

National Telecommunications and Information Administration  
[Docket No. 221202-0260] - RIN 0693-XC053  
Public Wireless Supply Chain Innovation Fund Implementation  
CHIPS and Science Act of 2022

NTIA (NTIA–2022–0003) Questions & KCCTech Answers on the State of the Industry:

Understanding the current state of the telecommunications industry is important to determining how any topics should be prioritized in the Innovation Fund, and what level of funding a topic should receive.

1. What are the chief challenges to the adoption and deployment of open and interoperable, standards-based RAN, such as Open RAN? Are those challenges different for public vs. private networks?

KCCTech Answers:

- *Within the USA, we have CBRS to utilize for Private networks. However Outside USA, lack of Spectrum for Private Networks limits implementation.*
- *Limited manufacturers of Hardware, seems like there are limited number of HW manufacturers based out of China or surrounding Southeast Asian countries and most other US based OEM vendor manufacturers are primarily software focused.*
- *For public networks, there are limited funding to utilize Open RAN networks, so it is easier to deploy traditional OEM networks. This limits growth of Open RAN disaggregated OEM Network growth.*
- *Handset and User Equipment (UE) development for Private Networks and Open RAN equipment is still very limited. Common UE and Handset equipment manufacturers (i.e. Apple iPhone, Google, Samsung, etc) still focus on working on with Macro networks for major Operators/Carriers. Expansion of support for CBRS bands and other private network bands will expand use cases and increase benefits of Open RAN Private Networks.*
- *Pricing remains to be one of the key challenges. Since the demand is still low, many CSPs are still in the wait-and-see stage, thus difficult for Open RAN vendors to kickstart effective and low-cost manufacturing, thus prices are still not competitive enough, compared to legacy RAN vendors.*
- *Interoperability between Open RAN vendors are still a major challenge, especially for the fronthaul interface. ORAN already specified split 7.2x as the de-facto recommendation functional split, but still, it is not widely accepted and implemented by the vendors.*
- *One of the biggest obstacles for Open and Private Networks are determining who will be held accountable for major outages caused by interoperability problems when multiple brands of equipment are employed on the same project.*

a. What are the challenges for brownfield deployments, in which existing networks are upgraded to incorporate open, interoperable, and standards-based equipment?

KCCTech Answer:

- *For Brownfield deployments, Open RAN networks have limited testing for handover to other existing technologies on the network, i.e. if we are deploying 5G ORAN network, existing legacy 4G or 3G or even 2G networks still need to operate on the same network.*
- *Private and Public Network Owners should be required to have certain % of the network with Open RAN disaggregated equipment.*
- *Brownfield deployments, in which existing networks are upgraded to incorporate open, interoperable, and standards-based equipment, can present several challenges. Some of the main challenges include (not limited to):*
  - *Compatibility and Interoperability: Ensuring that the new open, interoperable, and standards-based equipment is compatible with the existing network infrastructure can be difficult.*
  - *Technical Complexity: Upgrading an existing network to incorporate new equipment can be technically complex, particularly if the network is large and distributed.*
  - *Cost Challenges: Upgrading an existing network can be expensive, particularly if it requires significant infrastructure changes or the replacement of existing equipment.*
  - *Risk: Upgrading an existing network involves some level of risk, as there is always the possibility of disruption or downtime during the upgrade process.*
  - *Coordination: Coordinating the upgrade process across a large network can be challenging, particularly if the network is distributed or if multiple parties are involved in the upgrade process.*
  - *Stakeholder Management: Managing the expectations and concerns of stakeholders, such as employees, customers, and regulators, can be challenging during a brownfield upgrade.*
  - *Knowledge Gap: There aren't enough engineers on hand who are familiar with OpenRAN equipment to handle the operation of a lot of sites.*

## 2. What ongoing public and private sector initiatives may be relevant to the Innovation Fund?

### a. What gaps exist from an R&D, commercialization, and standards perspective?

#### KCCTech Answer:

- *Open RAN interpretability should follow like 3GPP standards so that the interoperability can be tested and confirmed in labs, seamlessly deployment should be possible.*
- *Commercialization is limited due to lack of compliance control and lack of UE/Handset availability.*
- *There are several gaps that exist from an R&D, commercialization, and standards perspective regarding Open RAN. Some of the main gaps include:*
  - *R&D: There is a need for continued research and development in Open RAN technology to improve performance, reduce costs, and address potential vulnerabilities. OpenRAN suppliers should put in a lot of effort/money to match the depth of knowledge of traditional ran vendors, who have a very wide range of experience on the field.*
  - *Commercialization: There is a need for more commercialization of Open RAN technology, including the development of mature product offerings and the establishment of a clear roadmap for future development. Due limited HW production capacity, OpenRAN vendors will need large capital investments to meet expectations of big vendor commercial requests.*
  - *Standards: There is a need for the development and adoption of industry standards for Open RAN to ensure interoperability and compatibility among different vendors and equipment.*
  - *Ecosystem Development: The development of a strong and diverse ecosystem of vendors, partners, and users is essential for the success of Open RAN.*
  - *Deployment and Adoption: There is a need for more deployment and adoption of Open RAN technology, particularly in developing countries and underserved areas, to drive the growth and development of the technology.*
  - *Regulation and Policy: The development of supportive regulation and policy frameworks can help to promote the adoption and deployment of Open RAN.*

**b. How might NTIA best ensure funding is used in a way that complements existing public and private sector initiatives?**

KCCTech Answer:

- *The National Telecommunications and Information Administration (NTIA) is a U.S. government agency responsible for promoting the growth and development of the telecommunications industry. To ensure that funding is used in a way that complements existing public and private sector initiatives, NTIA could take the following steps:*
  - *Coordinate with other Government Agencies: NTIA could work closely with other government agencies, such as the Federal Communications Commission (FCC) and the Department of Commerce, to ensure that funding is aligned with broader policy goals and initiatives.*
  - *Consult with Industry Stakeholders: NTIA could engage with industry stakeholders and build a SME Committee, including telecommunications companies (such as KCCTech), technology vendors, and trade associations, to understand their needs and priorities and ensure that funding is directed towards areas of greatest need and impact.*
  - *Conduct Market Analysis: NTIA could conduct market analysis to identify areas where funding could have the greatest impact and ensure that resources are directed towards those areas.*
  - *Set Clear Goals and Objectives: NTIA could establish clear goals and objectives for its funding programs, including specific outcomes and metrics for success, to ensure that funding is used effectively and efficiently.*
  - *Monitor and evaluate progress: NTIA could establish a system for monitoring and evaluating progress towards its goals and objectives, including regularly reviewing the effectiveness of its funding programs and adjusting as necessary.*

**3. What kind of workforce constraints impact the development and deployment of open and interoperable, standards-based RAN, such as Open RAN?**

KCCTech Answer:

- *There are several workforce constraints that can impact the development and deployment of open and interoperable, standards-based RAN, such as Open RAN. Some of the main workforce constraints include:*
  - *Skills Shortages: There may be a shortage of skilled professionals with the necessary expertise to develop and deploy Open RAN technology.*
  - *Training and Development: Ensuring that the workforce has the necessary skills and knowledge to work with Open RAN technology may require training and development programs.*

- *Retention: Retaining skilled professionals in the telecom industry can be challenging, particularly in the face of competition from other industries.*
- *Attracting New Talent: Attracting new talent to the telecom industry, including students and professionals from other fields, can be difficult due to perceptions about the industry or the lack of awareness of career opportunities.*
- *Diversity and Inclusion: Ensuring that the telecom workforce is diverse and inclusive can be a challenge, particularly in industries with a history of lacking diversity.*
- *Workforce Mobility: Ensuring that the workforce is mobile and able to work remotely, particularly in the face of the COVID-19 pandemic, can be challenging.*

**How (if at all) can the Innovation Fund help alleviate some of these workforce challenges?**

KCCTech Answer:

- *The Innovation Fund is a U.S. government program administered by the National Telecommunications and Information Administration (NTIA) that provides funding for projects that advance the deployment of broadband infrastructure and services. The Innovation Fund can help alleviate some of the workforce challenges in the telecom industry in several ways:*
  - *Funding training and development programs: The Innovation Fund could provide funding for training and development programs that help to build the necessary skills and knowledge among the telecom workforces.*
  - *Promoting diversity and inclusion: The Innovation Fund could prioritize funding for projects that promote diversity and inclusion in the telecom workforce.*
  - *Supporting Remote Work: The Innovation Fund could provide funding for projects that enable remote work or improve workforce mobility, particularly in the face of the COVID-19 pandemic.*
  - *Encouraging Collaboration: The Innovation Fund could encourage collaboration between industry, academia, and government to help address workforce challenges and build a strong and diverse telecom workforce.*
  - *Funding Research and Development: The Innovation Fund could provide funding for research and development projects that aim to address workforce challenges, such as developing new technologies or training programs.*

4. What is the current climate for private investment in Open RAN, and how can the Innovation Fund help increase and accelerate the pace of investment by public and private entities?

KCCTech Answer:

- The current climate for private investment in Open RAN varies depending on the specific market and the investor. Some investors may see the potential for growth and innovation in the Open RAN market and be willing to invest, while others may be hesitant due to perceived risks or uncertainties.
- The Innovation Fund is a U.S. Government Program administered by the National Telecommunications and Information Administration (NTIA) that provides funding for projects that advance the deployment of broadband infrastructure and services. The Innovation Fund can help increase and accelerate the pace of investment in Open RAN by:
  - o Providing Funding: The Innovation Fund can provide funding for Open RAN projects, which can help to reduce the risk for private investors and encourage them to invest.
  - o Promoting Collaboration: The Innovation Fund can encourage collaboration between industry, academia, and government, which can help to build confidence among private investors and create opportunities for investment.
  - o Providing Guidance and Support: The Innovation Fund can provide guidance and support to private investors to help them understand the opportunities and risks associated with Open RAN and make informed investment decisions.
  - o Fostering Innovation: The Innovation Fund can support research and development efforts that drive innovation in the Open RAN market, which can help to create new investment opportunities.
  - o Encouraging Adoption: The Innovation Fund can support the deployment and adoption of Open RAN, which can help to demonstrate the viability of the technology and encourage private investment.

5. How do global supply chains impact the open, interoperable, and standards-based RAN market, particularly in terms of procuring equipment for trials or deployments?

KCCTech Answer:

- *The availability of certified equipment (UE) and Handsets is huge impact for trial campaign or deployment, the supply chain should be maintained with the forecast. Additional funding should be provided within the US to accommodate the supply of these UE devices to develop, manufacture, test and deploy for diversity and increased availability.*

## Questions on Technology Development and Standards:

Understanding the current state of open and interoperable, standards-based RAN and the standards that inform its development will assist NTIA in maximizing the impact of grants.

Questions in this section will be used to assess the maturity of the technology and related standards to help determine which topics should receive additional investment.

6. What open and interoperable, standards-based network elements, including RAN and core network elements, would most benefit from additional research and development (R&D) supported by the Innovation Fund?

KCCTech Answer:

- Radio Unit (RU) should be the main area of focus since it's the most challenging element for interoperability between vendors (towards DU – fronthaul interface)
- The UE test device performance will be the most benefit, the end user testing stability and performance test will accelerate the input for HW and SW corrections.

7. Are the 5G and open and interoperable RAN standards environments sufficiently mature to produce stable, interoperable, cost-effective, and market-ready RAN products? If not:

a. What barriers are faced in the standards environment for open and interoperable RAN?

KCCTech Answer:

- Willingness between RU and DU-CU SW vendors to be fully open and expose their fronthaul specification, challenges, issues and collaborate between each other and testing companies like KCCTech.

b. What is required, from a standards perspective, to improve stability, interoperability, cost effectiveness, and market readiness?

KCCTech Answer:

- O-RAN requires to function as effective as 3GPP with similar committee and control body.

c. What criteria should be used to define equipment as compliant with open standards for multivendor network equipment interoperability?

KCCTech Answer:

- O-RAN or TIP Compliance badging & certification by 3<sup>rd</sup> party organizations like KCCTech
- Less equipment or low-cost equipment compact with high performance.

8. What kinds of projects would help ensure 6G and future generation standards are built on a foundation of open and interoperable, standards-based RAN elements?

KCCTech Answer:

- *Universal Service Obligations project can be a consideration, in some poor countries access to information are very limited.*

#### **Questions on Integration, Interoperability, and Certification:**

**Challenges associated with systems integration and component interoperability can hinder the adoption of open and interoperable, standards-based RAN.**

**This section will help NTIA structure the NOFOs in a way that most effectively addresses these challenges and facilitates adoption. NTIA also welcomes feedback on the effectiveness of certification regimes in driving open and interoperable, standards-based RAN adoption.**

9. How can projects funded through the Innovation Fund most effectively support promoting and deploying compatibility of new 5G equipment with future open, interoperable, and standards-based equipment?

KCCTech Answer:

- *Strategy for the promotion of 5G technology, identifying for each one the type of measure it refers to, its implementation framework, the associated budget, and the goal it intends to achieve at the end of the Strategy's validity.*
- *Within 7 years, to transition to open standards-based compatible equipment, such as equipment developed pursuant to the standards set forth by organizations such as the O-RAN Alliance, the Telecom Infra Project, 3GPP, or any successor organizations, to ensure forward compatibility and open, multi-vendor network equipment interoperability.*

a. Are interoperability testing and debugging events (e.g., "plugfests") an effective mechanism to support this goal? Are there other models that work better?

KCCTech Answer:

- *LaaS (Lab as a Service) is one of the good alternative solutions, to test and solve interoperability issues between vendors. As of now, this function is already in line with TIP Lab function. This is a good opportunity for vendors or SIs to develop the function and skill within their organization to support the Open RAN vision.*
- *We strongly believe interoperability testing with debugging events is most effective mechanism. The design is based on the key application requirements for use in interoperability plug fests and field testing. To alleviate the need for manual configuration, a key requirement is device discovery. The second requirement is real-time packet capture, processing, and analysis. Lastly, scalability to fully support all devices*



10. How can projects funded through the program most effectively support the “integration of multi-vendor network environments”?

KCCTech Answer:

- *Efficient project management in a multi-vendor environment can depend on a combination of effective tools and technologies, positive work culture, and organizations' willingness to go above and beyond the traditional project management practices.*
  - o *The How and Why of the Project*
  - o *Integration Points*
  - o *Cohesion - The Bonding Factor*
  - o *Scope Boundaries*
  - o *Governance and Compliance Frameworks*

11. How do certification programs impact commercial adoption and deployment?

KCCTech Answer:

- *Industry certification is solution for working professionals to demonstrate measured skill sets in specialty areas, also in Open RAN.*
- *Every development implements a transformation, whether a small change in functionality or a major business change. Usually, it is about replacing something we currently have or use by something better or getting something, we have not had before.*
- *Deployment and training are essential in all transformations as it plays a key role in the adoption of the new capability, product or service being deployed. It is critical that people adapt and change in line with the deployment, and that acceptance of change does not become a bottleneck for the deployment.*

a. Is certification of open, interoperable, standards-based equipment necessary for a successful marketplace?

KCCTech Answer:

- *Yes, certification of open, interoperable, standards-based equipment necessary for successful marketplace. The product certification acts as an indicator of that product's safety, reliability, and quality, but it can be difficult to make sense of all the different certifications.*

b. What bodies or fora would be appropriate to host such a certification process?

KCCTech Answer:

- *GSMA / O-RAN Alliance and/or TIP*
- *While open and virtualized RAN has the potential to increase the resilience of the 5G ecosystem, it is also a key instrument in strengthening network security. The GSMA welcomes the commitment and focus of policymakers on these issues through assurance and certification schemes, such as the European Commission's focus and support of 5G certification schemes.*

- To further strengthen resilience and engender trust in the security of the 5G ecosystem, we encourage —for all suppliers of components for RAN — participation in schemes such as the GSMA’s Network Equipment Security Assurance Scheme (NESAS)<sup>8</sup> and appropriate certification schemes such as those proposed under the framework of the Cybersecurity Act in the EU.

12. What existing gaps or barriers are presented in the current RAN and open and interoperable, standards-based RAN certification regimes?

KCCTech Answer:

- *The introduction of 5G will see more use cases for cellular networks, such as private network solutions, and most notably industry specific applications and solutions beyond MNOs.*
- *It is further understood that incumbents will lose shares in the RAN market as smaller vendors enter and establishes themselves. However, due to the risks and challenges associated with its immaturity, as well as responsibility, security, and reliability of Open RAN.*
- *Mission-critical solutions may favor purpose-built RAN by incumbents due to their expertise, experience, and track record. Hence, non-critical enterprise solutions are more favorable and presents more opportunities for Open RAN deployments*

a. Are there alternative processes to certification that may prove more agile, economical, or effective than certification?

KCCTech Answer:

- *Not all certifications or trainings are bad — some are very helpful. However, the certification isn’t a guarantee the certificate holder knows what they are doing.*
- *Pursue Timeless Agility instead. Timeless Agility is the outcome of a mindset that transcends methodology. It consistently allows to identify, produce, and deliver the next right thing effectively and efficiently.*

b. What role, if any, should NTIA take in addressing gaps and barriers in open and interoperable, standards-based RAN certification regimes?

KCCTech Answer:

- *Government funding (NTIA) should facilitate solutions that are based on open, interoperable approaches grounded in international standards, and be made available for 5G infrastructure, services, and operating expenses.*
- *In ensuring that public safety has the applications that it needs, NTIA ensure to take a role in allow existing over-the-top applications to be temporarily “grandfathered,” providing public safety with time to replace their existing applications as part of the normal upgrade lifecycle*

### Questions on Trials, Pilots, Use Cases, and Market Development:

A key aim of the Innovation Fund is to promote and deploy technologies that will enhance competitiveness of 5G and successor open and interoperable, standards-based RAN. We have seen a range of Open RAN trials, pilots, and use cases underway across the United States and internationally to date. This section will inform the types of NOFOs NTIA publishes and administers as the Department works to accelerate adoption.

13. What are the foreseeable use cases for open and interoperable, standards-based networks, such as Open RAN, including for public and private 5G networks? What kinds of use cases, if any, should be prioritized?

KCCTech Answer:

- *The use cases depend on the customer's needs,*
- *for example - PTT for Using Push to Talk for Emergency Communications, Group Calling, latency, and everyone's talking at the same time.*
- *Machine Vision, Detect PPE Compliance on the factory floor, real-time detection of safety compliance*
- *AGV (Automated Guided Vehicle)*

14. What kinds of trials, use cases, feasibility studies, or proofs of concept will help achieve the goals identified in 47 U.S.C. 906(a)(1)(C), including accelerating commercial deployments? a. What kinds of testbeds, trials, and pilots, if any, should be prioritized?

KCCTech Answer:

- *There are several kinds of trials, use cases, feasibility studies, or proofs of concept that could help achieve the goals identified in 47 U.S.C. 906(a)(1)(C), including accelerating commercial deployments of open and interoperable, standards-based networks, such as Open RAN. Some potential options include:*
  - *1. Technology Demonstrations: Technology demonstrations can help to showcase the capabilities and benefits of open and interoperable, standards-based networks and encourage further adoption.*
  - *2. Interoperability Testing: Interoperability testing can help to verify that different vendors' equipment and systems are compatible and work together seamlessly, which can facilitate the integration of multi-vendor network environments.*
  - *3. Feasibility Studies: Feasibility studies can help to assess the technical and economic feasibility of deploying open and interoperable, standards-based networks in different locations and under different conditions.*
  - *4. Proofs of Concept: Proofs of concept can help to demonstrate the viability of open and interoperable, standards-based networks in specific use cases or applications.*

- *In terms of prioritization, it may be useful to focus on testbeds, trials, and pilots that address critical infrastructure needs or support economic development. It may also be useful to prioritize testbeds, trials, and pilots that can demonstrate the benefits and capabilities of open and interoperable, standards-based networks and encourage further adoption.*

**15. How might existing testbeds be utilized to accelerate adoption and deployment?**

KCCTech Answer:

- *Testbeds should target applications with the potential to deliver a practical path to substantially accelerate adoption impact.*
- *The goal is to ensure the testbed is of interest to a significant section of customers, either by its ability to address current business issues or by its ability to generate future revenues*

**16. What sort of outcomes would be required from proof-of-concept pilots and trials to enable widespread adoption and deployment of open and interoperable, standards-based RAN, such as Open RAN?**

KCCTech Answer:

- *The outcomes of POC are regarding some test cases that are required for deployments like latency, throughput, and stability of each UE/CPE so the customer can decide what kind UE/CPE is suitable for their business.*

**Questions on Security:**

**Strengthening supply chain resilience is a critical benefit of open and interoperable, standards-based RAN adoption. In line with the Innovation Fund’s goal of “promoting and deploying security features” to enhance the integrity and availability of multi-vendor network equipment, and Department priorities outlined in the National Strategy to Secure 5G Implementation Plan, this section will inform how NTIA incorporates security into future Innovation Fund NOFOs.**

**17. “Promoting and deploying security features enhancing the integrity and availability of equipment in multi-vendor networks,” is a key aim of the Innovation Fund (47 U.S.C 906(a)(1)(C)(vi)). How can the projects and initiatives funded through the program best address this goal and alleviate some of the ongoing concerns relating to the security of open and interoperable, standards-based RAN?**

KCCTech Answer:

- *Multi-vendor networks are critical to network security. Since it is crucial to update devices from different Vendors as quickly as possible, additional delays may introduce risks for network operators.*

- For example, if a zero-day vulnerability is identified, vendors could release patches at different times. If one vendor's device is patched in response to a critical vulnerability, and others are not, it could lead to incompatibility of network devices and loss of network service availability.
- Until all the vendors within a network release a patch for the exploit, the operator's network may be vulnerable.

a. What role should security reporting play in the program's criteria?

KCCTech Answer:

- Tools to ensure the security and resilience of the network Orchestrating Security patches and config within different Open RAN Component, function, and Vendors.

b. What role should security elements or requirements, such as industry standards, best practices, and frameworks, play in the program's criteria?

KCCTech Answer:

- Monitor compliance with security standards
- Define the scope of your multi-vendor environment

18. What steps are companies already taking to address security concerns?

KCCTech Answer:

- 1. Back up data
- 2. Secure the devices and network
- 3. Encrypt important information
- 4. Ensure use multi-factor authentication (MFA)
- 5. Manage passphrases
- 6. Monitor use of computer equipment and systems
- 7. Put policies in place to guide staff
- 8. Train staff to be safe online
- 9. Protect the customers
- 10. Consider cyber security insurance
- 11. Get updates on the latest risks
- 12. Focus on Cyber Security, receive consulting and recommendations.

19. What role can the Innovation Fund play in strengthening the security of open and interoperable, standards-based RAN?

KCCTech Answer:

- From a security perspective, software-based networking and virtualization enables techniques such as sandboxing, micro segmentation, containerization, and network slicing.
- There are also important trust and security capabilities of virtualization enabled by modern hardware and processors. The result is that through the

*advancements of hardware and virtualization, operators have more tools to ensure the security and resilience of the network.*

20. How is the “zero-trust model” currently applied to 5G network deployment, for both traditional and open and interoperable, standards-based RAN? What work remains in this space?

KCCTech Answer:

- *Both traditional and open RAN are using standard security access model*
- *Work remains in this space by modernizing security strategy to overcome modern-day cybersecurity challenges in a multi-vendor environment consist of:*
  - *Align your security strategy with business objectives*
  - *Assess security maturity*
  - *Prioritize threat use cases*
  - *Work towards a Zero Trust architecture*
  - *Map to industry standards and detection frameworks*

**Questions on Program Execution and Monitoring:**

**The Innovation Fund is a historic investment in America’s 5G future. As such, NTIA is committed to developing a program that results in meaningful progress toward the deployment and adoption of open and interoperable, standards-based RAN. To accomplish this, we welcome feedback from stakeholders on how our program requirements and monitoring can be tailored to achieve the goals set out in 47 U.S.C. 906.**

21. Transparency and accountability are critical to programs such as the Innovation Fund. What kind of metrics and data should NTIA collect from awardees to evaluate the impact of the projects being funded?

KCCTech Answer:

- *Confidential communication.*
- *Participatory communication.*
- *Accountable communication.*
- *Substantial information disclosure.*
- *Company integrity and goodwill.*
- *Overall trust.*
- *Overall transparency.*

22. How can NTIA ensure that a diverse array of stakeholders can compete for funding through the program? Are there any types of stakeholders NTIA should ensure are represented?

KCCTech Answer:

- *Through assessment and evaluation of the stakeholder type such as Vendor and System Integrators*

23. How (if at all) should NTIA promote teaming and/or encourage industry consortiums to apply for grants?

KCCTech Answer:

- *Applying grant is a good opportunity to improve organization's image and attract the branding. Several ways to promote industry consortiums to apply for grants:*
  - o *1. Create Quality content*
  - o *2. Form New Partnerships*
  - o *3. Master social media (i.e. LinkedIn)*

24. How can NTIA maximize matching contributions by entities seeking grants from the Innovation Fund without adversely discouraging participation? Matching requirements can include monetary contributions and/or third-party in-kind contributions (as defined in 2 CFR 200.1).

KCCTech Answer:

- *The most important thing to maximize the matching contributions by entities should be look down on below several point.*
  - o *1. Organization/Entities profile should be matching to NTIA's grant.*
  - o *2. Experience, Achievement, and Contribution to the existing or any related to NTIA's grant.*

25. How can the fund ensure that programs promote U.S. competitiveness in the 5G market?

KCCTech Answer:

- *5G is more than a connection but it is designed for a future proof Telecommunication and Information Technology. U.S. as Global Power and a Leader on 5G Market, the programs need to fully comply with regulation and law that will make a sustainable network expansion on Industry, Entertainment, and the existing Public Telecommunication.*
- *Open Standard and Security will be very critical foundation for the programs so it will promote U.S. competitiveness as Independent Leader Nation.*

a. Should NTIA require that grantee projects take place in the U.S.?

KCCTech Answer:

- *In the world that is such Fluid, Global and Openness, the project can be take place anywhere as 5G standard nowadays more open and can be benefited to U.S.*
- *Opening this up to US companies in other Nations where Chinese OEM Vendors are dominant, it creates local Operators/Carriers and Private Networks alternatives to their existing infrastructure, that is cost effective and flexible. This also enables US based organizations with Global Operations to expand their business revenue Globally.*

b. How should NTIA address potential grantees based in the U.S. with significant overseas operations and potential grantees not based in the U.S. (i.e., parent companies headquartered overseas) with significant U.S.-based operations?

KCCTech Answer:

- *Company Profile based in the U.S. with excellence portfolio handling U.S. project consider as higher potential.*

c. What requirements, if any, should NTIA take to ensure “American-made” network components are used? What criteria (if any) should be used to consider whether a component is “American-made”?

KCCTech Answer:

- *Company that based or affiliate with US and registered company will ensure that “American-made” network components being used Global solutions.*

26. How, if at all, should NTIA collaborate with like-minded governments to achieve Innovation Fund goals?

KCCTech Answer:

- *1. Identify Leaders from Expert Organizations to Collaborate With*
- *2. Build Trust*
- *3. Building Relationships*
- *4. Focus on Solving a Problem and Giving Solution*
- *5. Get Everyone on the Same Page*
- *6. Build Culture and Capability*
- *7. Incorporate Accountability*
- *8. Build a Model for the Future*
- *9. Expand any Ideas and Problem-Solving Solution*

#### **Additional Questions:**

**NTIA welcomes any additional input that stakeholders believe will prove useful to our implementation efforts.**

27. Are there specific kinds of initiatives or projects that should be considered for funding that fall outside of the questions outlined above?

KCCTech Answer:

- *Accomplishment of any Proposal Fund time plan*
- *Improvement a process or system on each Stakeholder.*



28. In addition to the listening session mentioned above and forthcoming NOFOs, are there other outreach actions NTIA should take to support the goals of the Innovation Fund?

KCCTech Answer:

- *Make it less "Barrier" and "red-tape" for the Innovation Fund*
- *High-Impact Practice to any Stakeholders*
- *Service Delivery Change*
- *Benefits on compliance*
- *Creating alternative to Conventional OEMs*
- *Measure Outcomes*

Contact: [info@kcctech.com](mailto:info@kcctech.com)

Ike A. Cark  
Managing Partner, KCCTech LLC  
+1.858.603.5047  
[ike.cark@kcctech.com](mailto:ike.cark@kcctech.com)

Hakan Kavlak  
Managing Partner, KCCTech LLC  
+1.925.357.1167  
[hakan.kavlak@kcctech.com](mailto:hakan.kavlak@kcctech.com)