RIVADA NETWORKS

DEFENSE SPECTRUM SHARING
REQUEST FOR INFORMATION

RIVADA NETWORKS SUBMISSION EXCERPT

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For the vast majority of its needs, DoD does not need to own or operate 5G networks itself in order to use and benefit from them. As long as DoD can access the capacity it needs when and where it needs it, and can pre-empt commercial access to the spectrum when needed, it does not need to own or operate a nationwide network itself. And in fact, owning a nationwide network would have numerous disadvantages for DoD.

Chief among the disadvantages of DoD ownership is cost. If DoD were to build, operate and own a 5G network for its exclusive use, it would need to pay for the entire cost of that network—likely many billions of dollars at least, plus billions more every year for operations and maintenance.

The superior alternative is a network built to commercial scale and with private capital, while being shared with commercial users who are subject to pre-emption by DoD.

There are further disadvantages related to the limited coverage and capacity of a wholly owned, exclusive-use DoD 5G network. The result would be a network that would likely be smaller than ideal in terms of both coverage and capacity, due to the cost constraints imposed by the need to fully fund its deployment and operations. In turn, the limited scale of the network would not attract the market-driven commitment of important vendors of infrastructure, network equipment, mobile terminals (including smartphones), software, operating systems and other capabilities that are critical to the success of the non-Chinese 5G ecosystem. Lastly, DoD risks losing the benefits of important technological developments and innovations resulting from the operations of a commercial wholesale network.

In contrast, a commercially scaled network can be built on an accelerated basis with greater coverage at a lower cost through partnerships with owners or providers of existing infrastructure (backhaul, power, rights of access, towers, and even community owned infrastructure such as land lots, rooftops and water towers). In addition, a wholesale business model for that network allows an efficient exchange of access to infrastructure for wholesale capacity (that can be used or resold). Lastly, a commercially scaled network could further reduce costs by "hosting" the spectrum of others (similar to the regional or community-oriented bidders in the recent CBRS auction) that need access to shared infrastructure.

In addition to the cost challenges, a DoD-owned and -operated network would be inefficient and underutilized, meaning that it would be a constant drain on DoD funds. The superior alternative is a network built to commercial scale and with private capital, while being shared with commercial users who are subject to pre-emption by DoD. Because such a network would cover more ground and provide more capacity than a stand-alone, exclusive-use network, DoD would not lose anything from having to share: Total capacity and coverage would far exceed DoD's needs. The excess capacity would then be sold by DoD's commercial network operator partner, generating revenue to pay for the network's deployment,

operations and maintenance. For the reasons outlined below, we recommend that such a network be operated as a wholesale wireless network, rather than an old-fashioned retail-focused one.

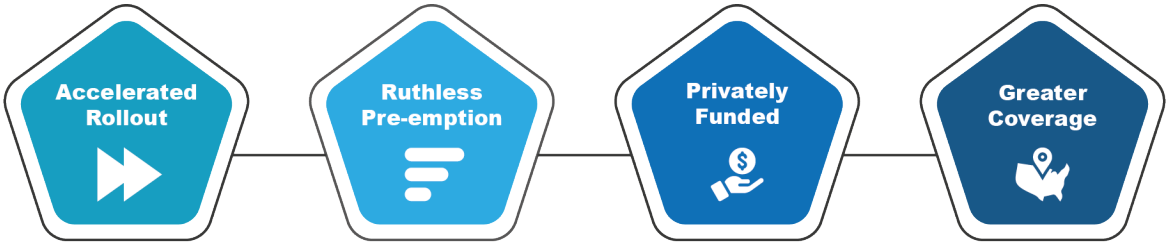

Figure 1: Benefits of a Commercially Scaled Network

By utilizing a purely wholesale business model (subject to DoD pre-emption), the network operator avoids costs associated with branding, retail marketing, sales, retail operations and customer management. The Commercial Wholesale Network Operator will lower prices, drive increased utilization, improve access to 5G and provide enhanced coverage to underserved areas. By reducing the costs of the network build and operations, eliminating all retail expenses, and operating through an open access wireless sales model, broadband capacity would be sold dynamically at the lowest possible price over cost. In turn, these would unleash the ability to sell capacity to (i) other cellular Mobile Network Operators (MNOs) that need extra capacity, (ii) existing and new MVNOs (potentially including DoD as an MVNO to its employees or more broadly to federal employees), and (iii) other providers of innovative new products, services and solutions that will increasingly "bundle" broadband connectivity with the product, service or solution (rather than requiring the end user to subscribe to the connectivity services of a retail carrier in order to access the digital product, service or solution).

A wholesale network would not compete with any existing retail carrier business in any geographical area. Rather, it would provide those existing 5G carriers with quick and flexible additional 5G capacity if they needed it, either on a short-term or long-term basis.

Rivada calls its model for providing network capacity to wholesale customers the Open Access Wireless Market (OAWM). Conceptually it is similar to the open-access wholesale electricity markets that have been in operation for decades, and have helped drive down costs and increase investment in that sector.

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