

**Discussion Paper – 5G, 6G, and O-RAN: Issues for Policy**  
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The next generation of network and telecom technology will use a new architecture involving virtualized networks, generic hardware, cloud computing, and standardized interfaces. Open Radio Access Networks (O-RAN) will play a central part of these next generation networks. O-RAN is a network architecture that allows a modular approach (some compare it to Lego blocks) where components from different vendors can be integrated into a single network. This contrasts with the traditional approach to RAN, where a single vendor produces the entire network stack. O-RAN has gained increasing attention from policy makers as foundational for next generation networks and a solution to industrial and supply chain problems. The move to open network technologies has major implication for innovation, security, and business.

O-RAN could lower capital expenditures for network operators and make next generation networks more efficient by using cloud and AI technologies. It has already increased the pace of innovation in network technology. O-RAN could also help increase supply chain resiliency, but a modular approach to networks also creates challenges for service providers that have to integrate technologies from multiple vendors. There are also concerns over the potential effects on network security that the new open architecture may create.

Much of the policy discussion of O-RAN revolves around the three “S” – standards, supply chain, and security. Standards, by providing the framework for interoperability, will play an essential role in O-RAN. Our previous [event](#) discussed the importance of the standards development process for 5G/6G and the importance of safeguarding an international standards process to keep it free from political influence, with decisions based on superior performance.

O-RAN technologies will depend on an international supply chain involving many companies, including both traditional and non-traditional vendors (ranging from startups to tech giants). The United States, with its strong companies in semiconductors and software, will have some advantages in this new environment. Japanese, European, Korean, and Chinese companies are also well positioned to compete in the O-RAN market. This is a diverse supplier base, based on a mix of incumbent telecom equipment vendors, tech companies, and new start-ups. This mix of vendors makes the system inherently more complex. The challenges from the integration of differing technologies highlight the importance of standards for interoperability and security.

ORAN’s global supply chain is one reason why the United States, at least, hopes O-RAN to minimize the role of Chinese suppliers. Chinese companies participate in industry alliances and the standard process, and one company – Huawei – hopes to return to a dominant position in telecom, using a mix of government funding and export subsidies, a strong research base, and

good integration skills, to achieve this in the O-RAN market. How far Huawei can get in the face of U.S. (and increasingly Japanese) competition remains to be seen, but it will stay a powerful competitor. Given the interconnections of the global supply chain for technology, O-RAN will not be a return to “re-shored” telecom and network infrastructure industries. O-RAN supply will map to existing tech capabilities – software, cloud, artificial intelligence (AI), and chips - which are globally (if unevenly) distributed. O-RAN is not a “silver bullet” for supply chain security but a transition to a new kind of supply chain that has vendor diversity at its core.

A case can also be made that O-RAN, with its vendor diversity combined with 5G’s mix of “intelligence at the edge,” AI, and cloud computing will also increase security if it is done right. This cybersecurity opportunity is an area where Federal policy could usefully contribute.

There are so far only a few successful O-RAN deployments, but much interest among governments and service providers. Service providers expect that O-RAN will ultimately offer lower costs and could (in combination with 5G) lead to increased capacity without sacrificing security if architected correctly. This leads some to recommend that we accelerate O-RAN adoption by mandating its use. Many others would prefer to allow market forces to dictate the pace of deployment for O-RAN, 5G, and 6G. There are steps other than mandates that governments can take to accelerate O-RAN, but the issue of whether to allow a “natural,” market driven deployment or whether to use government action to accelerate it (given the potential economic benefits) is central to our discussion.

Given the technological and commercial complexity, and policymaker attention and interest, there are contentious issues involved in the policies for O-RAN and its deployment. The Biden Administration’s [policy](#) is to “to promote the development of Open RAN alongside other policies, technologies, and architectures that support 5G vendor diversity and foster market competition.” We can usefully ask where we are best served by relying on market forces and where would we benefit most from Federal support for the adoption of O-RAN. Our discussion today will look at what policies are necessary, where market trends will take O-RAN and 5G/6G, and how best to provide lower cost, accelerate innovation, and increase trust and security.

### Questions for Discussion

1. What Federal policies best support O-RAN?
2. How do we work with companies in allied and partner nations on O-RAN?
3. Some in Brussels express fears that Europe will be unable to compete in next generation networks and that O-RAN is an industrial policy intended to provide trade advantage. Is this perception accurate and what should the EU do for 5G and O-RAN competitiveness?

4. What are the security implications of O-RAN and how are they best addressed?
5. As ORAN discussion has moved beyond technical circles into mainstream discourse, the opportunity for misconceptions about the technology has grown. What are some common misunderstandings about ORAN?
6. What is the estimate for a timeline for when O-RAN will be widely adoptable?
7. How should we approach the debate over whether to encourages O-RAN deployment through mandates or subsidies versus relying on market forces. What is the optimal blend of public and private action?
8. How will O-RAN align with the transition to 6G?
9. Some in Congress have expressed concern over the role that Chinese companies will play in O-RAN. What's the best way to manage the involvement of Chinese companies?