



## DECT FORUM INDIA

**Date :** 17<sup>th</sup> February 2012

**To :**

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**Subject: Counter Comments on TRAI Consultation Paper No. 9/2011**

**“ALLOCATION OF SPECTRUM RESOURCES FOR RESIDENTIAL AND ENTERPRISE INTRA-TELECOMMUNICATION REQUIREMENTS/ CORDLESS TELECOMMUNICATION SYSTEMS (CTS)”.**

Sir,

1. More than 42 responses have been received against the TRAI Consultation Paper referred above, indicating the interest of the general public in the subject matter. The responses can be classified into:

- a) Responses from Indian Mobile Service Providers and their Association/s & Consultants.
- b) Response from GSMA - Global trade association of the mobile industry, representing more than 800 mobile operators across 219 countries along with more than 180 manufacturers and suppliers of GSM technology. This includes some of the global telecom service providers having a stake in the Indian mobile services and all of the GSM equipment suppliers to India.
- c) The largest wireline service provider in India – BSNL.
- d) Indian Consumer Associations and Associations of organizations interested in use of digital cordless equipment.

- e) DECT Forum Associations – DF & DFI
- f) Manufacturers/Dealers of digital cordless equipment

2. Other than 7 responses received from (a) above, all the rest of the more than 35 organizations, and more specifically the Indian consumer organizations and BSNL the largest wireline service provider in India, are strongly in favour of de-licensing of the existing 1880-1900MHz band for digital cordless technology as this revive landline usage by subscribers and save on spectrum. It will also further support the Govt. of India policy for use of landline for broadband to the home for e-governance/ e-education/ e-medicine.

3. GSMA, the organization at (b) has also expressed no objection against de-licensing of the 1880-1900MHz band but have suggested need for good coexistence with adjacent band cellular systems.

4. The 7 Cellular organizations at (a) are the only ones who have objected to de-licensing of the digital cordless band. We believe this is basically due to commercial interest involved rather than any technical reasons or considerations for efficient use of spectrum as a scarce resource. As all the Cellular Operators are in the commercial business of providing licensed cellular services to customers in India, they have a very natural common commercial objective of ensuring that all intra-communications within the residential & enterprise private space should also be made as a mobile commercial service call, even though this would be an inefficient way of use of a very scarce public resource such as spectrum.

5. Therefore the controversial issues covered by this Consultation Paper are primarily about (i) customer needs & rights to a better technology along with efficient use of the scarce spectrum resource and (ii) the commercial interest of mobile service providers.

6. DFI would therefore like to make the following para wise counter comments against the comments of Mobiles Service Providers: :

### **3.1 Whether the current allocation of spectrum for CTS is sufficient to meet the requirements? If not, then how to meet the demand of cordless telephony spectrum requirements?**

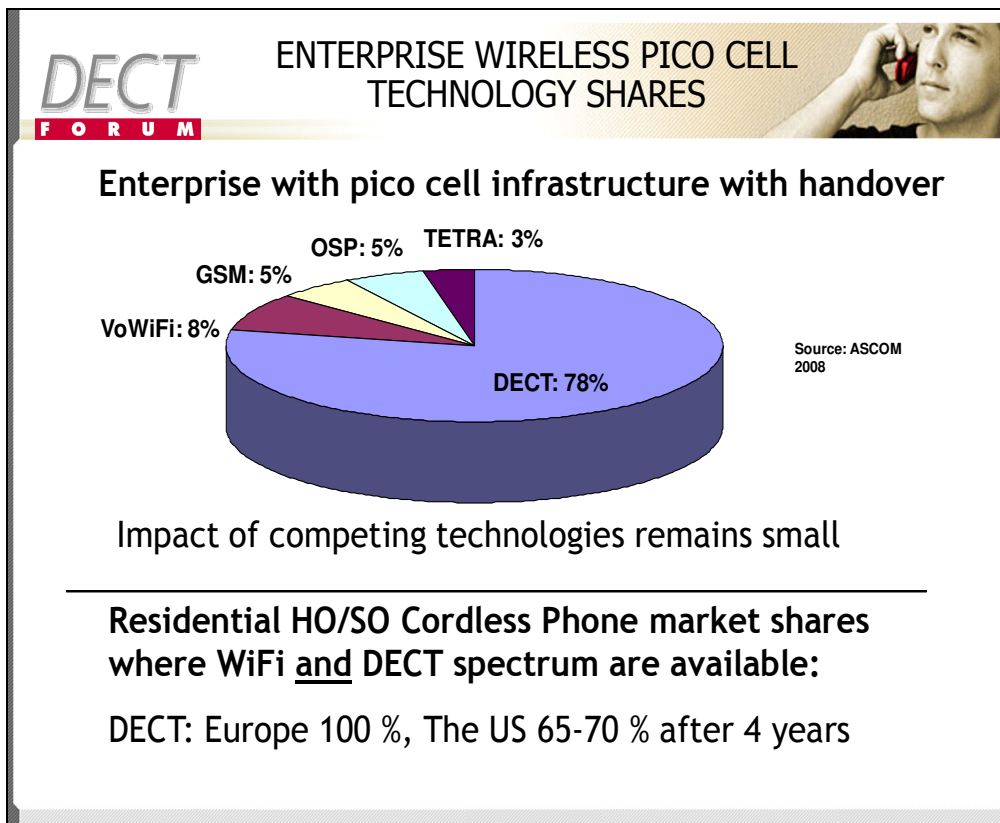
*Mobile Service Providers comments:*

- A) No there is no need for extra band allocation. Existing CTS-WiFi de-licensed band is sufficient for the present needs.*
- B) There is no such great demand for DECT technology in India. There could be only a few corporate users.*
- C) Before we consider the release of a new band for digital CTS, there should be an audit of the use of existing unlicensed bands.*
- D) The existing PHS digital CTS services are being phased out in most countries.*

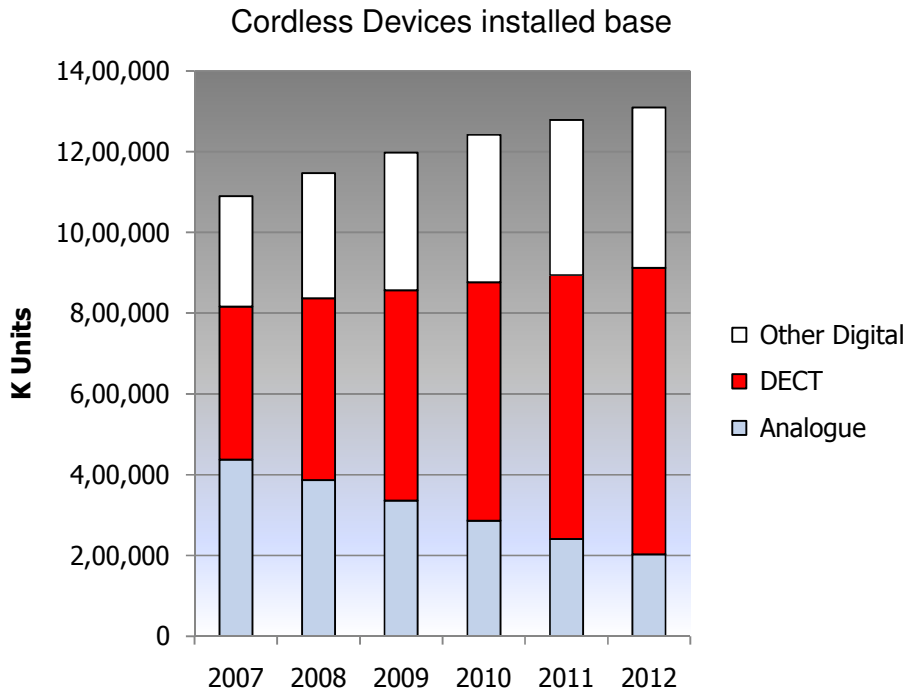
### DFI COUNTER RESPONSE TO POINTS ABOVE:

NFAP2011 has already allocated 1880-1900MHz band for digital CTS technology. NFAP2011 was prepared after long consultations with all stake holders including Mobile Service Providers i.e. (a) above. Therefore this Consultation Paper and the discussions to follow have to be necessarily limited to de-licensing of this band. A de-licensed band is necessary for digital CTS because in order to guarantee the quality of service for CTS a co-existence etiquette is required, which is not available in the ISM band.

Furthermore, the old de-licensed bands for CT0 analog technology are not under use now for obvious reasons of obsolescence/poor conversation security/ cost and size of handsets etc. The only other band available for digital cordless is the ISM/WiFi de-licensed band. Reasons for its un-popularity and the need for shifting cordless technology away from this band to a separate band are given under our response to 3.3 below. Therefore the need for any audit did not exist at the time of the NFAP2011. Digital cordless technology is used not only by enterprises but on a much larger scale in residential and SOHO applications. Millions of these cordless sets are still being sold in the Indian market. Despite the presence of GSM/CDMA mobile technologies there is no justified reason for denying digital CTS technology to the Indian consumer when it is being all over the world.. While PHS technology is being phased out, it is being replaced by other digital CTS technologies such as DECT. US has introduced DECT in 2005 and Japan, the home of the PHS technology, has introduced DECT in 2010. The popularity of DECT technology can be gauged by the two figures below.



**DECT is the Dominant Global Cordless Technology**



**3.2 In view of the availability of cellular mobile services in the country and possibility of Fixed Mobile Convergence (FMC), is there any need to have DECT Phones?**

*Mobile Service Providers comments:*

- A) *Mobile services are already serving the limited mobility needs of the residential and enterprise sector.*
- B) *With the widespread deployment of GSM and other cellular technologies, specially in the urban areas where digital CTS is used the needs of the residential & enterprise customers is being taken care of very well. Mobile services will be able to increase data rates, QOS and sophistication of services with the introduction of 3G. The use of DECT for data services has lost its relevance.*
- C) *CUG mobile plans are already providing the solution for residential & enterprise needs. This further enhanced due to the ease of use of single very low cost handset for all communications. These services are also National Security complied – lawful interception. All solutions being thought of for use of DECT are being provided by UASL/CMTS.*
- D) *The IBS and DAS enhance overall coverage and capacity especially at locations where the potential for increase in data usage is evident. The IBS has the advantages of cost benefit due to enhanced network coverage and shared*



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*deployment. DAS design with Multi Operator and Multi Technology support for both indoor and outdoor sites delivers a better utilization of the overall infrastructure. All existing service providers are already deploying IBS to enhance network coverage and quality of service in urban areas.*

- E) GSM/CDMA and 3G performs much better than DECT*
- F) Fixed Mobile convergence does not require allocation of any dedicated spectrum and can be implemented with changes in National Numbering Plan and a simplified interconnection regime with BSNL/MTNL.*

### **DFI COUNTER RESPONSE TO POINTS ABOVE:**

While the cellular industry claims regarding serving the needs of the enterprise office space using CUG & pico cell technology based systems are technically correct, in the real world of enterprises such as hospitals, manufacturing setups, banks, hotels etc there are certain industry specific needs which cannot be served by these service provider systems. Digital CTS systems with their low bit rate data applications are very suitable for this task and offer industry specific solutions integrated with the user's IP-PABXs and PCs. Besides this mobile CUG/pico cell based technologies have inherent security issues as explained under 3.8 below. They are also limited in their application due to radio planning issues, customer-service provider interaction issues, customer administrative control issues and service cost issues. Besides this mobile pico cell based technologies are unsuitable for residential/SOHO applications.

Due to reasons stated above, despite the presence of a well established mobile network, US has introduced DECT in 2005 and Japan has introduced DECT in 2010. The technology is already present in Europe and more than 100 countries all over the world. The popularity of DECT technology can be gauged by the two figures above.

Digital CTS technology is complimentary to mobile technology in terms of efficient use of the scarce spectrum resources. It is also important that Indian consumers must have the choice between the two technologies.

### **3.3 Is there any requirement of allocating spectrum for digital CTS, in view of similar solutions being available in already de-licensed band 2.4 & 5.8 GHz?**

*Mobile Service Providers comments:*

- A) 2.4 & 5.8GHz is already de-licensed and under use for CTS. They are matured and proven technologies.*
- B) Un-licensed devices using WiFi band have been quite successful*
- C) All low bit rate data needs of residential and enterprise private space can be catered to by WiFi.*

### **DFI COUNTER RESPONSE TO POINTS ABOVE:**

It is important to take into consideration how the user's private space broadband needs as well as services delivered through the network to his home/enterprise are provisioned through the use of WiFi-LAN implementation. The WiFi equipment along with wireline

modem is installed and maintained by the telecom service provider along with the wire-line phone. However, the same LAN is also used by the customers privately held 2.4 & 5.8GHz cordless sets. The ISM band does not have any coexistence etiquette. This very often leads to the service provider being blamed for the poor WiFi voice services due to interferences caused to the cordless sets from un-coordinated broadband equipment using the same LAN. This blame is not justified as its source is the use of 2.4 & 5.8GHz cordless sets on a LAN which is actually meant for 802.11 data protocol equipment where interferences between the different un-coordinated broadband equipment without any co-existence etiquette is easily and automatically corrected by packet re-transmissions. This interference into cordless is likely to become very pronounced as the Govt. of India expands the broadband network. This is also the primary reason for the un-popularity of use of 2.4 & 5.8GHz cordless sets in the developed world where WiFi is omni-present. The best policy therefore is to provide for a segregation between the two network requirements by use of a separate de-licensed digital CTS band.

Digital CTS band & WiFi band are complimentary. It is for us to use the best of both the technologies – digital CTS exclusively for private space voice/messaging/control applications and WiFi ISM band exclusively for broadband services delivered by the telecom service provider.

As has been stated very clearly in the TRAI paper, digital CTS technology offers the possibility of a much more efficient means of use of the spectrum by sharing the NFAP2011 allocated 20MHz band between all residential & enterprise users all over the country, for their private non-commercial inter-communication needs on a de-licensed de-regulated basis. Different systems of the same CTS technology or different CTS technologies obeying the mandatory co-existence radio etiquette can be easily co-located with no radio planning etc and will coexist very well due to the inherent instant dynamic channel selection procedures.

Thus a mere 20MHz de-licensed spectrum is able to serve the total national requirements of non-commercial residential & enterprise inter-communication needs, which in any case is in the band gap between cellular bands and is of no obvious use to them.

### **3.4 Whether de-licensing of the spectrum for digital CTS applications will be the right path?**

*Mobile Service Providers comments:*

- A) CTS as unlicensed service would create non-level playing field with existing services. There will be no license fee to Govt.*
- B) Delicensing could lead to some operators providing WLL service using the unlicensed spectrum.*
- C) It will lead to back door entry of unlicensed in-building solutions such multi-storied buildings/ stations/ apartment complexes/ airports.*
- D) Allocation of free spectrum will go waste as there is not much demand. It is better to auction the spectrum. Existing WiFi based PABXs and cordless phones is satisfying the requirement.*



- E) *Once auction route has been established for all spectrum, giving it for de-license would not be correct and will not lead to transparency of allocation and technology neutrality.*
- F) *UASL license granted to the mobile service providers covers the home/establishment space within the SDCA*

**DFI COUNTER RESPONSE TO POINTS ABOVE:**

From our reading of the Consultation Paper, it is about private space non-commercial in-house application of digital CTS technology in homes & establishments. It is not about offering any commercial “telecom service” as made out in some of the responses by the mobile service providers. Inter-communication within the private space cannot be classified under “public telecom service”. The existing use of Intercoms/ PABXs/ Plan Instruments/ Analog Cordless Phones & digital WiFi cordless phones all used for private space inter-communications are not categorized as “public telecom service”. The concept of “public service” applies to a commercial telecom service and hence the need for auction of spectrum.

Therefore there is no such issue of creation of level playing field between a licensed telecom public mobile service and non-commercial inter-communication within private space. There is no competition between them.

Their fear that the de-licensed digital CTS band could be misused to provide public services in multi-apartment buildings etc can be addressed by clearly specifying that the de-licensing of the band is only for the purpose of non-commercial use in private space and not for any public telecom service.

Their proposal for sale/auction and licensing of spectrum is applicable for licensed commercial services just as much as an auction may be applicable to a commercial copper mine, another scarce resource. When spectrum is used on a non-commercial basis on a co-existence principle by general public auction cannot be made applicable as it is not possible to auction the spectrum to the general public just as much as water, another scarce resource used by all, cannot be auctioned. It has also not been made applicable in earlier cases of de-licensing and free public availability of analog CTS band and the ISM band for 2.4 & 5.8MHz digital cordless.

Furthermore, the 1880-1900MHz band needs to be de-licensed and harmonized with the rest of the world. Globally, this band is a necessary band gap between two cellular bands. It cannot be used for cellular mobile services(2G/3G/4G etc) and shall remain unutilized if it is not used for low power in-building CTS applications. If it is not de-licensed, there will be no takers for the spectrum as technologies available in the world that use this band are digital cordless technologies which globally work in a de-licensed regime.

Their view that the UASL license granted to them gives them the exclusive right to provide limited mobility services within the SDCA area *including privately held spaces and residences* is an incorrect interpretation of the license. If that were so no residential or



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enterprise user could use WiFi/ PABX/Intercom or any other means of inter-communications within the private space. Commercial telecom license is valid only for public space within the SDCA or any other defined area.

Issue regarding Govt. revenue loss is dealt with under para 3.7

### **3.5 Do you agree that the 1880-1900 or 1910-1920 MHz band (TDD Mode) be allocated for digital CTS applications? If yes, what should be the limits of emitted power (EIRP), power flux density (pfd), antenna gain etc?**

*Mobile Service Providers comments:*

*A) Internationally, the 1900 MHz band has been identified for IMT and IMT-Advanced for public telecommunication services. The same has also been acknowledged by TRAI in its Consultation Paper on "IMT - Advanced Mobile Wireless Broadband Services" dated 19th Aug. 2011 as referred below:*

*a. "In Regions 1 and 3, the bands 1885-1980 MHz, 2010-2025 MHz and 2110-2170 MHz and in Region 2, the bands 1885-1980 MHz and 2110-2160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications-2000 (IMT-2000).*

*B) As the band lies within the IMT band should be used by cellular technology providers.*

### **DFI COUNTER RESPONSE TO POINTS ABOVE:**

The fact that 1885-1980MHz band is allocated for IMT2000 approved technologies has been acknowledged by TRAI. This applies to public services, but not limited to public services. This band has been identified by ITU for all IMT-2000 family member technologies.

As mentioned in earlier comments and known to TRAI, DECT is a IMT-2000 family member denoted ITU IMT-2000 TDMA/FDMA (DECT). It is the only IMT-2000 technology that provides coexistence of uncoordinated system installations on a common spectrum allocation.

Being an IMT-2000 technology DECT allocations all over the world are within the identified IMT-2000 band (specifically within 1800-1930 MHz, depending on Region).

Furthermore, these DECT allocations are in unused guard bands between cellular up-links and down-links

That the 1900 MHz has been identified as an IMT-2000 band amplifies the reason for allocation for DECT in this band, rather than objecting as some mobile service providers are doing.

In fact DECT is the only digital cordless technology which is part of the IMT2000. Therefore the coexistence etiquette for the already allocated 1880-1900MHz band should be specified such that the DECT technology fits into the etiquette. Examples of such definitions have been given by DECT Forum in their response to TRAI paper.





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The 1880-1900MHz band(TDD mode) is already allocated for digital CTS. If in future there is more demand for digital CTS then 1910-1920 MHz band(TDD mode) could also be allocated.

Terminal power (conducted): 250 mW (24 dBm)

Antenna gain: < 12 dBi.

(This specification is taken from the European Harmonized Standard ETSI EN 301 406.)

The antenna gain of 12 dBi is used in Europe and many other countries. In some countries other values are used. e.g. in the US 3 dBi is used. In the ITU specification of DECT ITU IMT-2000 TDMA/FDMA (DECT), 4 dBi is specified.

DECT residential and enterprise systems are installed and used indoors. This is basically a non line of sight, NLOS, environment. In dispersive NLOS environments it is in principle the total power of all reflections, rather than the emission in a specific direction, that decides which power reaches the other end point. Thus the range as well as interference estimates will basically be dependent on the totally emitted power (the conducted terminal power), and rather independent of the shape of the antenna pattern.

### **3.6 Do you see any coexistence issues between existing cellular systems using adjacent band with low power CTS allocations in 1880-1900 or 1910-1920 MHz band?**

*Mobile Service Providers comments:*

*A) Will lead to Interference with adjacent 2G&3G bands*

*B) Some of the CTS operators may increase power level in an unlicensed band without knowledge and cause problems to adjacent bands.*

#### **DFI COUNTER RESPONSE TO POINTS ABOVE:**

Thousands of DECT systems are already working in countries where extensive cellular networks exist with no apparent problems. DECT is the only IMT2000 approved digital cordless technology. Technical reasons as to why interference does not take place due to these systems have been stated at length in the DECT Forum counter response. The TRAI Consultation Paper under para 2.8.3 .also lists a large number of studies done on this subject which make it very clear that there is no interference into the adjacent cellular band due to DECT. Please see our response to point 3.5 regarding limiting the antenna gain to lower levels than those prevalent in Europe to further ensure no interference.

There are no CTS 'operators' with ability to modify power levels of digital CTS. Digital CTS equipment is bought off the shelf in standard configuration.

### **3.7 Whether the de-licensing of either 1880-1900 MHz or 1910-1920MHz band for low power CTS applications will result in loss of revenue to the government?**

*Mobile Service Providers comments:*

*A) Yes. By not auctioning the band the Govt. shall loose huge amount of revenue.*

*B) The band could instead be auctioned for cellular services.*

- C) *Unlicensed home / enterprise use will lead to revenue loss to the Cellular Operators due to loss of traffic and therefore revenue earnings of the Govt. will also come down.*

**DFI COUNTER RESPONSE TO POINTS ABOVE:**

The question of loss of revenue does not arise. CTS is a private space non-commercial application concept based on a de-licensed band as in the case of Wi-Fi bands and the earlier analog CTS band-46/49Mhz. It is adding revenue to the exchequer in terms of duties and taxes. It also enhances employment and revenue generation through manufacturing & R&D. As indicated in BSNL response to the TRAI Consultation Paper, increased use of digital CTS will stem the decline of around 30million existing land lines, increase ARPU on them and thus bring value to the huge sunk cost and revenue earnings to the Govt. through increased earnings of BSNL. Once landlines become popular again consumers will also go in for broad band, which is a Govt. initiative for e-governance, e-health, e-education. This itself will be the biggest gain for the Nation as we are far behind in broadband penetration.

Globally DECT is used as a digital CTS in the de-licensed part of the guard band between cellular up-links and down-links such as the presently allocated 1880-1900MHz band. These guard bands are very difficult to use for public cellular systems. Using them for low power state of the art CTS is to the benefit of the general Indian public and will cause indirect revenues to the Indian society. At present the 1880-1900MHz band is totally under utilized and will remain so unless it is de-licensed for general public digital CTS use

**3.8 Will there be any potential security threat using CTS? If yes, how to address the same.**

*Mobile Service Providers comments:*

- A) *The mandatory requirements like subscriber verification and lawful interception & monitoring that are imposed on licensed telecom service providers would be a challenge in case of such services offered on unlicensed band without license.*

**DFI COUNTER RESPONSE TO POINTS ABOVE:**

As indicated by all mobile service operators, they provide the desired security cover over inter-communications needs of private space by use of CUG/pico cell based cellular technologies. In their case the user/customer of the service lacks the ability of security & administrative control over the service provided to him. One of the major reasons for the success of the digital CTS technology for providing mobility within private space for non-commercial inter-communications(speech, data, control functions) is the security and administrative control it provides the user over the equipment/system. Calls made/received from the private space network into the National telecom network are already covered under the landline operators security protocol compliance.

Even in case of CUG, internal calls of users can be monitored, whereas in CTS it is not so.

**3.9 Amongst the various options of digital technologies available to meet the cordless telephony requirements, either spectrum allocation can be considered according to technology or the etiquettes/ specifications can be defined for the de-licensed spectrum band. What method of allocation of spectrum for digital CTS applications should be adopted?**

*Mobile Service Providers comments:*

- A) *When technology neutrality is being suggested by NFAP and draft NTP2011 why are we then considering a particular technology DECT.*
- B) *Enough etiquette parameters may be provided to ensure non interference into adjacent cellular bands.*

**DFI COUNTER RESPONSE TO POINTS ABOVE:**

The TRAI Consultation paper is about digital CTS technology and is technology neutral. DECT is *one* of the many successful digital CTS technologies. The Cellular Operators are wrongly presuming that the TRAI consultation paper is about a specific technology – viz DECT. All CTS technologies using the proposed 1880-1900MHz band are required to abide by minimum radio etiquette parameter as proposed under para 3.9 of the Consultation paper. This radio etiquette is mandated in US, Canada, Mexico and so many other countries which also obey technology neutrality for de-licensed CTS bands. DFI is not suggesting any deviation from the policy of technology neutrality for India.

For a de-licensed band, the main issue is to provide for coexistence within the band for uncoordinated installations of different technology systems, since no single operator is there to coordinate and plan. To provide this coexistence property for uncoordinated installations, all technologies using the common spectrum have to obey some common rules of conduct i.e. obey an etiquette of conduct. This etiquette is different from the best effort data services (WiFi on the 2,4 GHz and 5 GHz bands) and is required for high quality real time functioning proposed for digital CTS and required for residential/enterprise use. The etiquette permits use of the de-licensed spectrum by every technology having the coexistence properties mandated by the etiquette.

**3.10 Any other points.**

*Mobile Service Providers comments:*

- A) *DECT technology is obsolete..*

**DFI COUNTER RESPONSE TO POINTS ABOVE:**

There seems to be a general belief in mobile service providers that DECT technology is obsolete and is not preferred globally, its market is coming down even in Europe and there are very few takers for the technology. This belief is not based on facts. Their observation that local city based mobility systems such as Fido which were deployed earlier had used DECT and were a failure, is not appropriate here as Fido was a city based public service and not for residential / enterprise private space inter-communication which is being considered here. The figures shown above demonstrate the success of the technology



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during the last few years. It would be pertinent to add here that US introduced DECT systems into its CTS band only in 2005 and since then it has been a tremendous success. Japan, despite having PHS for so many years, has opted for DECT in 2010. In fact DECT is the only IMT2000 approved technology for digital cordless phones. Further developments are taking place in the DECT standards and the new CATiq Standards shall further enhance the speech performance to HD-voice and achieve higher data rates for broadband/internet applications.

The mobile service provider's responses show a lack of understanding of the concepts used in DECT for sharing of a common spectrum resource using the technique of dynamic lowest noise channel/timeslot allocation and its re-use by other nearby systems where the noise level on the same channel/timeslot is found to be least. This leads to the most efficient use of the spectrum. In fact DECT systems can cater to a traffic of 9000 erlangs/sq. km. with base units placed at a distance of 25m each.

Thanking you,

(SS Motial)  
Chairman,  
DECT Forum India

From: DECT Forum India <[info@dectforumindia.in](mailto:info@dectforumindia.in)>  
Date: Monday, February 20, 2012 5:47 pm  
Subject: Counter Comments on TRAI Consultation Paper No. 9/2011  
To: [pradvmn@traigov.in](mailto:pradvmn@traigov.in)

Dear Sir,

With reference to our mail dated 18 February 2012 on the subject, kindly find minor correction in Para 3.8 :

### **EXISTING**

**3.8 Will there be any potential security threat using CTS ? If yes, how to address the same.**

*Mobile Service Providers comments:*

*A) The mandatory requirements like subscriber verification and lawful interception & monitoring that are imposed on licensed telecom service providers would be a challenge in case of such services offered on unlicensed band without license.*

### **DFI COUNTER RESPONSE TO POINTS ABOVE:**

> As indicated by all mobile service operators, they provide the desired security cover over inter-communications needs of private space by use of CUG/pico cell based cellular technologies. In their case the user/customer of the service lacks the ability of security & administrative control over the service provided to him. One of the major reasons for the success of the digital CTS technology for providing mobility within private space for non-commercial inter-communications (speech, data, control functions) is the security and administrative control it provides the user over the equipment/system. Calls made/received from the private space network into the National telecom network are already covered under the landline operators security protocol compliance.

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> In case of CUG, internal calls of users can be monitored, whereas in CTS it is not so. **Moreover a large number of such devices are already in use within the country and till date no security related issues have come up.**

With Warm Regards

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