



## PROGRAMME

Time	Wednesday, 18 December 2019
09:30 – 10:15	<b>Opening</b> <ul style="list-style-type: none"><li>• Welcome Address by Mr. S. T. Abbas, Chairman, SATRC Working Group on Spectrum</li><li>• Special Address by Mr. U. K. Srivastava, Principal Advisor, TRAI</li><li>• Keynote Address by Ms. Areewan Haorangsi, Secretary General, Asia-Pacific Telecommunity</li><li>• Inaugural Address by Dr. R. S. Sharma, Chairman, TRAI</li></ul> <p>(Group Photograph)</p>
10:15 – 11:00	<b>Session 1 – SATRC Working Group on Spectrum</b> <ul style="list-style-type: none"><li>• Activities of the SATRC Working Group on Spectrum – <b>Mr. S. T. Abbas, Chairman, SATRC Working Group on Spectrum</b></li><li>• Activities of APT in spectrum management – <b>Mr. Forhadul Parvez, Programme Officer, Asia-Pacific Telecommunity</b></li><li>• Keynote Presentation on ‘Economics of Spectrum Management’ – <b>Dr. Rohit Prasad, Professor, Management Development Institute, India</b></li></ul>
11:00 – 11:15	<b>Coffee/Tea Break</b>
11:15 – 12:45	<b>Session 2 – Outcomes of WRC-19 and what to do next (Panel Discussion)</b> <b>Session Chair: Mr. U K Srivastava, Pr. Advisor, TRAI</b> <ul style="list-style-type: none"><li>• Outcomes of WRC-19 and what needs to be done following WRC-19 – <b>Mr. Jitendra Singh, Qualcomm India</b></li><li>• Understanding the process of WRC – <b>Mr. Forhadul Parvez, Programme Officer, Asia-Pacific Telecommunity</b></li><li>• Interactive discussion on experience and various aspects of the outcomes of WRC-19</li></ul>
12:45 – 14:00	<b>Lunch Break</b>
14:00 – 15:30	<b>Session 3 – Assessment of current practices in spectrum management and developing spectrum roadmap: National Long-Term Strategies for Spectrum Utilization</b> <b>Session Chair: Mr. S T Abbas, Advisor, TRAI</b> <p>Wireless technology is evolving rapidly and spectrum management practices need to be modified as per time demand - with clear formulation of spectrum roadmaps. To ensure that consumers and businesses have access to new wireless technologies and new services are introduced in timely manner. SATRC countries have put in place several spectrum management practices and strategies. However, this is becoming more challenging due to the unbalanced pace of development in technology and</p>

	<p>services. In addition, the implementation of spectrum management framework and allocation often take a considerable amount of time to take effect. A spectrum roadmap is essential to ensure there is enough spectrum to meet surging demand for new services. Development of Spectrum Roadmap is required to forecast future and increase certainty about the regulator's future allocation plans and spectrum management.</p> <p>In this session the various aspects of the spectrum management practices and essential components of developing a spectrum roadmap will be discussed in details. Following topics will be covered:</p> <ul style="list-style-type: none"> <li>– Planning spectrum use and national frequency allocation plan – <b>Dr. Azim Fard, Director General, Communications Regulatory Authority, Islamic Republic of Iran</b></li> <li>– Spectrum audit, national interest vs. socio-economic interests in spectrum planning – <b>Mr. S T Abbas, Advisor, TRAI</b></li> <li>– Current Practices of Spectrum Management and Development of Spectrum Roadmap for Telecom Industry in Nepal - <b>Ms. Roja Kiran, Basukala, Deputy Director, Spectrum, QoS and Service Delivery Monitoring Section, Nepal Telecommunications Authority (NTA)</b></li> <li>– Current practices in spectrum management and developing spectrum roadmap in Pakistan - <b>Mr. Imad Memon, Director General (Strategy and Development) Pakistan Telecommunications Authority (remotely)</b></li> <li>– <i>Question and answer</i></li> </ul>
15:30 – 15:45	<b>Coffee/Tea Break</b>
15:45 - 17:15	<p><b>Session 4 – Assessment of current practices in spectrum management and developing spectrum roadmap (continue...)</b>  <b>Session Chair: Mr. U K Srivastava, Pr. Advisor, TRAI</b></p> <p>This session will continue on the previous session. Following topics will be covered in this session:</p> <ul style="list-style-type: none"> <li>– Essential components and considerations to develop spectrum roadmap or national spectrum strategy – <b>Dr. Ashok Chandra, Independent Consultant, Former Wireless Adviser to Govt. of India</b></li> <li>– Developing spectrum roadmap in South Asian Region: Industry perspective – <b>Mr. Nitin Sapra, Assistant Vice President, Group Regulatory affairs, Axiata Group Berhad, Malaysia</b></li> <li>– Best practices of developing spectrum roadmap/national spectrum strategy from around the world – <b>Mr. Cristian Gomez, Director, Spectrum Policy &amp; Regulatory Affairs, GSMA (remotely)</b></li> <li>– <i>Interactive discussion</i></li> </ul>
<b>Time</b>	<b>Thursday, 19 December 2019</b>
10:00 – 11:30	<p><b>Session 5 – Spectrum Authorization: Licensing and Pricing</b>  <b>Session Chair: Mr. S K Mishra, Pr. Advisor, TRAI</b></p> <p>Spectrum licensing and pricing mechanism are still important issues for the regulators in order to get maximum benefits for the people and the industry. This session will look into various aspects of spectrum licensing and pricing including an in-depth</p>

	<p>analysis, current practices in South Asian Countries and globally and the views of the industry for spectrum licensing and pricing. The session will focus on some of the following issues:</p> <ul style="list-style-type: none"> <li>– Spectrum rights, assignment and licensing procedures – <b>Dr. Azim Fard, Director General, Communications Regulatory Authority, Islamic Republic of Iran</b></li> <li>– Case study of India for determining the price for spectrum - <b>Mr. S K Mishra, Pr. Advisor (Finance &amp; Economic Analysis Division), TRAI</b></li> </ul>
11:30 – 11:45	<b>Coffee/Tea Break</b>
11:45 - 13:00	<p><b>Session 6 – Spectrum Authorization: Licensing and Pricing</b>  <b>Session Chair: Mr. S T Abbas, Advisor, TRAI</b></p> <p>In this session will continue on the previous session. Following topics will be covered in this session:</p> <ul style="list-style-type: none"> <li>– Best Practices of Spectrum Pricing and recent auctions- <b>Mr. Jitendra Singh, Qualcomm India</b></li> <li>- Unlicensed spectrum and its socio-economic impact, Spectrum sharing and secondary market for spectrum: it's challenges and opportunities – <b>Mr. Cristian Gomez, Director, Spectrum Policy &amp; Regulatory Affairs, GSMA (remotely)</b></li> <li>- Sharing experience of SATRC countries by Afghanistan Telecommunication Regulatory Authority (ATRA) – <b>Mr. Sebghatullah Andar, Head of Spectrum Monitoring &amp; ICAP Department, ATRA</b></li> <li>- <i>Spectrum licensing and pricing practices in Bangladesh</i> - <b>Lt. Col. Mohammad Faisol, Director (Spectrum Management), Bangladesh Telecommunication Regulatory Commission</b></li> </ul>
13:00 – 14:00	<b>Lunch Break</b>
14:00 - 15:30	<p><b>Session 7 – Spectrum licensing and pricing in the era of 5G and IoT</b>  <b>Session Chair: Dr. Azim Fard, Director General, CRA, Iran</b></p> <p>5G has the potential to accelerate the creation of connected digital future in the Asia-Pacific. Following the outcomes of WRC-19, 5G will be deployed in many countries around Asia-Pacific and worldwide. This session will look at the progress that has been made for the deployment of 5G. Specially, the context of spectrum licensing and pricing issues will be address in this session. Among the key topics will include</p> <ul style="list-style-type: none"> <li>– How to ensure sustainable spectrum pricing that foster the development and deployment of 5G &amp; case studies on some recent and forth coming auctions for 5G - <b>Dr. Rohit Prasad, Professor, Management Development Institute, Gurgaon, India</b></li> <li>- <i>The issues associated with Multi-Layer spectrum approach to 5G including C-band and millimeter-wave bands</i> – <b>Mr. Radhey Shyam Sarda, Wireless CTO, Huawei, India</b></li> <li>- <i>Bands under consideration for 5G deployment and what needs to be done for the low bands for 5G</i> – <b>Mr. Subrata Kumar Mitra, VP, Ericsson India</b></li> <li>- Q&amp;A</li> </ul>
15:30 – 15:45	<b>Coffee/Tea Break</b>

15:45– 17:00	<p><b>Session 8 – <i>Spectrum Efficiency: Spectrum re-farming and spectrum co-ordination</i></b></p> <p><b>Session Chair: Dr. Rohit Prasad, Professor, MDI, Gurugram</b></p> <p>As spectrum is a scarce resource, there is every reason to strive for technical efficiency in most circumstances. There are clear benefits from increasing utilization while also planning for future use of spectrum. Re-farming is a regulatory strategy to reuse the frequency resources to introduce latest wireless technologies and to improve the spectral efficiency and overall benefits. Further, spectrum coordination is an important aspect to consider for ensuring spectrum efficiency by reducing cross-border interference</p> <p>This session will focus on the various aspects of spectrum re-farming including:</p> <ul style="list-style-type: none"> <li>– Regulatory aspects of spectrum re-farming including recent case studies of recent spectrum re-farming in Asia-Pacific and globally— <b>Dr. Azim Fard, Director General, Communications Regulatory Authority, Islamic Republic of Iran</b></li> <li>– The process of spectrum coordination for radiocommunication services – <b>Dr. Ashok Chandra, Independent Consultant, Former Wireless Adviser to Govt. of India</b></li> <li>– Industry perspective on spectrum re-farming— <b>Mr. Cristian Gomez, Director, Spectrum policy &amp; Regulatory Affairs, GSMA (remotely)</b></li> <li>– <i>Interactive discussion</i></li> </ul>
Time	<b>Friday, 20 December 2019</b>
09:30 – 11:00	<p><b>Session 9 – <i>Spectrum as a crucial element to deliver connectivity</i></b></p> <p><b>Session Chair: Dr. Ashok Chandra, Ex-Wireless Advisor, WPC</b></p> <p>Providing last mile connectivity is still a challenge in South Asian despite many efforts to tackle the digital divide in the region. Governments, service providers and other stakeholders are working together and collaborating in delivering connectivity in rural areas. No doubt that spectrum is a key element to such efforts. This session will look into the aspects of into the requirements of spectrum for such efforts and how it can be ensured that access to the necessary bandwidth is available.</p> <ul style="list-style-type: none"> <li>– Spectrum considerations for satellite communications: Spectrum requirements for high-throughput satellites and future satellites – <b>Mr. Rajesh Mehrotra, Redbooks Consulting</b></li> <li>– NGSO Constellation: Global Space Based Broadband- <b>Dr. Siok Tan, Director, Regulatory Affairs, (APAC), OneWeb, Asia, Singapore.</b></li> <li>– WiFi in 6 GHz: Breathing New Life into Broadband- <b>Mr. Ashwani Rana, Facebook, India</b></li> <li>– <i>Interactive discussion</i></li> </ul>
11:00 – 11:15	<b>Coffee/Tea Break</b>

11:15 – 12:00	<p><b>Session 10 – <i>Looking into the future and Way forward</i></b>  <b>Session Chair: Mr. Sanjeev Sharma, Advisor, TRAI</b></p> <p>This session will look into the aspects of future of spectrum management in the context of South Asia particularly about Industry 4.0. It will also update the current status of implementation of APT Frequency Information System (AFIS).</p> <ul style="list-style-type: none"> <li>– Aspects of future spectrum management: Concept of harmonized spectrum licensing for Industry Automation (Industry 4.0) and captive use – <b>Mr. Vikram Tiwathia Deputy Director General, COAI</b></li> <li>– Update on AFIS – <b>Mr. Forhadul Parvez, Programme Officer, Asia-Pacific Telecommunity</b></li> <li>– <i>Interactive Discussion</i></li> </ul>
12:00 – 12:30	<p><b>Session 11 – <i>Summary of discussion and closing</i></b></p> <ul style="list-style-type: none"> <li>– Summary of the workshop by Chairman of SATRC WG Spectrum</li> <li>– Closing Remarks by Secretary General, APT</li> <li>– Closing Remarks by Chairman, TRAI</li> </ul>
12:30 – 13:30	<b>Lunch Break</b>
13:30 – 17:30	<b>Local Site Visit</b>