



# ACCESS

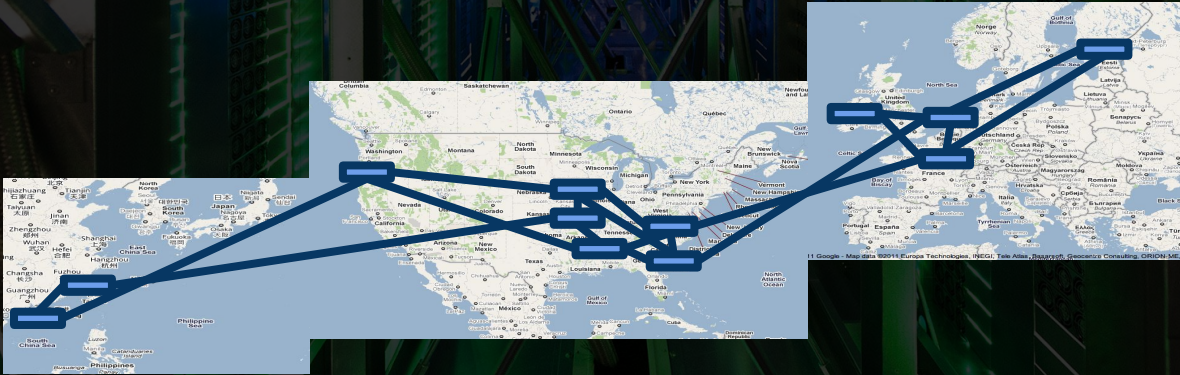
Achieving abundant connectivity through partnerships

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# History of SDN & Virtualization at Google

Used at scale in our production datacenters and backbone networks  
Eg, Maglev, Jupiter, Andromeda, B4



# Access initiatives underway



**Residential**



**Mobile**



**Enterprise**



# Residential



# Mobile

## Project Loon

- Meeting unique needs of mobile base stations
- Partnering with service providers to provide service to their subscribers



# Enterprise



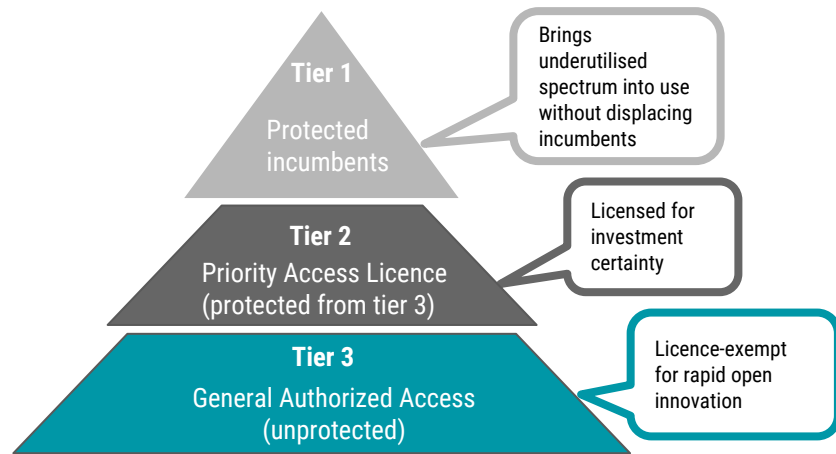
## Simplifying running Wi-Fi networks

Managing Wi-Fi across Google offices

Providing Wi-Fi across 100 railway stations

Working to simplify deployment and operation for SMBs

FAST WiFi FOR ALL  
Select RailWifis connect for free

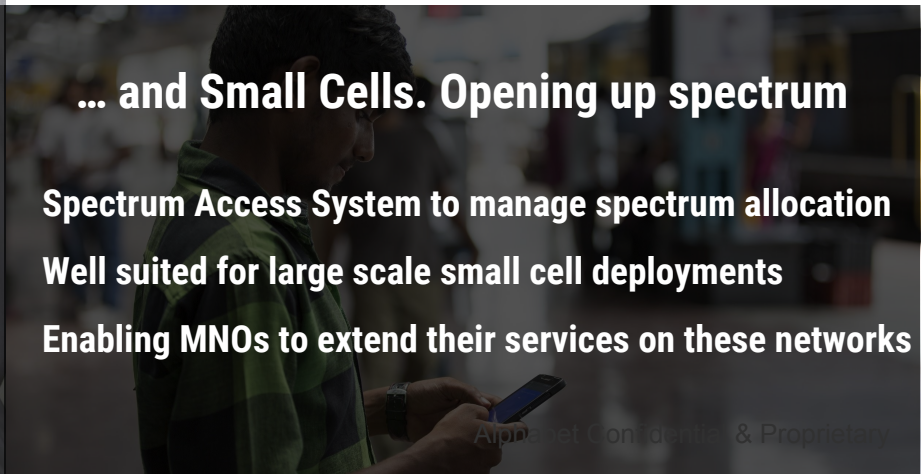


## ... and Small Cells. Opening up spectrum

Spectrum Access System to manage spectrum allocation

Well suited for large scale small cell deployments

Enabling MNOs to extend their services on these networks



# Common underlying themes

SDN

+

NFV

+

Cloud

*Agility, scalability*

Partnerships





# A shared vision



Bringing benefits of SDN, NFV, Cloud through partnerships to access networks of the future

**Share &  
learn**

**OA&M  
APIs**

**APIs for  
Application  
↕  
Network**

**Strengthen  
community**



An aerial photograph of Mexico City, Mexico, showing a dense urban grid. The map is overlaid with a large number of small, bright green dots, which are scattered across the city's streets and blocks. In the center of the image, the words "Thank you" are written in a large, white, sans-serif font. The background shows various landmarks, including the Metropolitan Cathedral, the National Palace, and several parks. The overall scene is a dense, colorful urban landscape with a high concentration of green dots.