

## White Paper on Community Development, Testing & Certification Infra

Indigenization of products would require Indian companies to have strong hold of Technology, Testing and Certifications. These will be the primary pillars for creating world class stable products that can be put to use in domestic as well as International market.

Problem Statements –

- High investments involved in research of new technologies
- Product research and development ecosystem
- Recognition of Indian companies developed standards on the global forums
- Huge capital expenditure in equipment to set up test environments
- Centralized Indian certification criteria and standards
- Domestic preference to home grown products
- Policy support to push global exports of Indian make products

Above points can have resolution in the form of Technology funds, by creating Nodal monitoring body, centralized Test lab setup and others....

### 1. **National Digital Communication Policy Document states**

- a. Creating a Fund for R&D in new technologies for start-ups and entrepreneurs to enable innovation in cutting edge communications, 5G, software, content, security and related technologies and applications, and commercialization of products and services through grants, scholarships, venture capital, etc.**
- b. Establishing Centres of Excellence including in Spectrum Management, Telecom Security and Next Generation Access Technologies**
- c. Assisting start-ups and other innovators in filing copyright, patent and**
- d. trademarks applications**
- e. Providing financial incentives for the development of Standard Essential Patents (SEPs) in the field of digital communications technologies**
- f. Creating a framework for testing and certification of new products and services**
- g. Enabling creation of suitable infrastructure for testing of new products and services with due regard to safety and security concerns**

### 2. **Technology Fund**

The most crucial part of creating any product is the understanding of technology. For example, With 5G we might be able to understand technology, design and manufacture products but with 6G we can hand hold of the technology itself. We should start now and participate in formulation of standards for the upcoming

technologies of the Telecom domain.

Part of the fund should focus on product creation where success can be achieved in relatively shorter time frames and technology may be available with Industry, C-Dot or Academia. These would be low hanging fruits resulting in “quick success” that will spin a positive re-enforcements cycle for product design and commercialization in India. Telecom products like Customer premises equipment, Access products, NMS, Billing software, VoIP products, Network switches, Routers & Media gateways can be classified in this category.

This fund will push Indian companies in

- Design and Product development
- Support of IPR and patents
- Common testing and standardization
- Defining of new standards and technologies
- Early start in the upcoming technologies to mark global presence.
- Support to the extent of 70% of the expenses incurred by Indian design companies on certification from TEC approved test labs.

So a technology Find can be constituted to push organizations to go for defining relevant standards in respective domains.

### 3. Testing and Validation

Testing and validation will be crucial stage to make the Indian make products stable and commercially usable in and out of the country. The need is to develop local capability to assure that certification requirements for Indian IoT/ 5G Products and services must be locally handled under TEC accredited labs, including international certifications such as GSMA SAS, oneM2M, ETSI, CTIA etc. to make sure our made products are suitable for global deployments.

The key asks here are, funding of the Test and Certification Labs, assurance of inter-operability test capabilities along lines of key international standards (including performance testing standards)

**Government funded-test beds for upcoming technologies like 5G, will ensure that “the downside costs are defrayed.”**

- Functional Validation lab

Centralized lab to provide TEC (Telecommunication Engineering Center) support to do Functional Testing which would include 5G/4G (RCT/ORAN/IOT), Wi-Fi , Switches, ONT (Product Functionality as per TEC user manual, Power, Spectrum, Environmental, Surge etc.) and Safety Measure Test (EMC and EMI) for different telecommunication/wireless/networking products.

For simpler products referred to as “low hanging fruits”, Govt funded projects including C-DOT, C-Dac or Academia who have developed or worked in these technologies will have the requisite test and certifying facilities who can be tasked to validate / enhance such products developed by Industry / start-ups. C-Dot can set up a cell whose function should be to ensure validation / certification & enhancement of products developed by Industry in aligned area.

Based on their validation / certification, TEC should be advised to issue a provisional certificate or approval.

#### 4. **Pilots, Technology Trials, Use case labs**

Proper infrastructure and environment would be required to make products ready for commercial use cases.

The key asks here are funding of field trials and pilots through various government initiatives and funding schemes including opening up of the USOF for domestic technology incubation and testing

- Allocation of Airwaves for Cellular products testing
- Product testing and validation in actual network environment
- New technology trials for benchmarking standards
- Realization of real time use cases to make product readiness for the commercial

#### **Support on the availability and allocation of “Test Space” for RU and Wi-fi Access Point Testing**

To do the field testing of

- 5G O-RAN and 4G Products including Radio Unit (Indoor/Outdoor and Massive MIMO) supporting multiple bands. These products support bands on FDD, TDD and mm Wave etc.
- Wi-Fi Access Points, UBR

#### 5. **Certification**

Lab to perform different testing for security of the product which includes EMI and EMC based testing.

- Reliability Testing and Certification Support in terms of :
- IEC: Safety Section covering all the standards
- Ingress Protection: Including all automated solution and facility
- Telecom: ITU/ETSI/3GPP/ORAN standards
- EMC : Electromagnetic compatibility
- EMI: Emission Testing
- BIS: Bureau of Indian Standard
- BEE: Bureau of Energy Efficiency