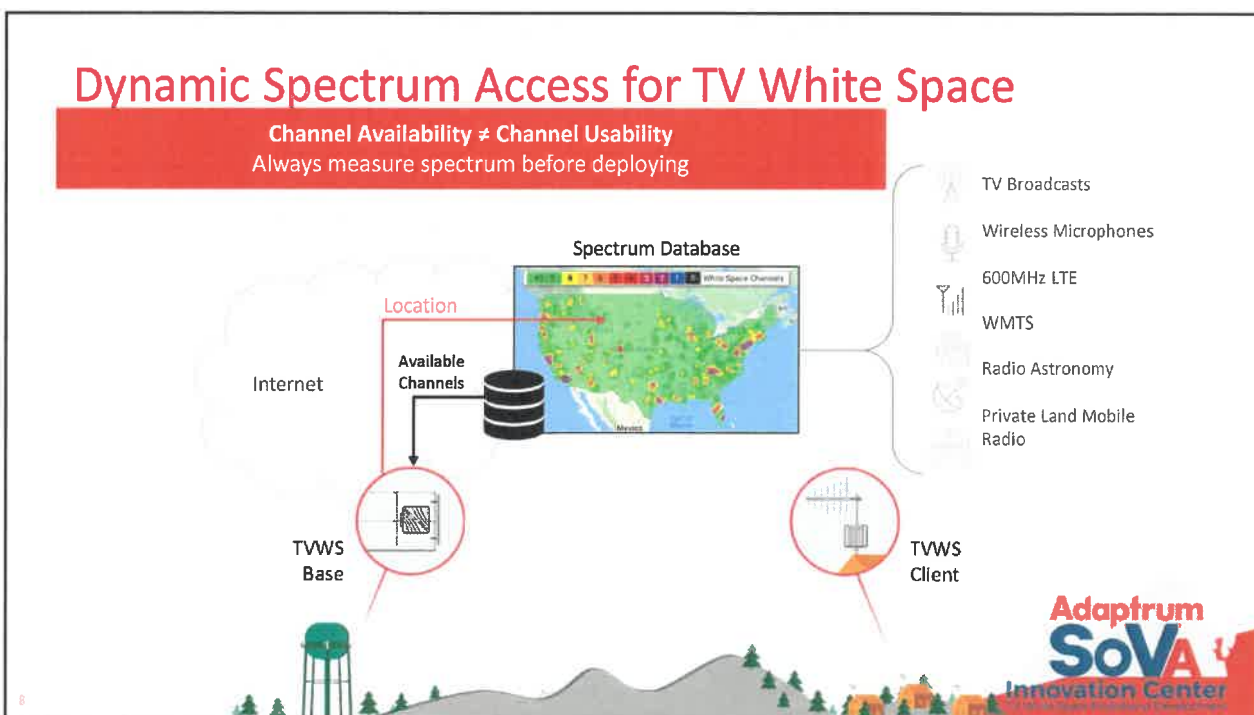
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Advanced Spectrum Sensing

Ensures Adaptrum networks operate with the optimal channels

Unavailable: X

Location

Available Channels

Spectrum Database

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Delivering on the 3 C's of TVWS

Addressing today's TVWS Challenges: Capacity & Cost

Coverage ✓

Long-range
Non-line-of-sight

Capacity

Challenge: Provide 25/3 service

Solution: Carrier aggregation systems to provide 25/3 and higher service over TVWS

Cost

Challenge: Equipment costs higher than more established wireless technologies

Solution: R&D

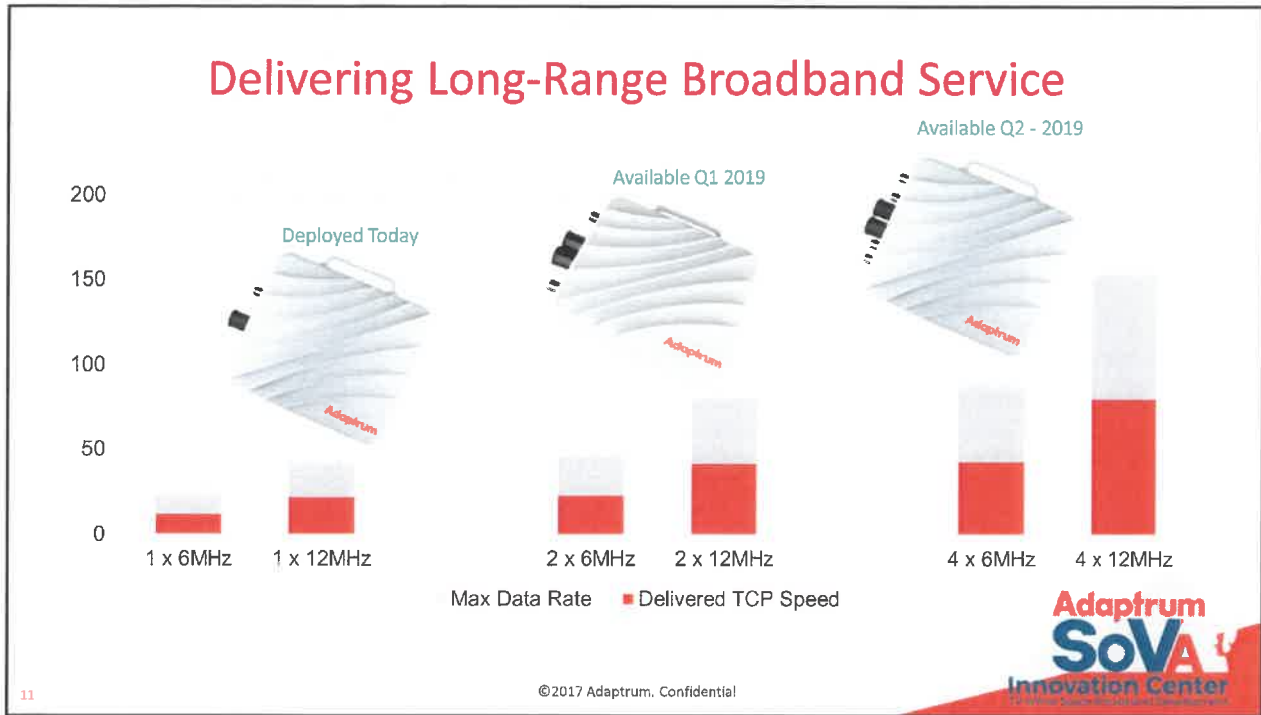
Chips

Software

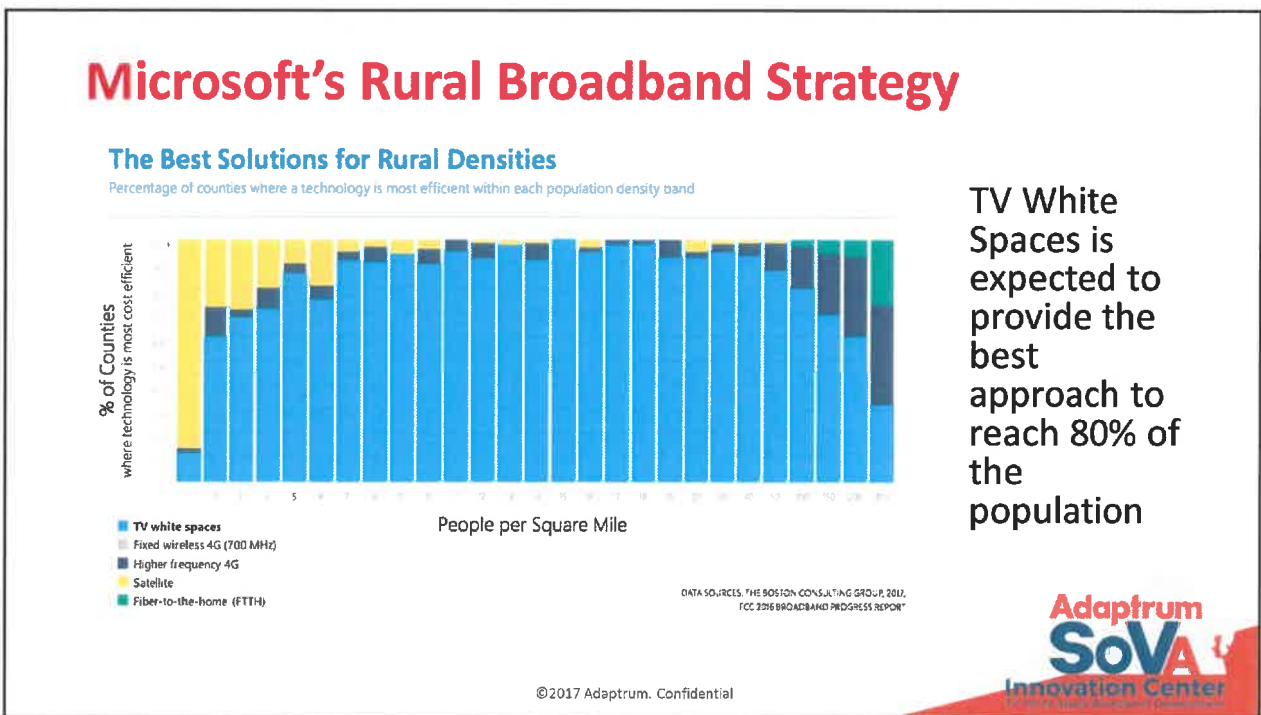
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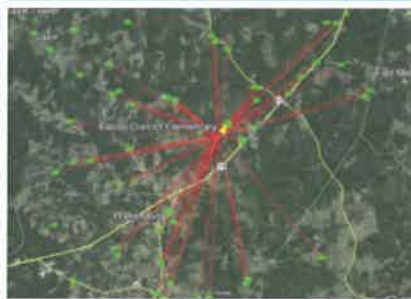
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TVWS in Virginia

The Homework Network

Closing the homework gap in rural Virginia with largest US TV White Space project

Providing free internet to students in Charlotte & Halifax County



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Further Applications for TVWS in Virginia

- Broadband service in rural areas and low population density regions (i.e. Southern & Southwest Virginia, Shenandoah valley, and Eastern Shore)
 - Bedford County – Bedford County Board of Supervisors directed county staff to move forward with a proposed \$1.5 million plan to expand high-speed internet access to 98 percent of county residents.
 - Eastern Shore – Declaration Networks Group Inc. and Microsoft Corporation announced an agreement to deliver broadband access to around 65,000 people in the two regions over the next three years using a combination of technologies (including TVWS)
 - Tobacco Commission Broadband Grants – The Commission approved 9 funding requests for broadband expansion projects in Southern and Southwest Virginia, totaling more than \$11 million in new spending. The projects approved at this meeting will result in broadband becoming available for more than 31,000 homes and businesses
 - Governor Northam announces statewide broadband initiative for Virginia
 - SOVA Innovation Center – Adaptrum launches SOVA Innovation Center for TVWS Development in Bedford County

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