About the SWSPG

The Singapore White Spaces Pilot Group (SWSPG) was established in April 2012 with support from Infocomm Development Authority (IDA), the Regulator of Singapore. The objective of the pilot group is to promote the Lion City as a leading test-bed and innovative zone for conducting pilot projects using White Spaces technologies, thereby accelerating the adoption of White Spaces technologies locally, regionally and eventually globally.

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Note

This response is not associated with Starhub's operator view. StarHub will be submitting its own response to the Consultation Paper.

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Re: SWSPG Response to the IDA's Consultation Paper on the Proposed Allocation of Spectrum

1. We note that the primary focus of the CP is on the allocation of spectrum for mobile and wireless services, with a long term vision of supporting the idea of a Het-Net as suggested in the proposed *Infocomm Masterplan 2025* to create Singapore as a 'Smart Nation'.
2. We note the IDA plans to take into account "the technological trends and developments in the mobile and wireless space." In addition we would urge that IDA take into account the developments in terms of flexible policies towards the *usage* of spectrum. There are indications that IDA plans to do so, for example, in the discussion of introducing greater flexibility for 3G operators to offer 4G services following a similar initiative in the UK (para28).
3. Technological changes, such as smart antennae, MIMO, SDR and cognitive radio developments have, *as just some of the enablers*, opened up policy options to introduce a much more dynamic use of spectrum than was previously possible, or what is termed DSA or 'dynamic spectrum access'. This allows regulators to maximize the use of available spectrum, a requirement of a future Het-Net. Many types of devices are becoming available that can identify unused spectrum and transmit without causing radio interference with neighbouring users.
4. Several such technologies, such as short range devices (SRDs) are currently in operation in the 800 MHz, 900 MHz and other frequency bands. The CP mentions TV White Spaces which is another technology that has already won approval from the FCC in the USA and is being trialled in over 20 countries and under discussion in a further ten. Further, the IEEE 802.11af standard for wireless local area network (WLAN) operation and the IEEE 802.15.4m standard for low-rate wireless personal area network (LR-WPAN), both using TV white space in the VHF and UHF bands (54Mhz – 790MHz) were recently published by the IEEE, including an amendment to provide geo-location database access to previously unavailable, unused or underused frequencies.
5. The CP specifically refers to TV White Spaces in relation to the longer-term aim of creating the foundations of a Het-Net in Singapore (para 7). To achieve this objective it will be necessary for sufficient spectrum to be allocated on a DSA basis in the 700MHz band which is currently used for analogue TV broadcasting. The transition to digital terrestrial TV (DTT) creates the so-called 'digital dividend' as frequencies in the 700MHz band are freed up. This will take several years to complete, possibly

beyond 2020. IDA has suggested Singapore will follow the APT recommendations of allocating 90 MHz of this spectrum to mobile wireless broadband access, leaving relatively little TVWS beyond the transition period. However, we feel that if sufficient spectrum can be assured at least up until 2020 to be assigned on a DSA basis, this will provide the incentive necessary for investments in TVSW projects, services and devices.

6. This will also project Singapore into a position of regional leader in the use of white spaces and in the development of the services and applications that can be used on a white space basis, such as Super WiFI and M2M connectivity for sensors, meters, etc. which are a fundamental part of a Smart Nation.
7. Beyond 2020 the technologies may well have evolved to allow even greater flexibility for DSA devices to transit on other spectrum bands. And if the use of white spaces has proved successful, then the technology will be tried and tested and ready to play a role in the development of an island-wide Het-Net.