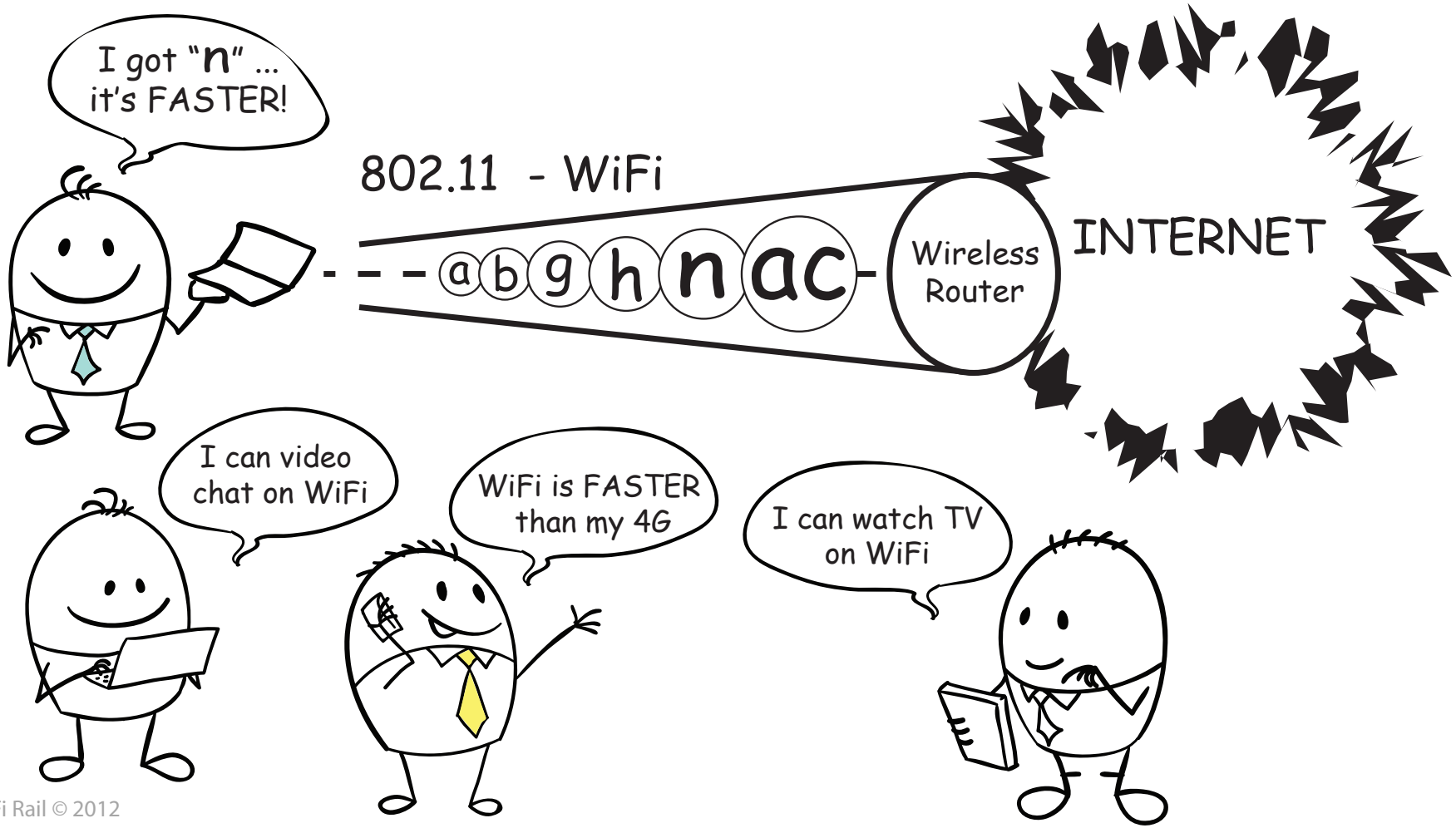
WI-FI RAIL

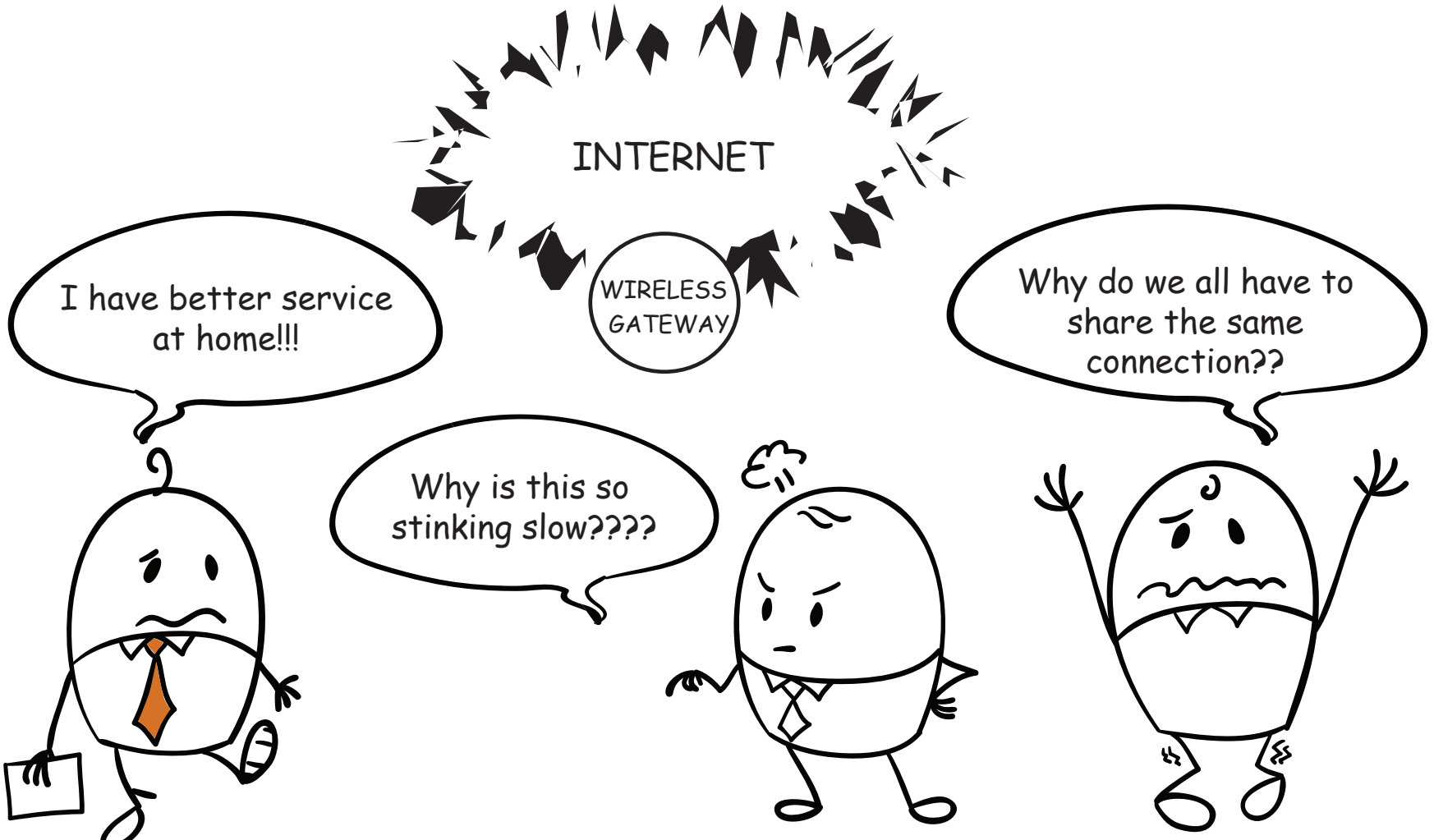
A exploration of Wi-Fi Networks by Cooper Lee, CEO, WiFi Rail

When most people hear WiFi, what do they think?

What do most people understand about the speed of WiFi?

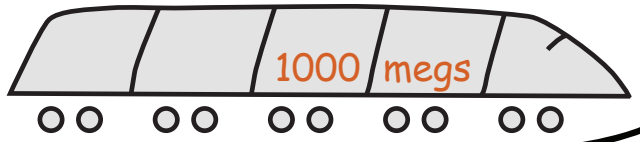


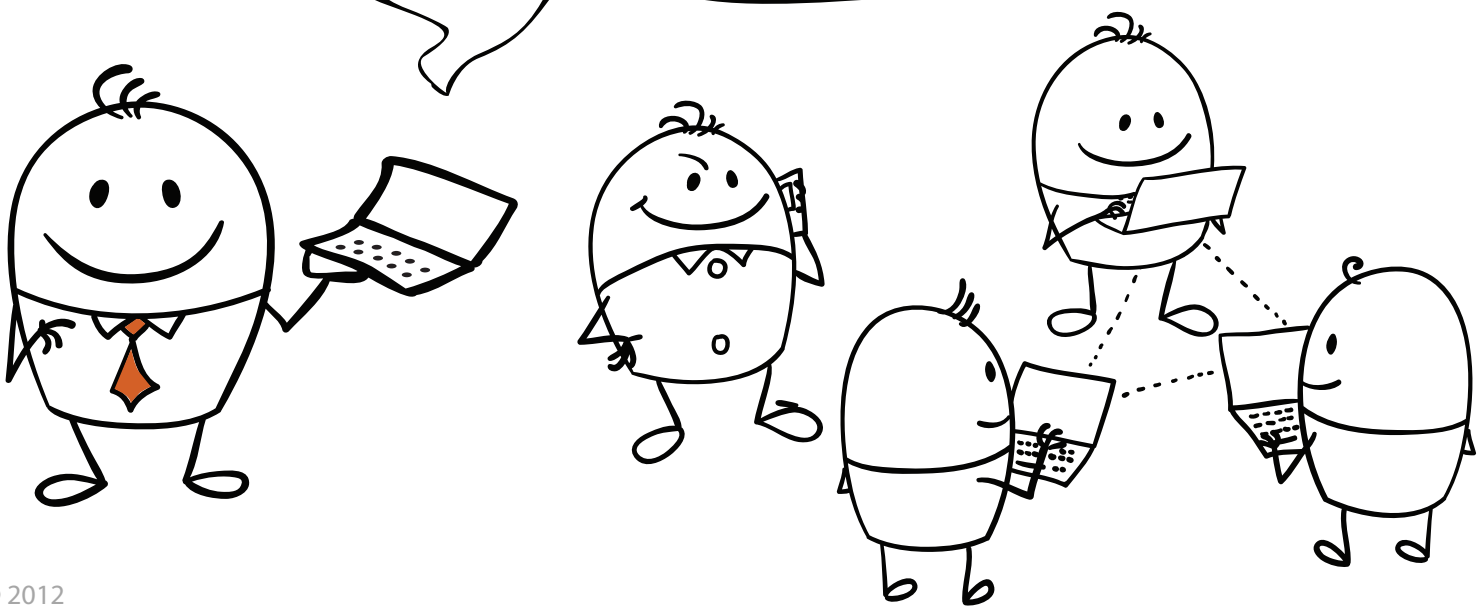
What most people don't understand about Transit WiFi



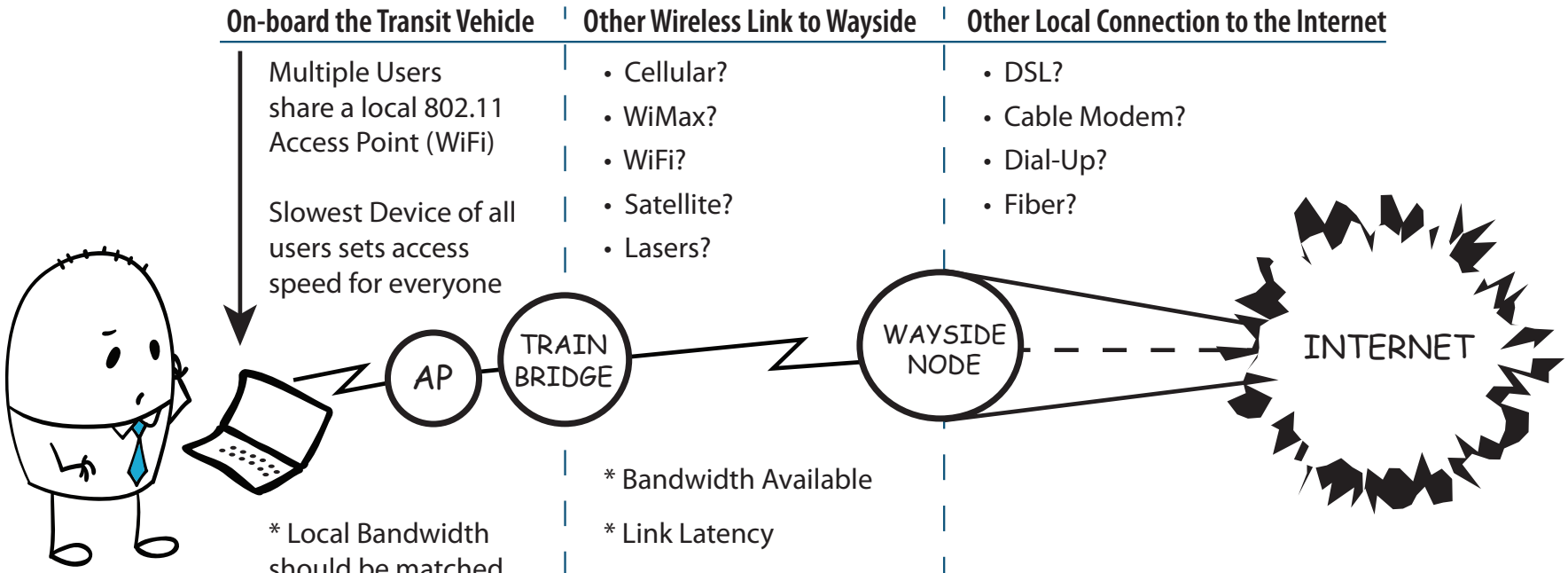
What do people expect out of WiFi service today?

Well, if I want to have
the same service I have at my house or office, then I want to have
1 meg all the time and sometimes 5-10 megs. If all the riders want the same as I do,
then the train needs to have 1000 times what I want.....
Therefore, each train needs more than a 1000 megs.





HowTransit WiFi Systems Work



What the future of Transit WiFi demands look like . . .

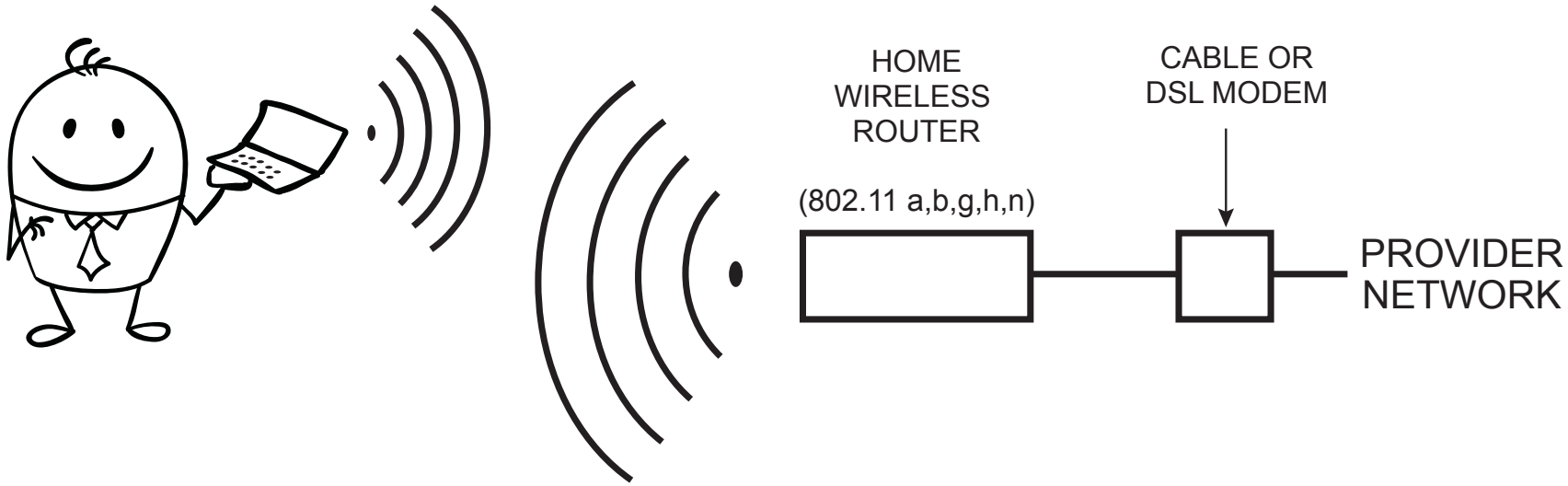
LOCAL DEMAND	LOCAL BANDWIDTH NEEDS	WAYSIDE WIRELESS LINKS	WAYSIDE BACKHAUL
Public WiFi Users desire 1 mbps minimum w/5-10 bursts	Train : +/- 500 Riders Bus : +/- 70 Riders	500-5000 Mbps @ 1 Mbps-10 Mbps / rider = 70-700 Mbps	
On-board Operational Purposes	Train : +/- 3 Employees Bus : +/- 1 Employee	2 Mpbs per Employee = 6 Mbps 500 Kbps per bus	
Telemtry, Train Control, and other M2M	Train : +/- 10 Train Cars Bus : +/- 1 Bus	2 Mbps per car = 20 Mbps 500 Kbps per bus	
CCTV - Live or Synced to Wayside	Train : +/- 4 Cameras per Car = 40 Cameras Bus : +/- 10-12 Cameras	1 Mbps each = 40 Mbps 1 Mbps each = 10-12 Mbps	

How to Meet Today and Tomorrow's Transit WiFi Demands

Wi-Fi 101 :

How This Stuff Works
(or doesn't)
in Different Environments

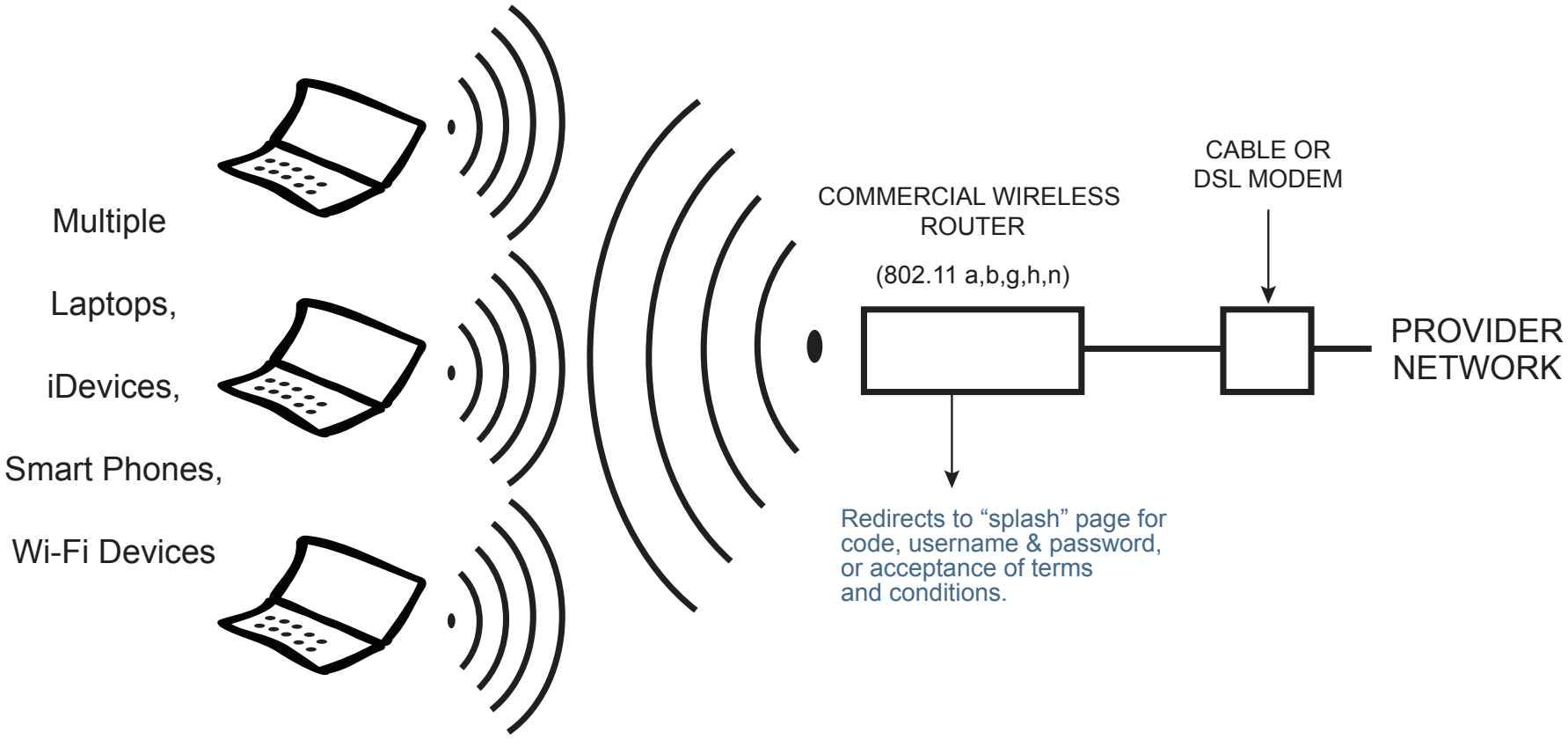
BASIC HOME WI-FI NETWORK



* Speed of Wireless Network and Local Devices

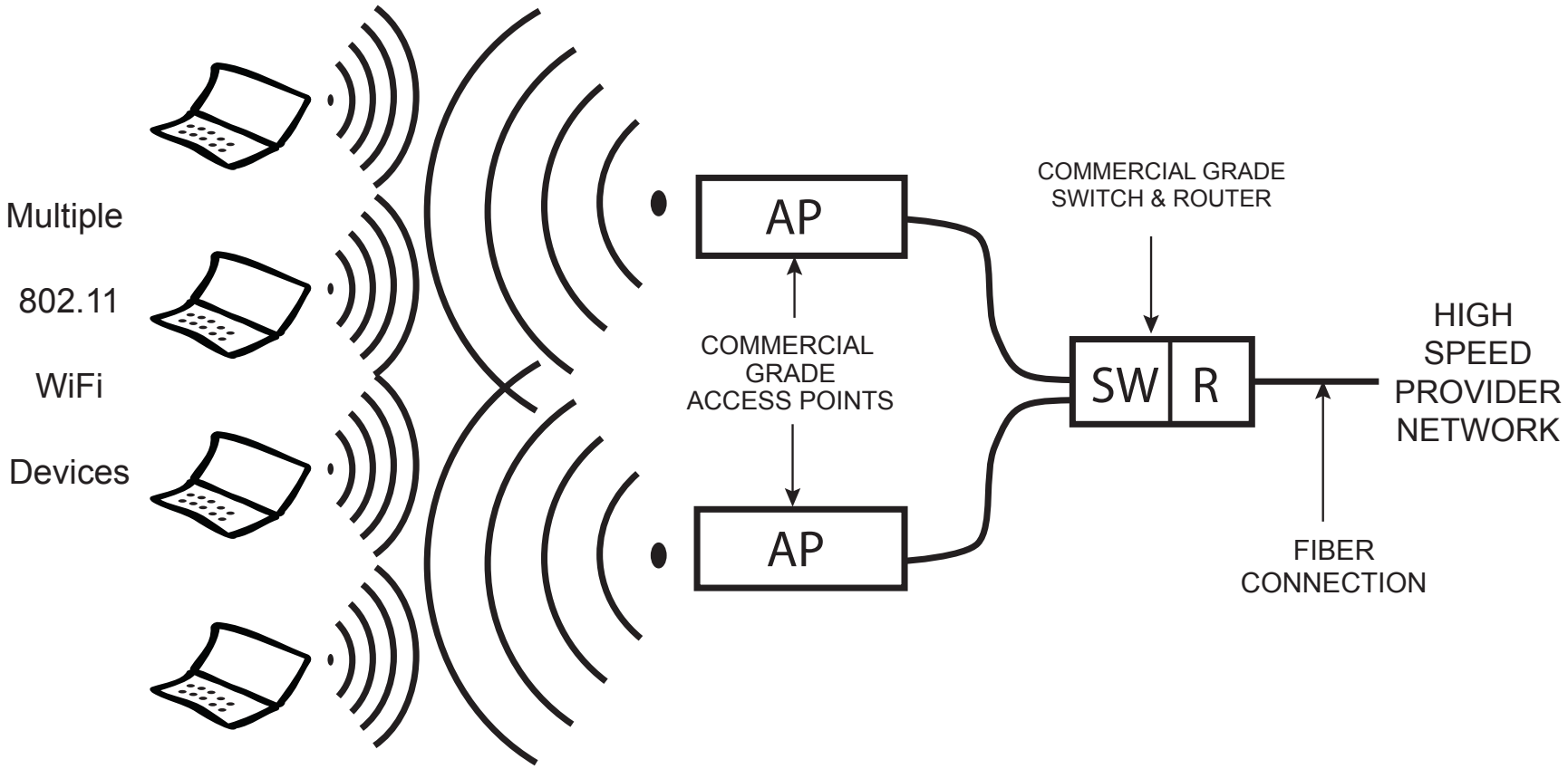
* Speed of Internet Gateway from Provider

BASIC “HOTSPOT” WI-FI NETWORK



* Speed of Wireless Network depends on slowest wireless device associated i.e., 802.11 (a,b,g,h,n)
* Speed of Single Internet Gateway is shared amongst multiple users w/o Bandwidth Profile

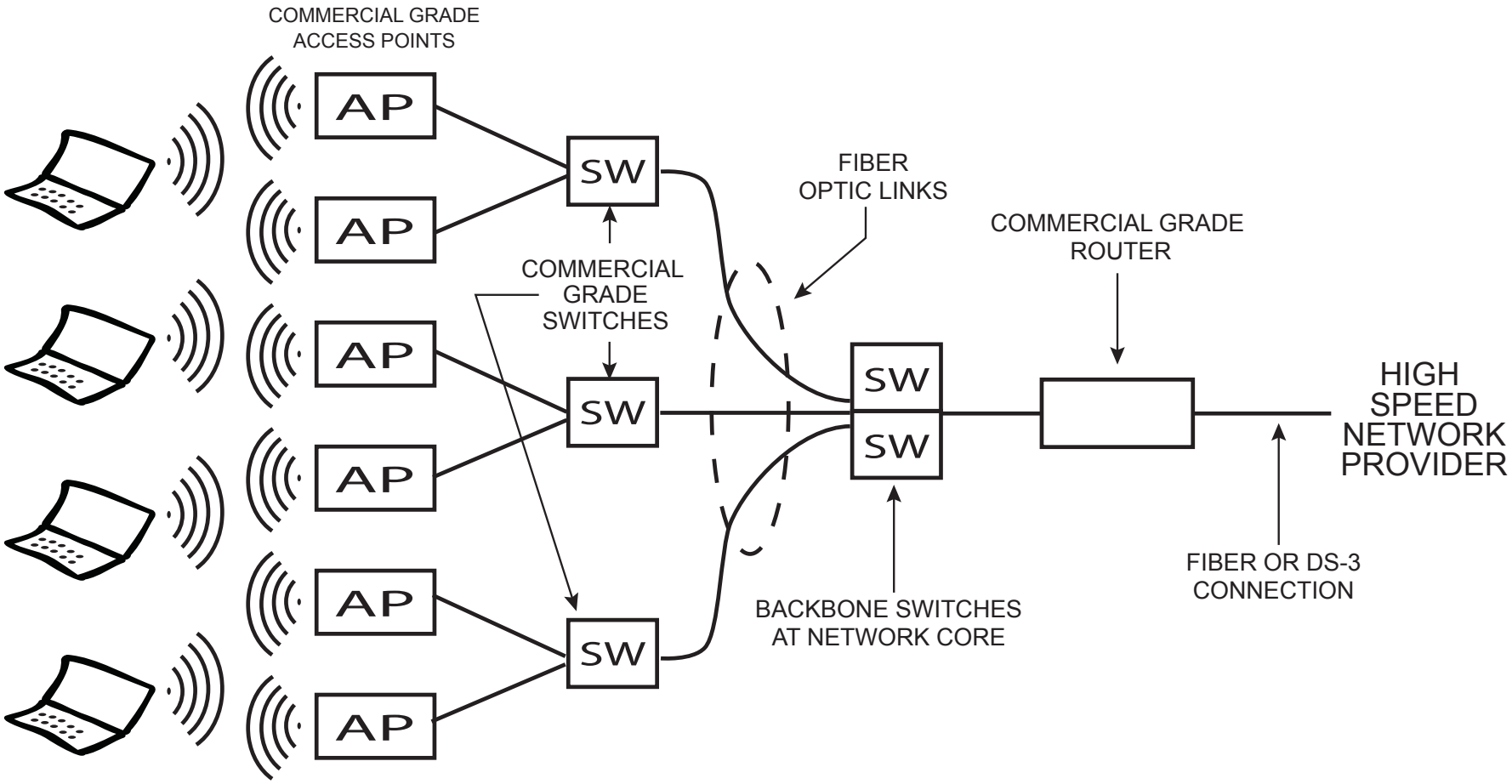
HIGH SPEED WI-FI NETWORK



* Speed of Wireless Network managed by Access Points

* Speed to Internet on Fiber is faster than all Wireless Links & Clients

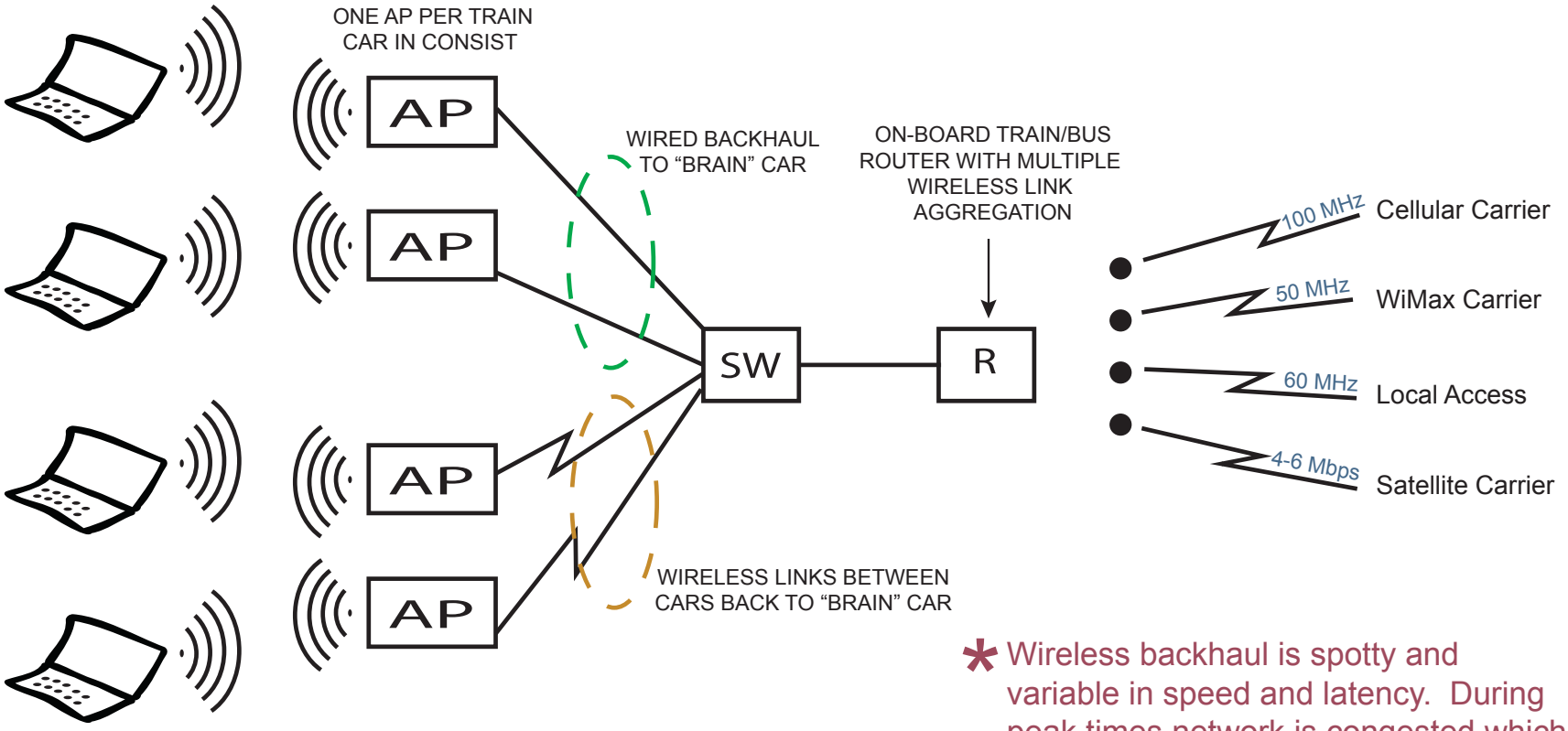
CAMPUS WIDE WI-FI NETWORK



* Multiple Wireless Devices on Multiple Access Points across Multiple Different Locations

* Bandwidth, Security, and Access all controlled through Policies at Router Edge and at Local AP

ON-BOARD TRANSIT WIFI WITH PUBLIC BACKHAUL



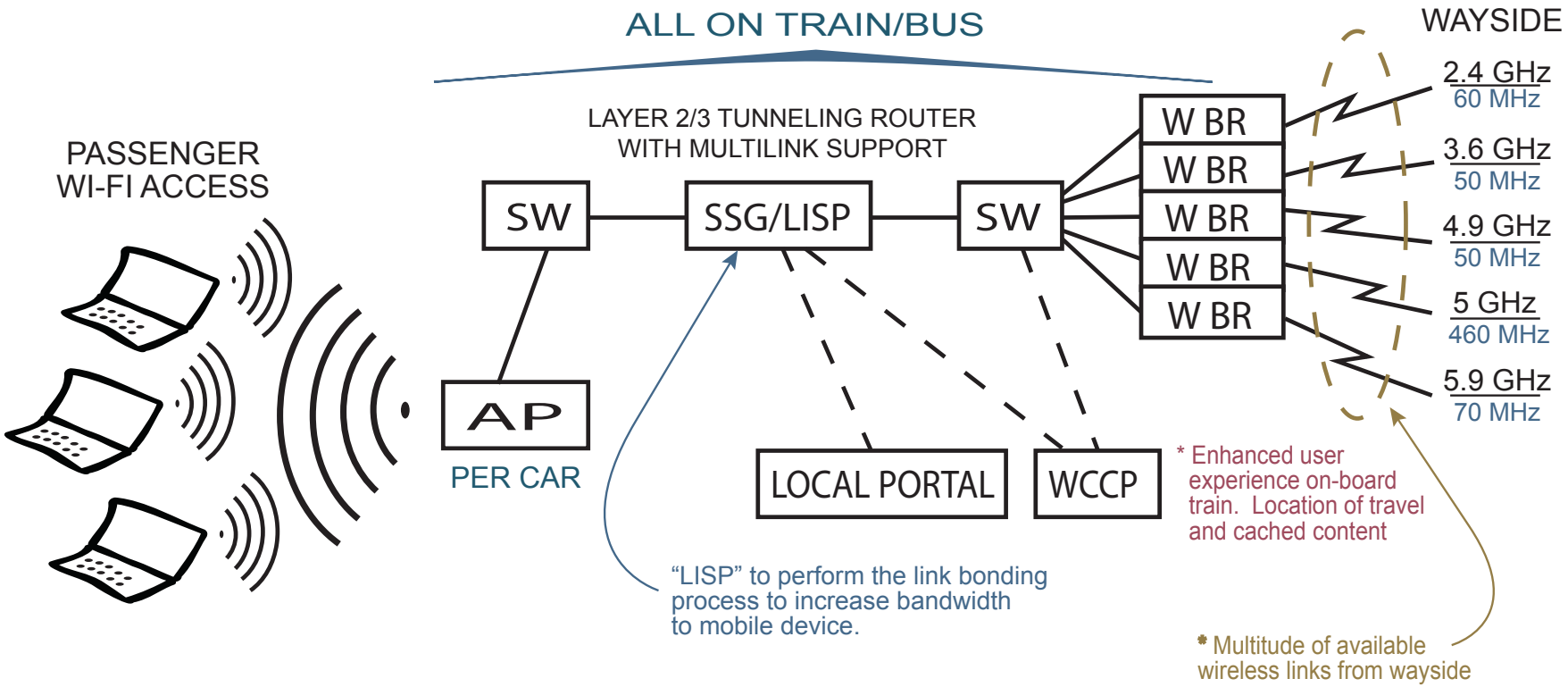
** Local network can be highspeed and support infotainment and other applications.

** Still limited by weakest device assocciated per train car.

* Wireless backhaul is spotty and variable in speed and latency. During peak times network is congested which leads to diminished service to transit vehicle. Best case; maxiumum throughput achievable is unacceptable for either passenger or operational requirements.

ON-BOARD TRANSIT WI-FI WITH PRIVATE BACKHAUL

* WiFi Rail Deployments

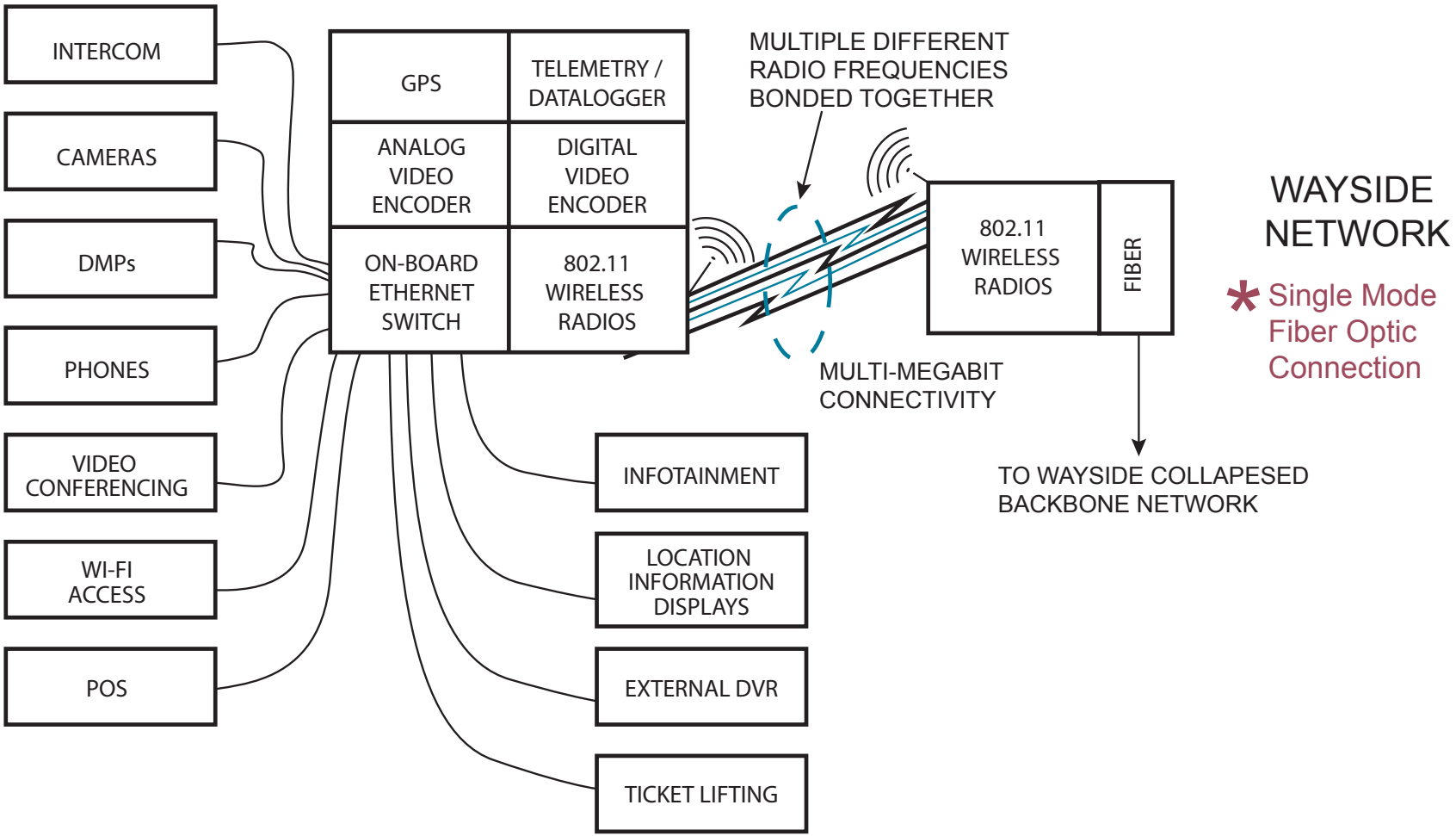


* All devices will maintain IP address whether acquired on train, in station or in the lounge.

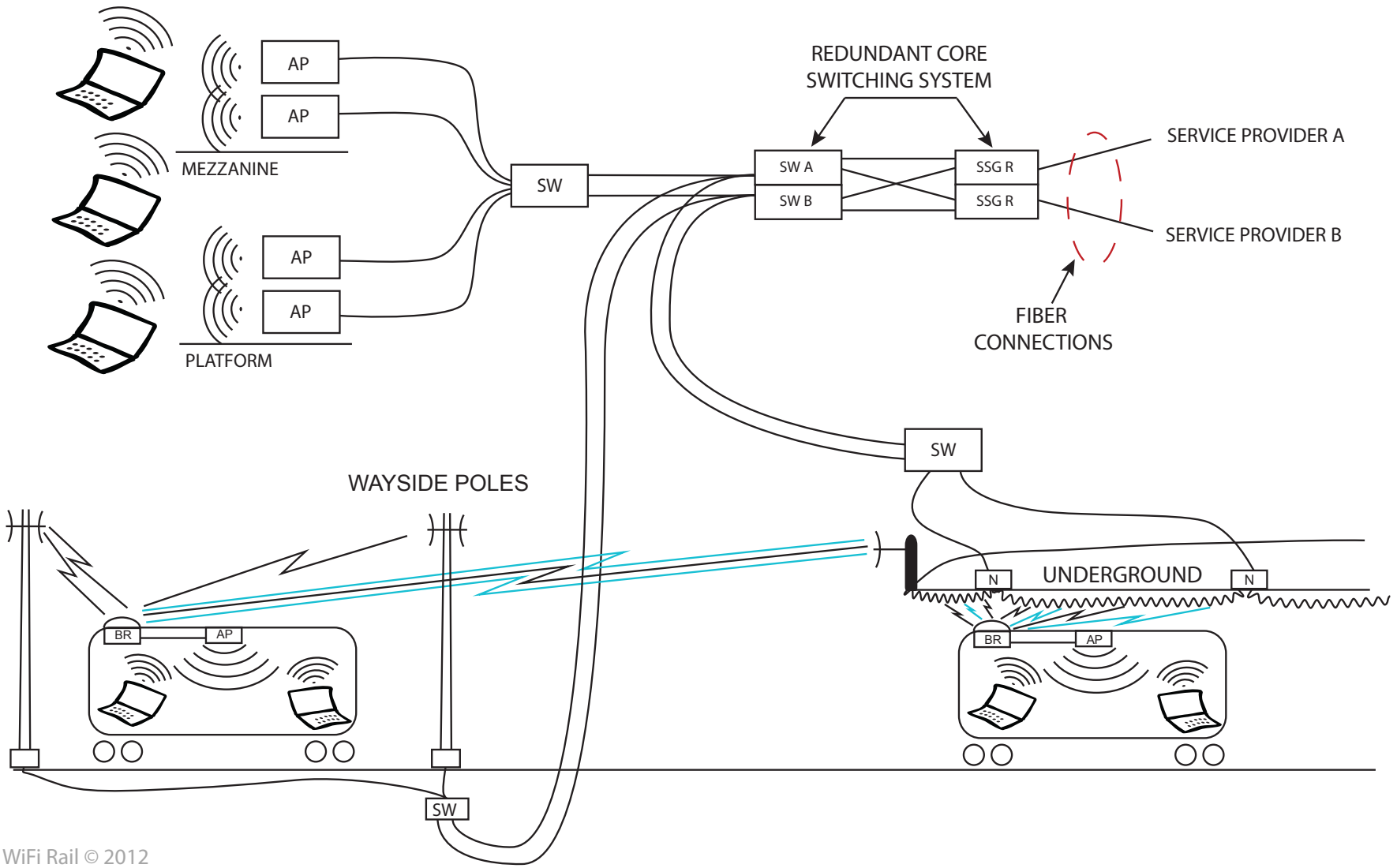
* Multiple wayside frequencies can be used to bond a much larger pipe than can be achieved with any single frequency.

TRANSIT WIFI OPERATION & MAINTENANCE BENEFITS

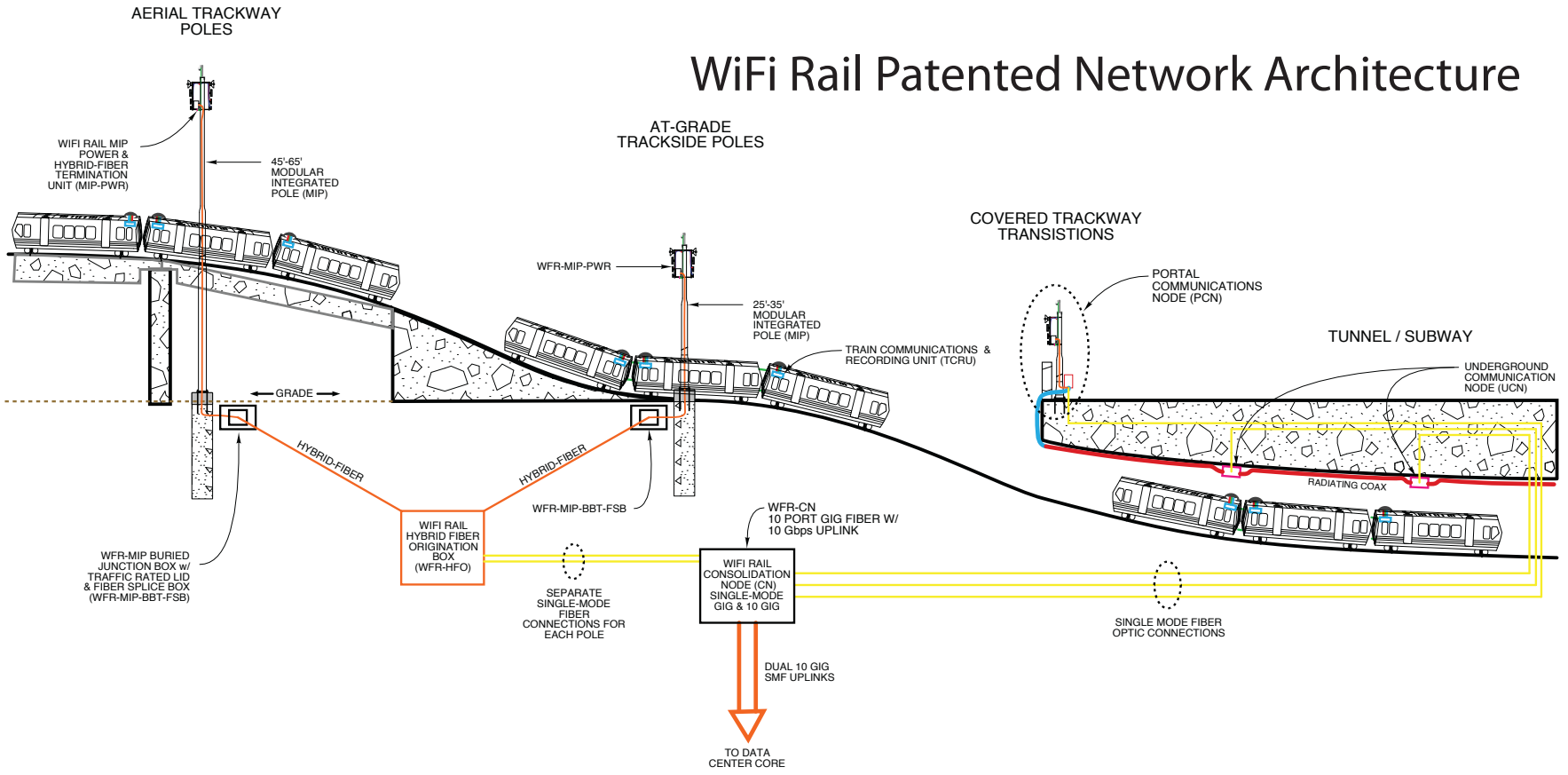
FROM PRIVATE NETWORK



WIFI RAIL NETWORKS IN A TRANSIT ENVIRONMENT



How to Meet Today and Tomorrow Transit WiFi Demands ...



Patent #7,768,952 #7,916,080 #7,787,402 : System and method of wirelessly communication witih mobile devices.