24 November 2000

Mr. Paul Neville, MP
Chair, The House of Representatives
Standing on Communications, Transport and the Arts
Parliament House,
Canberra, ACT 2600

Dear Mr. Paul Neville

I refer to the establishment of your Committee inquiring into the adequacy of radio services in regional and rural Australia. I am enclosing a copy of our Submission, which puts focus on the importance of recognition of Digital Radio Broadcasting (DRB) including Satellite Radio direct to personal portable receivers in seeking to address the growing digital divide between the cities and the bush.

To date satellite has played a significant role in extending television to rural and remote communities, via the Homestead & Community Broadcasting Satellite Service (HACBS) which started up in the early 1980's. Without such a satellite based service people residing in large parts of Australia (on and off the mainland) would never have been able to access basic broadcasting including a few radio channels. The shortcomings of HACBS have always been that it could not deliver services to personal portable or mobile receivers and terminals.

The more recent development of Digital Radio Technology and advances in satellite technology have opened the way for the benefits of Radio, namely portability, low cost receiving devices and choice of relevant content available to all Australians regardless of where they live. This has been amply demonstrated by the introduction of the WorldSpace system, the imminent introduction of Satellite DRB in the USA, the advanced plans for satellite DRB in Europe and Japan and now the decision of China to enter into joint venture partnerships with WorldSpace for satellite DRB to ensure advanced digital services can be made available to the whole of China.

One issue that needs further clarification is that of localism. Satellite DRB by definition can offer a multitude of services of all types including quality sound (radio) broadcasting, multimedia, text file, data, graphics and image transfer, etc., and in this sense each program stream can be delivered to particular sections of the population. Clearly these sections of the population could be communities defined in terms of geographic proximity and thus in this sense it can offer "local" programming streams in the conventional sense. However in the case of non-metropolitan regional and remote areas it makes more sense to speak of "community of interest" as the context for localism, rather than the close geographic proximity given the population densities that are typical of rural and remote parts of our country.

Satellite delivery is ideally suited to services to a varied group of "community interests" that cover wide geographic areas, as for example uses for TAFE, Farming and Agricultural interests that spread over areas beyond the smaller areas of the normal terrestrial stations.

./2.

Apart from service deliveries to rural and remote centres, the satellite is now seen as a viable alternative for the primary means of DRB service access in urban areas because of the terrestrial reinforcement technology that is now accepted as part of the basic satellite system standards.

From the Submission it is worth noting that the cost of the only terrestrial DRB receiver system currently available i.e. EU 147 has remained very high, despite the system being available commercially for more than 5 years. Indeed the most basic receiver costs consumers more than $US 600. Prices are not falling, as expected, due partly to lack of market penetration and failure to reach critical mass required for low cost large volume manufacture of receivers.

In contrast the WorldSpace receivers came to market in late 1998 at around US$ 250 and price reductions with volume and new manufacturing are dropping to some US $120 -150. A major stimulus is in hand for further consumer price reductions in 2001. This will be due not just because of the USA mass market but outcomes of the WorldSpace actions coming on stream with manufacturing extending from Japan to new suppliers and manufacturing in China, India, Thailand and others described in the Submission for the access to the WorldSpace system.

Further there is now a tendency for migration to digital broadcasting to evolve in the AM and FM bands, leaving spectrum for L Band satellite uses. This will occur by the so-called "in-band" or IBOC specifications. Although such migration would offer some improvements there would be practical limitations for quality and scope in comparison with L band service offerings.

Thus it is noteworthy that even Europe (the source of E U 147 specifications) is orienting back to put in place satellite DRB (L band). Further countries such as USA and China, India, Indonesia, Malaysia and even Mexico, with special rural situations have all initiated and reserved spectrum for satellite DRB. In the case of China and Indonesia among others, L band licences have been put in place and for agreed JV Partnering with WorldSpace, as described in the Submission.

Thus we consider in following up earlier feasibility studies, that it is important that Australia maintain the reservation of L band spectrum for satellite, as notified for the Australian DBStar concept updated by the ACA with the ITU in 1999. This spectrum deployment would provide the only way to assure equality of access opportunities for all Australians.

Finally may I invite you and your Committee to visit the AsiaSpace Headquarters and Regional Operating Centre at SouthBank, Melbourne to listen to real time quality DRB programs and observe some of the multimedia offerings off the satellite streams direct to the PC monitors.

We will be pleased to supply any additional material because like others we do have deep concern at the digital divide in our community. We believe that this issue must be seriously addressed now with wise policy formulations, taking full recognition of the technology and service options that we have described above and in the Submission.
Yours sincerely

Richard E Butler AM

ASIASPACE

Submission to

RADIO INDUSTRY INQUIRY

Adequacy of Radio Services in non-metropolitan Australia

November 2000

Executive Summary

The AsiaSpace Ltd submission addresses the terms of reference identified in the Inquiry Media Release, and also other issues considered relevant including:

i. adequacy of existing radio services (Commercial, Government, Community)
ii. Government plans for introduction of DRB
iii. terrestrial and satellite delivery options
iv. Australian DBSTAR Satellite Filing and L band spectrum reservation
v. new services (multi-media, distance education, disaster warning)
vi. implementation (coverage, roll out time, costs)
vii. programme content

The main AsiaSpace submissions can be summarised as follows:

1. radio continues to be an important form of media for the general public, particularly for non-metropolitan Australia
2. the main trends in radio broadcasting of digitalisation and community focus offer the potential for employment in non-metropolitan areas for upgrading existing broadcasting infrastructure, and for the creation of new content, including local content
3. new technologies such as DRB, multi-media and satellite delivery offer the potential to provide enhanced and localised services in regional and rural areas of Australia, enhancing connection and opportunities for knowledge augmentation between all Australians
4. it is important to preserve the DBSTAR satellite filing to take advantage of the benefits of satellite DRB, particularly for non-metropolitan Australia
5. the timetable for the introduction of DRB in metropolitan and non-metropolitan areas is not clear, and requires clarification by the Government
6. satellite delivery to non-metropolitan areas has the advantages of coverage to all of Australia and its territories, quicker implementation, and lower cost
7. The WorldSpace hybrid satellite/terrestrial technology can provide enhanced crystal clear spoken word and quality radio broadcasting and information and knowledge based services, including a variety of multi-media applications, which would provide entertainment, education, advisory services (e.g. health, agriculture & environment) and emergency information services direct to the general public via low cost portable and mobile personal receivers and terminals.
8. It is imperative spectrum be reserved for satellite DRB in Australia to ensure the benefits of digital radio broadcasting can be extended to all Australians regardless of where they live.
9. Only if satellite technology is embraced can the **"digital divide"** between the metropolitan and non-metropolitan areas be addressed for personal portable radio and ancillary services. Equally it can open up new quality markets for localised or wide area community groups, regional and nationwide - with also an inherent feature of individual receiver addressability - thus providing a high degree of local complementarity with smaller terrestrial service area coverage transmissions.

It is worth noting that currently the technology exists that allows the benefits of DRB to be extended to all Australian regardless of where they live in a practical and economic manner. This possibility can only be realized via the application of satellites. Unless the satellite component of DRB is properly embraced the rapidly growing "digital divide" between the cities and the "bush" cannot be addressed adequately for the entire nation.

AsiaSpace is a satellite radio broadcasting facilities and service operator and currently operates the Australian notified satellite AsiaStar that is delivering digital radio broadcasting (DRB) and multi-media services to Asian countries and near by areas. The company is the Australian subsidiary of WorldSpace Corporation, a USA based global satellite DRB Operator.

For contact details for AsiaSpace refer to section 6. Practical demonstration of satellite radio and its quality options can be heard or multi media type services can be observed at our Melbourne regional operating centre.

Contents

1. Introduction

AsiaSpace has pleasure in submitting this contribution to the Radio Industry Inquiry into the adequacy of radio services in non-metropolitan Australia, announced in Media Release 115/00, 8 September 2000.

The contribution addresses the terms of reference identified in the Inquiry Media Release, and also other issues considered relevant.

AsiaSpace is a satellite radio broadcasting Operator and currently operates the Australian notified satellite AsiaStar (ITU name is ASIABSS) which is delivering digital radio broadcasting (DRB) and multi-media services to Asia-part Pacific countries, using direct to low cost personal portable radio receivers. The company is the Australian subsidiary of WorldSpace Corporation, a USA based global satellite DRB Operator.

AsiaStar is the second satellite in the WorldSpace fleet. It was launched in March 2000, and entered into Service for use by public and related broadcasting on I July 2000. Its use already includes direct to public broadcasting and multimedia information type services. AfriStar was the first satellite launched and entered commercial service in October 1999 providing services to Africa, the Middle East, and adjoining areas. AmeriStar is the third satellite scheduled for launch in early 2001 to provide services to the Caribbean, Latin America, and adjoining areas. There are future plans to use co-located WorldSpace satellites to provide service to other regions, including Europe.

An important point to note is that not only are the existing two WorldSpace satellites providing the first direct to person DRB portable and other terminals but this technology has been delivered first to the underserved areas of the world. This is a unique historical recognition, coupled with the special international standards recognition that the WorldSpace Format and specifications are the preferred means for satellite delivery.

Private funding has provided the capital invested for the establishment of the WorldSpace infrastructure. It is operated as a commercial venture. No Government money has been involved. Revenue is derived from various sources including from some well- known international public broadcasters taking lease capacity under rental conditions, etc.

Further WorldSpace is associated with a US licensed company XMRadio. That Company will launch DRB satellite services in the USA in 2001. XMRadio will use the WorldSpace technical wave form and related specifications applied to the S band for associated royalties - bringing further spin off for mass market receivers and consumer price advantages - given both the strength and size of the US market and also the population size and service direct to vehicle markets. .

2. Important Issues

The terms of reference for the Inquiry identify a number of important issues concerning radio services in non-metropolitan Australia. These issues are discussed in section 5 of this submission.

AsiaSpace also considers that the Inquiry is an opportunity to consider other important related issues. The other important issues are:

i. adequacy of existing radio services (Commercial, Government, Community)
ii. Government plans for introduction of DRB
iii. terrestrial and satellite delivery options

iv. Australian DBSTAR Satellite Filing
v. reservation of spectrum for satellite DRB
vi. new services (multi-media, distance education, disaster warning and information services which were not feasible with existing analogue AM and FM broadcasting) via transmission direct to low cost personal/portable reception devices
vii. implementation (coverage, roll out time, costs)
viii. programme content

In addressing the issue of radio broadcasting to non-metropolitan Australia, AsiaSpace has focussed the attention of its contribution on regional, rural and remote areas, including Australian offshore territories.

Being a provider of satellite broadcasting infrastructure, AsiaSpace has structured its submission to focus on how the new technologies of satellite and DRB can serve the interests of non-metropolitan Australia.

2.1 Adequacy of existing radio services

Existing commercial, government and community radio broadcasting services provide good coverage and quality to metropolitan areas of Australia. The coverage to non-metropolitan areas, to rural and remote areas in particular, is not well served by commercial broadcasting services. Government and community radio broadcasters provide coverage to regional, rural and remote areas, but the service does not cover all of Australia and its territories. The technical quality and range of programmes are inferior to that available in metropolitan areas.

2.2 Government plans for introduction of DRB

As the trend for new broadcasting infrastructure is to digital (refer sect. 3.2) this Inquiry needs to consider the timing and technology to be recommended for introducing DRB in Australia.

DCITA established a Digital Radio Advisory Committee (DRAC) in August 1995 [1]. The DRAC final report containing recommendations for the introduction of DRB was released in August 1997 [2].

DCITA established a DRB Planning and Steering Committee (DRB-PSC) to advise it on planning the introduction of DRB in Australia in 2001. This Committee established a Digital Radio Technical Working Group (DRTWG) to advise it on technical matters.

As the work of DRB-PSC appears to be suspended, the current timetable for the introduction of DRB in metropolitan and non-metropolitan areas is not clear, and requires clarification as this timing may influence the recommendations of this Inquiry.

2.3 Terrestrial and Satellite delivery options

The DRB-PSC is considering both traditional terrestrial and the newer satellite delivery options [3].

It is expected that terrestrial DRB networks will be implemented first in urban and metropolitan areas of Australia. However, the availability of a suitable satellite and low cost receivers could make it possible to also provide services to non-metropolitan areas.

In non-metropolitan areas the expansion of terrestrial radio services is limited by cost. It is generally recognised that satellite delivery has significant advantages for non-metropolitan areas. The main advantages of satellite compared to terrestrial delivery for non-metropolitan areas are:

i. coverage to all of Australia and its territories
ii. quicker implementation
iii. lower cost

In the past it has been considered that satellite delivery for a large country like Australia may have problems providing local services. However, this is not a problem for DRB satellites that can provide a large number of channels within a beam (e.g. 96x 32 kb/s channels for WorldSpace), which can be used to provide local channels throughout Australia and its territories.

2.4 DBSTAR Satellite Filing

Australia has advance notified the DBSTAR DRB satellite to the ITU-R, to reserve an orbit position for a possible satellite to provide services to Australia.

AsiaSpace has been advised that DCITA plans to call for expressions of interest to determine industry interest in commercialising this satellite filing. AsiaSpace strongly supports this approach as a practical way of progressing the decision making process related to the use of the L band DRB spectrum in a transparent and open manner.

AsiaSpace considers that it is important to preserve the DBSTAR filing and to reserve L Band spectrum so as to ensure that the advantages and benefits of satellite DRB, can be delivered --particularly for the non-metropolitan parts of Australia where equivalent choice by means of terrestrial DRB systems can never be economically delivered. In fact with the present **Divide** between city and country in the Australian community and its social, economic, cultural and political consequences it would seem paramount (and indeed incumbent) upon the political and policy powers to take all practical actions and opportunities to address that **Divide**.

AsiaSpace has conducted a feasibility study of using DBSTAR to provide satellite DRB services to Australia and part South Pacific, taking into account inter-alia the proven economic advantages derived in acknowledging shared use of an appropriate multi-beam satellite system [4].

2.5 New services

The Inquiry needs to consider the potential benefits of the new services that can be provided by DRB, particularly for non-metropolitan areas. Some examples of new services using DRB are:

i. datacasting (voice, data, text, graphics and images)
ii. multilingual services
iii. distance education using multi-media
iv. hazard, and disaster warning
v. health, agriculture, environmental and other advisory services
vi. internet services (either one-way, or both-way using the PSTN for the backward channel)

3. Terms of Reference

In the following sections each of the terms of reference identified by DOCITA are discussed.

3.1 Social Benefits and Influence on the General Public

Radio continues to be an important form of media for the general public, and continues to have a significant influence on the general public. Factors in this importance are that radio has traditionally provided immediate, reliable, wide coverage, and low cost mass communication. This is particularly so for non-metropolitan communities who are not as well served by other media (TV and newspapers) as metropolitan communities. It is interesting to note that (except at particular evening peak period) radio listening far exceeds television viewing. Ubiquitous portable radio receivers and terminals are not confined to the home and residential television viewing room(s). Radio associated with satellite TV like for example in the HACBS to outback Australia does not have the capacity for direct personal portable receivers like -even hand held - as the WorldSpace type DRB direct to person receivers performs.

3.2 Future trends

The main trends in radio broadcasting are considered to be:

i. digitalisation
ii. programme associated data, including multi-media
iii. multiplicity of services
iv. divergence of focus including community/local content on the one hand and national/regional services on the other.

In the latter context it is worth noting that while the terrestrial DRB developments are focussing on a migration of existing analog services to digital it is only satellite L Band DRB that can bring a range of new services to large geographic areas in a reasonable time-frame.

This advantage of satellite over terrestrial DRB has been widely recognized in the USA where satellite DRB has been approved and licensed (2 operators) and also in Japan & Europe where plans are well advanced with spectrum reserved for satellite DRB. Also large area countries like India and Indonesia and even Mexico have initiated action for spectrum notification and reservation for satellite orbit and spectrum use.

It is also worth noting that satellite pioneering WorldSpace DRB service is now gaining international acceptance with rapidly falling receiver costs and volume receiver sales. The same is expected in USA later this year for the domestic satellite DRB services and also in Europe and Japan once services are launched there in the next few years.

Further China has entered into Partnership with WorldSpace and AsiaSpace for the use of the WorldSpace Technology. After very detailed analysis, including of various demands China has not just reserved L Band spectrum use for DRB but has decided to go the Satellite L band route, because it is the only way they can serve the whole population.

The China satellite entity will partner WorldSpace / AsiaSpace in regard to the NorthEast Beam (North and East Asia) of AsiaStar to serve the rural, remote and other Chinese communities. Partnership agreement has been concluded for technology transfer with receiver and terminal manufacture to commence in China early in 2001- Thus leading to an additional major boost to low cost receiver availability for consumers.

These trends suggest that in the coming years satellite DRB for Australia will also become a viable commercial proposition. This will then offer the potential for the expansion of the domestic satellite and broadcasting industry leading to increased information affluence, and employment in non-metropolitan areas, to the upgrading of existing broadcasting infrastructure, and for the creation of new content, including local and community related content.

The economic benefit of shared satellite infrastructure use enabling individual beams to different markets has now been accepted as a viable solution for the introduction of DRB at a Regional and Subregional levels. This trend was recognized on the updated ITU filing for DBSTAR submitted by the ACA in 1999. The adoption of such an approach would serve to accelerate the introduction of DRB in Australia for all Australians and in particular for those in the rural and remote areas.

3.3 Effect on Individuals, families and Small Businesses

Further to the comments made under sect. 3.1.DBStar application would lead to opportunities of orientation of enhanced information flows for localised or community interest groups over wider geographical area either in open over the air or in closed user groups to the particular addressees - such as for improved education and advisories, e.g. TAFE, Agricultural and Farming community interests.

The benefits of crystal clear radio reception with affordable quality sound to FM and even CD quality to individual hand held units could not be overstressed. Likewise the availability of the related and ancillary services providing direct connection to PCs and other devices must bring intrinsic social wellbeing and information affluence values.

An interesting feature of the WorldSpace reception capabilities is the capacity with low cost accessories for on the one hand, direct connect to individual high fi sets of individuals and families, or on the other, a PC card connector to PCs. In fact already services are operating with a simple exterior (yagi) antenna for direct connection to a PC.

Thus individual people and families will have the chance of sharing the same life qualities with quality radio as their fellow citizens elsewhere within Australia and certainly at reception devices much cheaper than the presently envisaged indications for L band terrestrial DRB standards.

It should be noted that the cost of the only terrestrial DRB receiver system currently available, namely Eureka 147 has remained very high, despite the system specifications being available commercially for more than 5 years. The most basic receiver now still costs more than $US 600. Their prices are not falling. This is due simply to lack of penetration in the market and the failure of the system to reach the critical mass required for low cost large production volumes.

By contrast the first production runs of WorldSpace DRB receivers came to the market at some US$ 250 in 1998 and have been reducing. With additional manufacturing suppliers, prices will be further dropping to US$ 120 -150 in the next few months. This is a reflection of the much faster take up of satellite DRB and higher production volumes. Further the situation will improve even further when the USA domestic satellite systems come on stream for commercial operation early next year.

There will be further stimulus to price reductions as manufacturing in China, India, Korea and Thailand as present Joint Venture Partners of WorldSpace go to market. -Some to commence mass production in early 2001. Yet to be finally concluded is Indonesia where there is a WorldSpace JV Operating L Band operating licence. Also Malaysia declared to the ITU that its territory was in the service area of AsiaStar. It then granted a licence to a Malaysian company interest and venture arrangements with import and manufacturing considerations are advancing in association with the National Corridor (Electronics, Multimedia and IT Technologies) Project for Industrial Growth.

Further by the end of 2001 we expect more than 1 million WorldSpace units will be in service and prices will continue to fall faster from then onwards.

All of the forgoing will be of flow on values not just for individuals and families but also for small business and farming groups with enlarged geographic areas /zones of reach not available at affordable costs with present technologies.

3.4 Potential for new technologies

DRB is the recognised new technology for radio broadcasting. New satellite DRB technology offers the potential to provide affordable enhanced and localised services in regional and rural areas of Australia.

Satellite delivery has the potential to provide universal service coverage to Australia and its territories, which has long been a goal of national broadcasting policy.

WorldSpace has recently developed a hybrid satellite/terrestrial DRB system. Based on successful tests of the system in 2000 the ITU-R has recognised the system as Digital System D_H in Recommendation BO.1130. With these enhancements satellite DRB can draw on the commercial benefits of extending the basic service to urban areas where mobile reception is a key requirement while still maintaining the potential for low cost mass market consumer receivers and affordable pricing of such receivers and terminals for enhanced services.

4. AsiaSpace Capability

For the information of the Inquiry, information is provided in Annex 1 on the WorldSpace hybrid satellite/terrestrial technology to provide satellite DRB services to the whole of Australia and its territories, including enhanced digital services such as multi-media and, provision for regional and associated community interest channels.

5. Summary of main AsiaSpace submissions

The main AsiaSpace submissions can be summarised as follows:

10. radio continues to be an important form of media for the general public, particularly for non-metropolitan Australia
11. the main trends in radio broadcasting of digitalisation and community focus offer the potential for employment in non-metropolitan areas for upgrading existing broadcasting infrastructure, and for the creation of new content, including local content
12. new technologies such as DRB, multi-media and hybrid satellite/terrestrial delivery offer the potential to provide affordable enhanced and localised services in regional and rural areas of Australia
13. it is important to preserve the DBSTAR satellite filing to take advantage of the benefits of satellite DRB, particularly for non-metropolitan Australia
14. The timetable for the introduction of DRB in metropolitan and non-metropolitan areas is not clear, and requires clarification by the Government.
15. satellite delivery to non-metropolitan areas has the advantages of coverage to all of Australia and its territories, quicker implementation, and lower cost
16. the WorldSpace hybrid satellite/terrestrial technology can provide enhanced services, including multi-media services, which can provide entertainment, education, and emergency information services to non-metropolitan areas
17. **It is imperative spectrum be reserved for satellite DRB in Australia to ensure the benefits of digital radio broadcasting can be extended to all Australians regardless of where they live.**
18. **Only if satellite technology is embraced can the "digital divide" between the metropolitan and non-metropolitan areas be addressed for personal portable radio and ancillary services. Equally it can open up new quality markets for localised or wide area community groups, regional and nationwide - with also an inherent feature of individual receiver addressability - thus providing a high degree of local complementarity with smaller terrestrial service area coverage transmissions.**

6. AsiaSpace Contact Information

For any clarification, or additional information, please contact:

AsiaSpace Ltd.
Level 5, 6 Riverside Quay
South Bank, Melbourne
Victoria, 3006
Attn: Mr. Les Davey, Vice President - Regulatory

ph: 03 9693 8403 fax: 03 9693 8535 email: ldavey@worldspace.com

References

[1] "A discussion paper on Digital Radio Broadcasting in Australia", Digital Radio Advisory Committee, September 1996

[2] "Digital Radio Broadcasting in Australia", Digital Radio Advisory Committee, August 1997

[3] Discussion paper from the Digital Radio Technical Working Group to DCITA DRB Planning & Steering Committee, 1999

[4] AsiaSpace Confidential Report on commercial feasibility of using DBSTAR filing to provide satellite DRB services to Australia & part-Pacific, March 1998

Annex 1: WorldSpace Satellite DRB Capability

Significant characteristics and benefits of WorldSpace satellite DRB services include the following:

Broadcast reception

- The basic digital receiver enables broadcast reception across a quality range from mono-aural through to CD level (depending on the transmission bit rate). Reception is free of interference anywhere within the coverage area, subject only to line of sight requirement. Services are far less affected by atmospheric disturbances than are terrestrial services, and are dependable in all seasons and hazard conditions.
- The basic receiver enables reception of text messages for LCD display (the limit of text capacity similar to most pagers), and can respond to remote alarm activation for urgent, priority or other messaging categories.
- Being addressable, the basic receiver also enables reception of private or specifically directed voice, audio or text communications, hence can be used for datacasting within subscriber boundaries or other closed user or group environments, e.g. list-served audio, data and multimedia.
- In addition to WorldSpace digital satellite broadcast services, the basic receiver is also capable of receiving terrestrial AM, FM and short-wave services.
- The basic receiver is equipped with audio and data ports and can be linked with other equipment to provide enhanced reception and proceeding capability, such as:
    - Sound equipment (audio), including stereo hi-fi equipment, recording and /or re-transmission equipment, producing quality levels up to near-CD level (depending on satellite transmission bit rate)
    - Digital equipment, including PC or other computing equipment, capable of processing and storing broadcast digital information streams of voice, data, fax, images, multimedia material, Internet data and file transfers.

- The basic receiver can be used as a portable receiver subject to line-of-sight requirements.
- Reception, both indoor and outdoor, can be improved by use of an external antenna.
- A WorldSpace satellite receiver/PC combination may be used as a high-speed delivery pipe as part of a satellite Internet system (see further comments below).

Broadcast Origination

- Service providers can reach listeners who are not capable of being reached by existing terrestrial broadcasting services, including AM, FM and short-wave.
- Satellite-based broadcasts can cover large areas at low cost (up to 14 million sq kms per beam) – significantly larger than any terrestrially delivered broadcast signal. Digital reception across the total coverage areas is also all weather and interference-free.
- The service provider may include datacast service offerings (voice, data and images).

- Addressable receivers enable a wide variety of directed and subscriber-based audio and datacast services.
- Remote activation of digital receiving equipment enables addressed datacast and data transfer applications in unattended or standby modes.
- Combining a number of basic channels (16kbps) enables the service provider to transmit at higher speeds which, when coupled with streaming technologies, permit a wide range of multimedia applications.
- Combining a number of basic channels enables a ISP to deliver one-way high-speed Internet PC-users who otherwise may be restricted to slower telephone modem rates (e.g. A very slow 9.6 kbps telephone back-channel could initiate Internet downloads at speeds up to 128 kbps).

The following briefly outlines the range and types of possible satellite digital broadcasting and datacasting services.

Sound broadcasting (with or without ancillary data)

Open (free to air)

Commercial
General public
International, regional, national or intra-national

Closed (subscription)

Pay radio services
Narrowcasting

Data broadcasting

Electronic publishing

Data text graphic multicasting
Print multicasting
File-casting
News-casting

Messaging and paging
Marine weather and hazard datacasting