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Q.1 Which of the following IFC services be permitted in India?

- a. Internet services*
- b. Mobile Communication services (MCA service)*
- c. Both, Internet and MCA*

A.1 The priority must be given to starting IFC services with a) Internet Services. Today most of the objectives with regards to entertainment, work or even voice calling can be achieved easily by using Internet Services. The primary services that MCA's provide remain as Voice Calling and SMS'es. While usage of SMS'es is on the decline and the usage of VoIP (Voice of IP) services (e.g. Whatsapp, WeChat, Viber, Skype etc) has been penetrating the market extensively for last 2-3 years.

Also as technology is moving at an extremely fast pace it would be prudent to wait for at least another year or two before allowing MCA services. This will allow you to encompass 5G services into the fold too. From my view point TRAI can formalize the following dates for rolling in the IFC –

- a) Internet services – from 1st January 2018
- b) MCA services – from 1st January 2020

Q.2 Should the global standards of AES/ESIM, shown in Table 2.1, be mandated for the provision of AMSS in Indian airspace?

A.2 Yes Global standards of AES/ESIM must be incorporated. We are large communication player at global level and cannot remain isolated in matters of Global communication standards. As a matter of fact we should actively participate and collaborate on policy formation on such large forums. TRAI should also raise concerns of smaller nations in our regions like Bhutan, Nepal etc and become the voice of the region.

Q.3 If MCA services are permitted in Indian airspace, what measures should be adopted to prevent an airborne mobile phone from interfering with terrestrial cellular mobile network? Should it be made technology and frequency neutral or restricted to GSM services in the 1800 MHz frequency band, UMTS in the 2100 MHz band and LTE in the 1800 MHz band in line with EU regulations?

A.3 I think we should hold off on providing MCA services for now (see my response in A.1). Let the model mature. Providing of internet services for now will alleviate the pain of majority of the passengers and will take care of their immediate needs (please do understand that Whatsapp and other messaging services have largely overtaken SMS based messaging). Also as we are in the phase of making 4th Generation of services the back bone of our country (and at the same time we are in trial phase of 5th Generation), there will be lots of technological changes in the next couple of years. It might be helpful in the long run for MCA's to weigh in future technology. Also section 3.4 in the consultation paper points out to extremely low adaption of MCA services within EU.

Q.4 Do you foresee any challenges, if the internet services be made available 'gate to gate' i.e. from the boarding gate of the departure airport until the disembarking gate at the arrival airport?

A.4 Rather than calling it gate-to-gate challenge let's call it Seamless Communication through Airport (SCA).

I do not foresee any major challenge in terms of providing Internet services (2G/3G or LTE) as most of these have been adapted extensively in the last 3-4 years by many countries as well as air carriers. Technology wise (in terms of interference with airplane communication) majority of issues have been tested successfully across various countries and airports in EU, Asia, Far East and Americas.

Q.5 Whether the Unified Licensee having authorization for Access Service/Internet Service (Cat-A) be permitted to provide IFC services in Indian airspace in airlines registered in India?

A.5 If we want SCA (Seamless Communication through Airports) then we must permit Cat-A service providers to provide IFC services in Indian airspace.

Q.6 Whether a separate category of IFC Service Provider be created to permit IFC services in Indian airspace in airlines registered in India?

A.6 We can categorize the IFC providers as following:

1. those who have Unified License (basically a Cat-A entity registered with DoT/TRAI)
2. a locally registered entity that partners with a TRAI registered Unified licensee to provide IFC services
3. a foreign registered entity that partners with a TRAI registered Unified licensee to provide IFC services
4. a foreign registered entity that directly provides IFC services

Q.7 Whether an IFC service provider be permitted to provide IFC services, after entering into an agreement with Unified Licensee having appropriate authorization, in Indian airspace in airlines registered in India?

A.7 Yes. In my opinion all types of entities (as described in previous answer) must be allowed to operate. But TRAI must lay down proper rules of engagement especially for non DoT/TRAI registered entities.

Q.8 If response to Q.7 is YES, is there any need for separate permission to be taken by IFC service providers from DoT to offer IFC service in Indian airspace in Indian registered airlines? Should they be required to register with DoT? In such a scenario, what should be the broad requirements for the fulfillment of registration process?

A.8 First of all DoT/TRAI must refrain from differentiating airlines registered in India or abroad. Rather than treating them as airlines, it must treat each aircraft (which wants to provide IFC services) as Transient Air Station (TAS). Each TAS must be identifiable with a unique combination of Aircraft number + Operational Airline code + Flight no. Each IFC provider must provide a complete list of TAS's to TRAI at time of registration. Any new inclusion/exclusion of TAS'es must be intimated to DoT/TRAI with an advance notice of 6-8 weeks.

All IFC service providers must be registered with DoT/TRAI & must be categorized as per my response in A.6. Their licensing period must be renewed from time to time (ideally every 12-24 months). Also a nominal fee must also be charged to all IFC's (e.g. a fixed fee of 5000 USD or 3 lacs per year or fee based on total number of TAS'es an IFC operates). All compliances (with regards to security and data sharing) that are followed by local Ground based service providers must be made applicable to IFC's. In case of any security breaches, IFC services must be stopped with immediate effect.

In order to protect consumer interests and discourage monopolization of services, fair tariff caps must be instituted by TRAI/DoT which must be revised every 24 months.

Q.9 If an IFC service provider be permitted to provide IFC services in agreement with Unified Licensee having appropriate authorization in airlines registered in India, which authorization holder can be permitted to tie up with an IFC service provider to offer IFC service in Indian airspace?

A.9 As per my response in A.6 clear cut guidelines must be established to ensure correct categorization of the IFC. Subsequently the IFC must be free to choose between airlines (it can be purely India based airlines or foreign based airlines or mix of Indian + foreign based airlines).

Q.10 What other restrictions/regulations should be in place for the provision of IFC in the airlines registered in India.

A.10 See my response in A.8

Q.11 What restrictions/regulations should be in place for the provision of IFC in the foreign airlines? Should the regulatory requirements be any different for an IFC service provider to offer IFC services in Indian airspace in airlines registered outside India vis-à-vis those if IFC services are provided in Indian registered airlines?

A.11 See my response in A.8

Q.12 Do you agree that the permission for the provision of IFC services can be given by making rules under Section 4 of Indian Telegraph Act, 1885?

A.12 Yes.

Q.13 Which of the options discussed in Para 3.19 to 3.22 should be mandated to ensure control over the usage on IFC when the aircraft is in Indian airspace?

A.13 Yes it is true that our Satellite Navigation System is not comprehensive yet. Technologically we may be at least 5 years behind advanced economies, but we must strive to make these advances. To begin with we can give a deadline to all foreign carriers that from Jan 1st 2020 all IFC services must switch on to satellite system as directed by DOS when in Indian Airspace. For all domestic flights this deadline must be expedited and made compulsory from 1st Jan 2018 itself (section 3.22 is quite comprehensive solution).

Q.14 Should the IFC operations in the domestic flights be permitted only through INSAT system (including foreign satellite system leased through DOS)?

A.14 Yes. A firm date (as pointed in A.13) must be implemented on. If the date seems aggressive, then it can be advanced by another 3-6 months. All communication, whether it may be flight navigation or IFC related services, must use satellite systems as directed by DOS. All domestic flights must comply sooner than later.

Q.15 Should the IFC operations in international flights (both Indian registered as well as foreign airlines) flying over multiple 31 jurisdictions be permitted to use either INSAT System or foreign satellite system in Indian airspace?

A.15 See my responses in A.13 and A.14

Q.16 Please suggest how the IFC service providers be charged in the following cases?

(a) Foreign registered airlines.

(b) Indian registered airlines.

A.16 As I suggested in my previous answers (A.8) that no distinction between airlines must be made. Instead each aircraft must be considered as Transient Air Station (TAS). The categorization of IFC's is mentioned in my answer A.6.

Q.17 Should satellite frequency spectrum bands be specified for the provisioning of the IFC services or spectrum neutral approach be adopted ?

A.17 This should be a technical decision and we must comply with international standards and good practices.

Q.18 If stakeholders are of the view that IFC services be permitted only in specified satellite frequency bands, which frequency spectrum bands should be specified for this purpose ?

A.18 Again this should be based on technical qualification. One thing is sure though. DoT/TRAI must lay down rules for specific usage of bands. Leaving this choice to IFC providers may not be a good decision from security aspect.