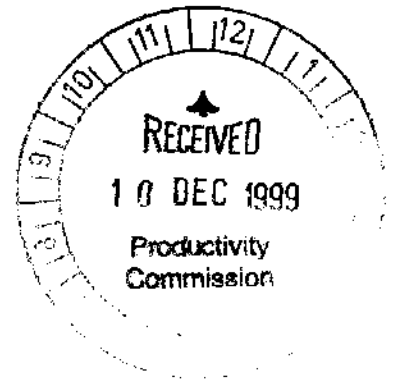


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Productivity Commission Public Inquiry into Broadcasting

Attention: Dr Julian Thomas

Fax: 02 9923 1166

Date: 8th December 1999

Dear Julian,

Apologies for the very late delivery of an overview of Philips discussion points for the Broadcasting Inquiry.

Very briefly (and not in specific order), Philips will discuss the following:

- Philips agrees with the PC Draft report; SDTV with MPEG audio is a TV application whilst HDTV (1920x1080i) with AC-3 multi-channel sound is a home theatre application
- Our position remains unchanged. SDTV is *best* option, whilst SD/HD simulcast is our second option
- Simulcast is possible; recent submission from NTL covered this subject well
- A 576i and 576p simulcast provides great pictures for all existing 16:9 picture tubes and room for datacasting
- HDTV (1920x1080i) very difficult & expensive for CRT (direct view) picture devices (1920 pixels x 0.7mm dot pitch = 1.5 m diag 16:9 CRT). Thus these display devices will down-convert the incoming 1080i picture to SD using methods such as:
 - Philips' Digital Natural Motion
 - Sony' Digital Reality Creation
 - 100 Hz Flicker Free Technology
 - or Line Doubling

These are new & existing technologies to enhance existing analogue TV pictures that can also be used for DTV.

- In a DTV environment, ALL direct view (CRT) receivers will be unable to display 1080i!
- SDTV picture resolution will be used for multi-programming and datacasting
- The world is embracing SD picture resolution: witness DVD and DVD recordable
- Singapore's (population approx 3.1 million) choices of DTV resolution has not been decided. Recent press release suggests they choose a SD profile
- China has NOT made a decision as to its DTV standard (at least 1 year away); a consultative committee has been formed to investigate the following:
 - Studio Group related to SD/HD and their display formats
 - Video Coding Group – related to MPEG2 coding
 - Audio Coding Group – related to MPEG or DVB audio
 - Channel Coding and Modulation group
 - Frequency Planning Group
- DVB-T HDTV set top boxes with firm pricing still don't exist.

INDUSTRY REPRESENTATIONS WELCOME AS SINGAPORE MOVES TO NEXT PHASE IN DIGITAL TELEVISION DEVELOPMENT

Singapore, 7 Dec 1999 - As Singapore gets ready to move on to commercial implementation of digital television (DTV) services, more industry involvement would give it added impetus for its further development.

This is the view of the National Digital Television (DTV) Committee*, an industry-led group formed in September 1999, to advise the Singapore Broadcasting Authority (SBA) on issues related to the development and early adoption of digital television services. Singapore has, since May 1999, adopted the European Digital Video Broadcasting (DVB) standard as its terrestrial digital television standard.

The National DTV Committee's Chairman, Mr Lee Cheek Yew, Chief Executive Officer of Television Corporation of Singapore (TCS) and Chairman of the Association of Broadcasters, Singapore (ABS), today announced the formation of three subcommittees to assist the main DTV Committee in spearheading the development of DTV in Singapore. Elaborating, Mr Lee said the three subcommittees - ***the Industry Development Subcommittee, the Transmission & Reception Subcommittee*** and ***the DTV Receivers Subcommittee*** - would look into the following areas :

- i) study and identify critical areas necessary for the development and growth of DTV services in Singapore;
- ii) study and recommend the best solutions for transmission and reception of DTV services; and
- iii) study and recommend specifications and standards necessary in order to have an open market and open access of DTV receivers.

The list of members in the National DTV Committee, Chairpersons of the subcommittees, is attached as Annex A and the scope of each subcommittee are attached as Annex B.

Mr Lee hopes that more industry players will come forward to actively contribute ideas at these subcommittees as Singapore maps its route and roll-out plans for DTV services in the new millennium. He said, "Whether you are a DTV receiver manufacturer, broadcaster, content developer or related technology service provider, we welcome you to join any of these subcommittees. This is especially if you share our vision of wanting to ensure that the type of DTV services that are eventually introduced here will serve the needs of the public and the industry alike."

Prof Er Meng Hwa, Chairman of the Transmission & Reception Subcommittee, highlighted that industry consultation should go beyond Singapore. He said, "The National DTV Committee recently appointed National Transcommunication Limited (NTL) to study the infrastructure requirements for implementing Digital Terrestrial Television (DTT) in Singapore. We can certainly learn and benefit from their experience in implementing DTV in UK."

Mr Harrie Tholen, Chairman of the Industry Development Subcommittee emphasised how DTV can offer radical improvements in the choice of programmes, picture and sound quality, portable and mobile reception and introduction of interactive applications. He added, "There is great potential for the industry in Singapore to develop innovative services for DTV in the areas of entertainment, information and e-commerce. As Singapore will be among the first countries to launch DTV, media organisations and technology providers have an opportunity to play a leading role in the Asian region. The Industry Development sub-committee looks forward to their participation to jumpstart this exciting new DTV era."

The needs of the public in being able to purchase DTV receivers easily off the shelf and convenience of usage are being addressed by the DTV Receivers Subcommittee, said its Chairman Mr Tay Joo Thong. "The public should not need to purchase different receivers to

receive programmes from different multiplex operators. They should be able to buy any receiver off the shelf to receive all DTV programmes," he said.

Those interested in signing up as members can register their interest by filling up the attached membership form at Annex C, or visit the SBA website at <http://www.sba.gov.sg>. For other details, interested parties may call Donald Ng at Tel: 373 0873.

**** The 15-member National DTV Committee was formed in September 1999 to advise SBA on the implementation and development of DTV and to encourage the industry to work together to facilitate early implementation of DTV in Singapore.***

Its members are drawn from the private and public sectors and include: Nokia Multimedia Terminals; Sony Corporation; Panasonic; Singapore Telecom; Philips Singapore; McCann Erickson; broadcasters Television Corporation of Singapore; Singapore Cable Vision; Discovery Asia; tertiary institutions like the Nanyang Technological University and; regulatory bodies and government agencies like SBA, Infocomm Development Authority of Singapore.

*Annex A***MEMBERS OF NATIONAL DTV COMMITTEE**

Mr Lee Cheek Yew	CEO Television Corporation of Singapore (TCS)	Chairman, Steering Committee
Prof Er Meng Hwa	Deputy President Nanyang Technological University	Chairman Transmission & Reception Subcommittee
Mr Tay Joo Thong	VP, Engineering, TCS	Chairman, DTV Receiver Subcommittee
Mr Harrie Tholen	GM, Asia-Pacific Philips Singapore	Chairman Industry Development Subcommittee
Mr Paul Chong	CEO, Multimedia Singapore Telecom	Member Steering Committee
Mr Ray A. Dempsey	MD McCann-Erickson (Singapore)	Member Steering Committee
Mr Kan Siew Ning	Director, Technology Directions & Standards, Infocomm Development Authority of Singapore (IDA)	Member Steering Committee
Ms Deborah Lee Kent	VP, Network Operations Discovery Asia, Inc	Member Steering Committee
Ms Ling Pek Ling	Director, Policy and Planning, Singapore Broadcasting Authority (SBA)	Member Steering Committee
Mr Takashi Nakamura	Deputy Senior GM (System and Platform) Sony Corporation (Japan)	Member Steering Committee
Mr Kimmo Paaso	VP, Asia-Pacific, Nokia Multimedia Terminals	Member Steering Committee
Mr Philip Tan	Senior VP, Operations Singapore Cable Vision	Member Steering Committee
Dr Yoshio Yasumoto	MD, Panasonic Singapore Labs	Member Steering Committee
Ms Valerie Cheng	Assistant Director, Radio and TV Policy, SBA	Secretary Steering Committee

DESCRIPTION AND SCOPE OF DTV SUBCOMMITTEES

Industry Development Subcommittee

Chair: Mr Harrie Tholen, GM, Asia Pacific, Philips Singapore Pte Ltd

Objective: To study and identify critical areas necessary for the development and growth of DTV services in Singapore.

The study would include:

- Measures to jump start the development of innovative services;
- Measures to attract companies to conduct their R&D for new services and applications in DTV in Singapore.
- Measures to attract and develop skills for DTV applications; and
- Measures to generate awareness of DTV's potential to companies.

Transmission & Reception Subcommittee

Chair: Prof Er Meng Hwa, Deputy President & Dean of School of Electrical and Electronics Engineering, Nanyang Technological University

Objective: To study and recommend the best possible solution for digital transmission and reception for the development of DTV services.

The study would include:

- Reception of DTV signals in Singapore;
- Suitable sites for Single Frequency Network (SFN) transmitters; and
- Recommendations for quality of service (QOS) standard for DTV technical codes and standards for measurements and tests for DTV transmission, receivers and signals.

DTV Receivers Subcommittee

Chair: Mr Tay Joo Thong, TCS, VP (Engineering)

Objective: To study and recommend steps, specifications and standards necessary in order to have an open market and open access of DTV receivers.

The study would include:

- Specification of minimum DTV receiver requirements (such as API, EPG, SI, CA, CI, etc.); and
- Implementation plan for introduction of STBs/receivers to consumers.

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