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| **Radiocommunication Advisory GroupGeneva, 15-17 April 2019** |  |
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|  | **Document RAG19/1-E** |
| **11 March 2019****Original: English** |
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| Director, Radiocommunication Bureau |
| REPORT TO THE TWENTY-SIXTH MEETING OF THE RADIOCOMMUNICATION ADVISORY GROUP |

# 1 Introduction

This document provides status reports and background information on some of the issues that appear on the draft agenda for the 26th meeting of RAG (see CA/236 of 30.10.2017). This document is intended to assist the meeting in considering the relevant agenda items.

Separate reports will be submitted for some of the agenda items.

# 2 PP-18 results

PP-18 elected the senior management team of the organization, the Member States of the [Council](http://www.itu.int/en/council/Pages/overview.aspx), and the twelve members of the [Radio Regulations Board](http://www.itu.int/ITU-R/index.asp?category=conferences&link=rrb&lang=en).

It also set the Union’s policies in various areas, including the Union’s strategic and financial plans, through new and revision of existing resolutions and decisions.

The Plenipotentiary has approved a set of new Resolutions and revised some Resolutions related to the Radiocommunication Sector:

* Resolution 136, on the use of ICTs in emergency and disaster situations,
* Resolution 137, on the Deployment of future networks in developing countries, including IMT-2020 (5G) networks.
* Resolution 139, on the Digital Divide;
* Resolution 176, on Human exposure to electromagnetic fields, instructs the Directors of the three Bureaux to collect and disseminate information concerning exposure to EMF;
* Resolution 186, on Outer space activities, encourages the dissemination of information, capacity building and the sharing of best practices in the use and development of satellite systems;
* Resolution 197, on the Internet of Things, promotes investment in the development of the Internet of Things (IoT) and smart sustainable cities and communities (SSCCs);
* Resolution 203, on Connectivity to broadband networks address the need for further improved broadband networks, including wireless broadband networks;
* Resolution on Innovation, which promotes an enabling environment for telecommunication/ ICT-centric innovation by small- and medium-sized enterprises (SMEs), start-ups, incubation centres and young entrepreneurs and encourages participation of SMEs in study groups and relevant ITU activities;

# 3 Council issues

This section covers and updates the issues addressed by the 2018 session of the Council (see: [https://www.itu.int/en/council/2018/Pages/default.aspx](https://www.itu.int/en/council/2017/Pages/default.aspx)).

## 3.1 Free on-line access to ITU-R Publications

The free online access policy continues to provide a very large dissemination of ITU standards to a broader public, especially in developing countries with financial and technical constraints. This wide outreach via free online access is helping to build the visibility of ITU’s mission and mandate and reinforce ITU as a global telecommunication authority.

By Decision 12 (Guadalajara, 2010), PP-10 adopted a free online access policy to include, inter alia, ITU R Recommendations and Reports. This policy was expanded by Council 2012 Decision 571, revised by Council 2013 and 2014 , and confirmed by PP-14 revised Decision 12, which provides free online access for the general public, on a permanent basis, to ITU-R, ITU-T and ITU-D Recommendations and Reports; ITU-R handbooks on radio-frequency spectrum management ; ITU publications concerning the use of telecommunications/ICTs for ensuring disaster preparedness, early warning, rescue, mitigation, relief and response; the International Telecommunication Regulations (ITRs); the Radio Regulations; the Rules of Procedure; the basic texts of the Union (Constitution, Convention, General Rules of conferences, assemblies and meetings of the Union, decisions, resolutions and Recommendations); the final acts of plenipotentiary conferences; the final reports of WTDCs; the ITU Council resolutions and decisions; the final acts of world and regional radiocommunication conferences; and the final acts of world conferences on international telecommunications.

Additionally, in response to requests from Member States, in particular developing countries, in January 2017 the free access policy has been extended by the BR Director to include all ITU-R Handbooks. The impact of these Decisions is well reflected by the large number of downloads of these publications, as shown in Section 9.1.4.

## 3.2 Cost recovery for satellite network filings

It was reported to Council 2018 that the implementation of Decision 482 by the Radiocommunication Bureau did not give rise to any administrative or operational difficulty either internally or with administrations notifying satellite network filings.

At its 2018 session, Council also considered the main conclusions of the study carried out by the Radiocommunication Bureau on the technical issues arising in connection with processing of complex non-geostationary satellite (non-GSO) systems as well as analysis of the main technical and regulatory issues associated with the proposal of splitting non-GSO filings containing non-homogeneous satellite orbits. Three possible, non-mutually exclusive, procedures were proposed for improving the cost recovery scheme of non-GSO satellite systems:

* Procedure A: Separately computing charges for mutually exclusive configurations and adding them.
* Procedure B: Limiting the flat fee to a maximum number of units.
* Procedure C: Introducing an additional fee for cases subject to Article 22 epfd limits.

Views expressed by the Radio Regulations Board and ITU-R Working Parties on these three procedures were communicated to Council in an addendum to the Bureau’s document.

After discussion of this and other input documents, Council adopted a revision to Decision 482 to implement Procedure A (this revised version of the Decision came into force on 1st July 2018, see [Document C18/114](https://www.itu.int/md/S18-CL-C-0114/en)) and agreed to establish a Council Expert Group on Decision 482. The terms of reference of this group contain three tasks:

1. to further examine Procedures B and C described in Document C18/36, while taking into account considerations contained in Documents C18/36 (Addendum 1), C18/75, C18/83 and C18/90 as well as contributions submitted to its meetings;
2. to focus its examination of Procedure B on the cases of complex non-GSO satellite filings and to prepare a report containing recommendations about the possible revision of Decision 482 with regard to complex non-GSO satellite filings for submission to the 2019 ITU Council for action;
3. once studies of complex non-GSO satellite filings have been completed, and subject to the Bureau providing information to this Council Expert Group that support the need to take action, to consider whether the approach of Procedure B should also be applicable to the cases of exceptionally complex GSO satellite filings (i.e. filings that require a very significant amount of additional time and resources to process). The results of the studies on these GSO filings should be reported to the 2019 ITU Council in a separate report, for action as appropriate.

This group, chaired by Mr Nikolay VARLAMOV (Russian Federation), held two meetings on
27-28 September 2018 and 28 February–1 March 2019 at ITU headquarters in Geneva. These meetings focused on a more detailed examination of Procedures B and C. A draft report to Council is currently being developed by the Expert Group to provide recommendations to Council with regards to these two procedures. Information about exceptionally complex GSO satellite filings was also considered.

All documents related to this Council Expert Group are available at the following webpage: <https://www.itu.int/en/council/Pages/eg-d482.aspx>. The next meeting of the Council Expert Group on Council Decision 482 will take place on 6 and 7 June 2019.

## 3.3 Processing of satellite filings

Since the last session of the Radiocommunication Advisory Group, the time for processing satellite filings has been decreased to meet the regulatory timeframes set forth in the Radio Regulations and the key performance indicators of the Operational Plan. The processing time of satellite networks under Articles 6 and 7 of Appendix 30B of the Radio Regulations still remains slightly above the 6-month objective; however, this has also been on the decrease. The evolution of the processing times for satellite filings is reported to each meeting of the Radio Regulations Board and is also updated on a monthly basis at the following webpage: <https://www.itu.int/en/ITU-R/space/Pages/Statistics.aspx>.

## 3.4 Conformance and interoperability (C&I)

PP Resolution 177 (Rev. Dubai, 2018) endorsed the objectives of WTSA Resolution 76 (Rev. Hammamet, 2016), RA Resolution 62 (Rev. Geneva, 2015), WTDC Resolution 47 (Rev. Buenos Aires, 2017), recognizing that “widespread C&I of telecommunication/ICT equipment and systems through seamless transfer of data and through the implementation of relevant programmes, policies and decisions can increase market opportunities and reliability and encourage global integration and trade”, and resolved to continue implementing the ITU Action Plan for the C&I Programme reviewed by the ITU Council.

The ITU Action Plan for the C&I Programme mandated by Resolution 177 (Rev. Dubai, 2018) is still based on four pillars: Pillar 1: Conformity assessment; Pillar 2: Interoperability events; Pillar 3: Capacity building; and Pillar 4: Establishment of test centres and a C&I programme in developing countries.

Actions under Pillars 1 and 2 are led by the Telecommunication Standardization Bureau (TSB), actions under Pillars 3 and 4 by the Telecommunication Development Bureau (BDT). ITU‑R continues to collaborate with, and provide information when requested by, ITU‑T and ITU‑D on C&I testing, as indicated in the resolves section of Resolution ITU‑R 62. There have been no inputs to the ITU-R Study Groups on this topic since the last RAG.

## 3.5 Space Protocol

## Based on the recommendations of Council 2017, the Plenipotentiary Conference, held in Dubai (UAE) from 29 October to 16 November 2018, was invited to decide whether ITU should become the Supervisory Authority of the International Registration System for Space Assets under the Space Protocol.

Three input documents on this topic, in addition to the report from the Secretary General, were considered. On their basis, the Plenipotentiary Conference adopted Resolution 210 (Dubai, 2018), which resolves “at this conference, not to accept the role of Supervisory Authority under the SpaceProtocol but, should there be further invitation by UNIDROIT to ITU, through the Secretary-General, to accept this role, a future plenipotentiary conference would reconsider this matter”. This Resolution also instructs the Council “to prepare, upon receipt of the invitation referred to in the resolves above, and submit to the following plenipotentiary conference, a report on this matter” and the Secretary-General “to bring this resolution to the attention of the Secretary-General of UNIDROIT” and “to participate in the work of the Preparatory Commission and its working groups and to report to the Council accordingly”.

No meeting of the Preparatory Commission has been held since the decision of the Plenipotentiary Conference.

## 3.6 Budget for the 2020-2021 period



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# 4 Implementation of WRC-15 decisions

## 4.1 Software development to implement WRC-15 decisions

During 2018, the Bureau pursued software design and development to implement WRC-15 decisions. The table below presents a summary of the main tasks under consideration.

**Table 1: Software development activities to implement WRC-15 decisions**

|  |
| --- |
| **Resolution 907 (Rev. WRC-15): Use of modern electronic means of communication for satellite network –related administrative correspondence**  |
| During 2018, work continued on implementing Resolution 907 (Rev. WRC-15), with the aim of delivering a secure online system to modernize and enhance the current correspondence system between Administrations and ITU as well as between Administrations. The system, which will be developed as a communications module, extending the already implemented e-Submissions and SIRRS online web services, shall have the following characteristics and features:- Simple, intuitive user interface to address a worldwide community of ITU member administrations and ensure the maximum possible acceptance- Web-based and self-contained online system hosted in ITU IT infrastructure, relaying online submissions of correspondence to a destination (ITU, Administrations)- High security and trust in relaying, timestamping, forwarding correspondence while monitoring the information flow- Ability to track submission and delivery, as well as successful reception of expedited data- Seamless integration into existing correspondence processing system and ITU IT infrastructure as well as full integration with other web services (e-Submissions and SIRRS)The detailed functional requirements for the communications module have been refined in light of the experience accumulated from the operation of the e-Submissions system and the Space Interference Reporting and Resolution System (SIRRS). The following project phases are envisaged:- June 3, 2019 – mid-August 2019: External test of beta version (Circular letter, nomination of user accounts by administrations)- September 1, 2019: Communications module of e-Submissions in production |
| **Resolution 908 (Rev.WRC-15): Electronic submission of satellite network filings**  |
| Resolution 908 (Rev.WRC-15) resolves that administrations shall submit all satellite network filings and comments, if required, using a secure paperless electronic approach upon being advised that the means for such electronic submission of a satellite network filing for satellite networks or systems has been implemented and upon receiving assurances that such means are indeed secure.To assist in the development and testing, the Administration of Japan has made a financial contribution to the Resolution 908 project and made available a space regulatory/technical expert in Geneva for a period of 2 years. The following outputs under Resolution 908 (Rev.WRC-15) are foreseen:1. A consolidated approach for the electronic submission and publication of all satellite network filings, related comments and publication.2. An improved internal BR processing system for the treatment of satellite network filings and comments.3. Streamlined internal BR processes for the treatment of satellite network notices.4. Integration between new versions of legacy software applications (please refer to the BR Space Information Systems roadmap in Annex 1) and the modern web based technology chosen for the implementation of Resolution 908.Phase 1 of the Resolution 908 project concerning the submission of satellite filings and comments, known as “e-Submissions for satellite network filings,” has been implemented in 2018 as follows:• mid-March 2018 – mid-July 2018: External beta testing (as announced in CR/427) and gathering of feedback from external users.• August 1, 2018: Use in production on a mandatory basis (as announced in CR/434, implementing the revised Rule of Procedure on the receivability of forms of notice adopted at the 78th RRB meeting). At this stage of the implementation of Resolution 908, administrations were still allowed to request assistance with the use of the new system, in order not to delay the submission of a filing.• January 15, 2019: The system is considered to be stable and the BR will provide assistance in uploading filings on behalf of Administrations only in exceptional cases from this date.The improvements in internal processes and processing software are being implemented concurrently with the above externally visible functionality. This work will continue into 2019, in conjunction with the work planned according to the BR Space Information Systems roadmap (SNS Online, SNTrack, etc.). The online publication part is envisaged to be implemented in 2020. |
| **Implementation of WRC-15 decisions relating to terrestrial services**Continuous update of all terrestrial services processing software, both for internal (*TerRaSys*) and external (BR IFIC (Terrestrial)) use, including improved database schemas and updated validation and examination software modules, for the submission of terrestrial frequency notifications, as a consequence of WRC-15 and RRB decisions.Continued development of the software modules, coordination criteria and associated tools for terrestrial services, aiming at the processing of: * requests for coordination under RR No. **9.19**;
* requests for coordination under RR No. **9.21**;
* IMT-advanced systems in the GE06 bands following the WRC-15 decision on the harmonization of the 700 MHz band. The relevant system type codes and related protection criteria were introduced for such systems
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### 4.2 Other actions to implement WRC-15 decisions

### 4.2.1 Implementation of Resolution 55 (WRC-15)

Resolution **55 (WRC-15)** instructs the Bureau “to make available coordination requests and notifications (…) “as received” within 30 days of receipt on its website”. Since the implementation of the online application “e-submissions for Satellite Network Filing”, most notices have been made available within 7 days instead of 30 days. With all notices submitted through the online system, the Bureau has been able to extend the types of notices that are made available “as received” to include advance publication information of satellite networks not subject to coordination, earth station notification notices, as well as Part A, Part B special sections and notifications related to Appendices 30, 30A and 30B of the Radio Regulations. The Bureau has received positive feedback to this improved “as-received” system by several administrations as it has further increased the transparency of the filing process.

### 4.2.2 Development of Rules of Procedure

The Bureau developed drafts for new or modified Rules of Procedure in order to reflect the WRC‑15 decisions (for example, to mandate the use of the online application “e-submissions for Satellite Network Filing” requested by Resolution **908 (Rev.WRC-15)** and to change the approach in the identification of affected administrations for the coordination of terrestrial transmitters under the provision of No. **9.19** of the RR). These drafts and proposals were considered by the RRB together with comments received from administrations and the corresponding Rules of Procedure were approved by the RRB at its 78th and 79th meetings (July and November 2018).

### 4.2.3 Initial operational experience in implementing Resolution 908 (Rev.WRC-15)

As mentioned in sections 4.1 and 4.2.3, the operational version of the online application
“e-Submission of Satellite Network Filings” has been released on 1st August 2018 and its use is mandatory for submitting all satellite notices and SpaceCom comments.

Since the implementation of the system, both the administrations and the Radiocommunication Bureau have benefitted from:

* avoiding miscommunications arising from the occasional removal of database attachments by email servers due to security or size constraints,
* removing issues of receivability due to non-receipt of the confirmation fax, and
* increasing the transparency of filings submitted to the Bureau.

Some Administrations also indicated to the Bureau that this system helped them to overcome the difficulty of sending and receiving electronic notices to and from their satellite operators.

The system provides immediate acknowledgement as required in the Rules of Procedure on receivability of space notices, which is also an improvement compared to the previous system of submission by email.

The Bureau has provided a dedicated email helpdesk and a hotline during the testing as well as through the operational phase, and has provided assistance on numerous occasions to users who either did not know how to use the system or encountered difficulties when using the system.

At the time of writing this report, 86 administrations and 1 intergovernmental satellite organization (noting that other such organization have chosen to be registered as satellite operator of their notifying administration) have registered, totalling 414 individual users.

The Radiocommunication Bureau would like to renew its thanks to the Administration of Japan for the specific assistance in the development of this project.

# 5 Study Groups activities

This topic is presented in Addendum 1 to this document.

# 6 RA-19/WRC-19 preparation

The responsible ITU‑R Working Parties and Task Group 5/1 completed the development of texts for the studies assigned to them at the first session of CPM-19 (CPM19-1), and these were included in the draft CPM Report for consideration at the second session of CPM-19 (CPM19-2). CPM19-2 was held on 18-28 February 2019 and successfully completed the preparation of the CPM Report to WRC-19. The compiled version of the CPM Report to WRC-19 was still being prepared at the time of the preparation of this document and being made available on the CPM webpage at: [www.itu.int/go/ITU-R/CPM](http://www.itu.int/go/ITU-R/CPM). In some cases, technical studies are continuing in the relevant ITU‑R Working Parties to finalize supporting ITU‑R Recommendations/Reports in preparation for both RA-19 and WRC‑19.

Taking into account Resolution 80 (Rev. Marrakesh, 2002), extensive preparations for WRC‑19 have been conducted through BR’s active participation in the preparatory meetings of the regional groups, including APT, ASMG, ATU, CEPT, CITEL and RCC. ITU has been assisting these preparations wherever possible, noting, in particular, Resolution 72 (Rev.WRC-07). Additional information can be found at: [www.itu.int/go/wrc-19-regional](http://www.itu.int/go/wrc-19-regional).

The first ITU Inter-regional Workshop on WRC‑19 preparation was held in Geneva on 21-22 November 2017 and the second Workshop took place on 20-22 November 2018. The third and final Workshop is planned to be held in Geneva on 4-6 September 2019. Additional information can be found at: [www.itu.int/en/ITU-R/conferences/wrc/2019/irwsp/Pages/default.aspx](http://www.itu.int/en/ITU-R/conferences/wrc/2019/irwsp/Pages/default.aspx).

The ITU‑R webpage for WRC‑19 at [www.itu.int/go/wrc-19](http://www.itu.int/go/wrc-19) has been updated and provides direct access to the above-mentioned information.

In keeping with the spirit of PP-18 Decision 5 (Annex 2), the understanding and assistance of administrations has been sought in having RA-19/WRC‑19 as fully paperless events. These measures are outlined, for RA-19 and WRC‑19 respectively, in BR Administrative Circulars [CACE/889](https://www.itu.int/md/R00-CACE-CIR-0889/en) and [CA/245](https://www.itu.int/md/R00-CA-CIR-0245/en) of 13 February 2019.

The joint work with the host country for RA-19/WRC-19 has continued, in order to ensure that all the facilities for a smooth running of these events will be in place as well as the corresponding logistical arrangements. The Host Country Agreement will be signed by ITU and the Government of Egypt on 25th March 2019.

The first session of the CPM for WRC-23 (i.e. CPM23-1) has been planned to be held on 25-26 November 2019 in the same venue as for RA-19/WRC-19.

# 7 Operational planning

As we are starting a new cycle as per the newly approved strategic plan of the Union for 2020-2023 by PP-18, the ITU‑R Operational Plan has been structured in accordance with the results-based management concept of Union in order to ensure complete linkage with the budget and other financial tools of the Union. The draft ITU‑R Operational Plan for the period 2020-2023 is presented in Addendum 2 to this document, for review and comments by RAG.

# 8 BR information system

RAG-19 (2012) advised the Director to implement recommended actions within the proposed time-frame, as described in the agreed roadmap, comprising: Phase 1 (Implementation of WRC 12 decisions) up to 31 December 2012; Phase 2 (Rewrite some existing software) up to 31 December 2015; and Phase 3 (Set up a project team to implement a common framework, security system and centralized space database) from 1 January 2016 to 31 December 2018. RAG encouraged Member States and Sector Members to submit their comments on Phase 3.

The progress report on this topic is presented in Annex 1 to this document. Other on-going developments are addressed hereafter.

## 8.1 Software developments related to space services

## 8.1.1     Implementation of Resolution 186 (Busan, 2014)

On 1 September 2018, the Radiocommunication Bureau released the operational version of the on-line application “Satellite Interference Reporting and Resolution System” (SIRRS) to facilitate the reporting and exchange of information between Administrations and the Bureau concerning cases of harmful interference affecting space services (see [CR/435](https://www.itu.int/md/R00-CR-CIR-0435/en) of 28 August 2018). The Bureau previously released a beta-version for testing by administrations (see [CR/428](https://www.itu.int/md/R00-CR-CIR-0428/en) of 13 March 2018).

200 individual users from 84 Administrations have so far been registered in SIRRS. Since the release of the operational version on 1 September 2018, 26 cases of harmful interference were reported through SIRRS.

The Bureau intends to continuously improve the SIRRS application, taking into account feedbacks from administrations and the latest developments in ITU-R Study Groups on Recommendations and Reports associated to space monitoring and interference reporting.

## 8.2 Software developments related to terrestrial services

### 8.2.1 Changes in the examinations under No. 9.19 of the Radio Regulations

The Bureau has changed the software module for notice treatment of terrestrial services under the new RoP on RR No. **9.19**, following the modification of the approach in the identification of affected administrations under this provision.

### 8.2.2 HFBC Software

In order to facilitate the coordination process and exchange of data between HFBC notifiers, the Bureau stopped the HFBC publications on CD-ROM at the end of 2018. It was replaced by an online free of charge database with HF Broadcasting Schedules and compatibility results from 1 January 2019 online. The relevant circular letter to inform the administrations was sent on 3 July 2018.

### 8.2.3 Integration of GE06 agreement Article 4 processing in TerRaSys

The Bureau completed the integration of the digital portion of the GE06 (GE06D) Article 4 notices processing, which had been previously performed in a standalone system, into TerRaSys. The first GE06D Special Section in TerRaSys is scheduled for April 2019. The resulting modifications to the technical coordination examination software for the GE06L portion, pertaining to other primary services, are under final testing. The full Article 4 of the GE06 agreement with all its components is expected to be fully integrated by end of May 2019.

### 8.2.4 Compatibility analysis software for planning Digital Terrestrial Television (DTT) in the Central America and Caribbean sub-region (CAC)

In order to assist the Central America and Caribbean sub-regions in planning the deployment of digital terrestrial television and other services in the VHF/UHF bands, the Bureau developed and enhanced the compatibility analysis software which had been developed for the GE06 Conference and improved for previous frequency planning activities in Region 1. The software considers all the DTT standards and the two channel rasters (6 MHz and 8 MHz) used in the region.

Software for DTT compatibility analysis for Central America and the Caribbean region has been completed, with the integration of the software for dealing with the relevant fixed and mobile assignments currently recorded in the Master Register. The complete set of software tools is as follows:

* The Digital-to-Digital, Digital-to-Analogue, Analogue-to-Digital, Digital-to-Fixed and Mobile and Fixed and Mobile to Digital compatibility analysis is available from eTools;
* The display software, CADisplay, providing mean for the visualization and interpretation of the compatibility analysis results, can be downloaded from the BR web site;
* Following the establishment of the Reference List of agreed digital terrestrial television channels at the end of the coordination process, a fully automated system for the compatibility analyses calculations via eTools has also been implemented by:
	+ Considering the records from the Reference List in the compatibility analysis process;
	+ Automating the calculation of the analogue reference situation, to consider any update to analogue assignments in the MIFR.

### 8.2.5 Development and further enhancement of web tools

In 2018, the Bureau has further enhanced *eBCD2.0 platform* for terrestrial broadcasting services by enabling field strength coverage contours calculation in the scope of the propagation prediction method ITU-R P. 1812. This tool, currently using SRTM3 elevation data (90m), can assist administrations for performing more precise interference and coverage analyses.

The Bureau is also completing the project for the enhancement, by using the lighter MVC technology, and generalization of the online tools for all terrestrial services. The Bureau is currently beta testing the system. As part of this project, a testbed is being implemented to ensure that the web application can sustain a load of hundreds of users with acceptable performances. The Bureau expects to put in production those tools in September 2019.

## 8.3 Other developments

**8.3.1 Progress in fulfilling the BR Space Information Systems roadmap (RAG-19, 2012)**

In 2018, the BR needed to urgently maintain existing legacy software, namely in order to improve software application deployment. Specifically, the BR worked on making the BR Space Software easier to install, or even make it possible to use BR Space Software without installing. These approaches were tested internally and with the collaboration of delegates attending space workshops at the WRS-18. This work has been in preparation of a brand new installation suite for BR Space Software, to be made available in the second quarter of 2019, which will make it easier for IT departments (Administrations, satellite operators) to deploy BR Space Software on end-user computers.

Also, the BR continued the implementation of examination software for PFD examination of non-GSO networks, with higher priority than redesigning legacy software for PFD examinations of GSO networks.

Therefore, the BR was not able to fully dedicate resources to the implementation of all the proposed improvements to the BR Space Information Systems, as described in Annex 1 to this document.

**8.3.2 Migration of Study Groups’ mailing lists to a modern mailing list platform**

The BR has redesigned the mailing list self-service pages for study group delegates (both for active lists and lists that have been disbanded/archived). The deployment of this new solution was delayed in 2018, but the modernized self-service pages shall be made available to delegates in the first quarter of 2019.

### 8.3.3 BR Geographic Information Systems (GIS)

The Bureau is continuing its project on establishing a common GIS Platform and data, with focus on Open Source tools.BR’s GIS Task Group was established to study BR needs and propose a common GIS platform which best fits BR requirements. Amongst the objectives for 2019, the Bureau plans to put into production a Geoportal, providing access to the Membership to relevant datasets (e.g. Study Group 3 radio-meteorological data).

With respect to external activities on this issue, a partnership with the UN Geospatial Section is strengthening. BR also continues to participate in discussions with other relevant UN agencies for the establishment of a United Nation system network for geospatial information management.

# 9 Membership outreach

Outreach activities include dissemination of information and assistance to membership, the publication of ITU-R outputs, the organization of, and the participation in, seminars and workshops, as well as the development and maintenance of communication and promotion tools. The purpose of these activities is to ensure that the outputs produced by the ITU-R Sector (regulations, recommendations, reports and handbooks) are disseminated worldwide and to facilitate the ITU membership and to stakeholders of spectrum, and that they form the basis for the formulation of spectrum management policies and decisions for the use of radiocommunications in general. To carry out these activities, the BR relies on close cooperation with the other Bureaux and Sectors, the ITU regional and area offices and the relevant international organisations and national authorities.

## 9.1 Publications

### 9.1.1 Regulatory publications

After the publication of the 2016 Edition of the Radio Regulations, in December 2016, the consolidated version of the Rules of Procedure was published during in May 2017. Two updates were published since then (November 2017 and August 2018).

### 9.1.2 Service publications

The Bureau prepares and issues the following service publications, as specified in Article **20** of the Radio Regulations.

* List I − International Frequency List
* List IV − List of Coast Stations and Special Service Stations
* List V − List of Ship Stations and Maritime Mobile Service Identity Assignments
* List VIII − List of International Monitoring Stations.
* Manual for Use by the Maritime Mobile and Maritime Mobile-Satellite Services

In view of the importance of the operational information contained in the maritime-related service publications, particularly with regard to safety, administrations are required to communicate the necessary amendments, as stipulated in No. **20.16** of the RR. It should be noted however, that the BR’s concerns reported to previous RAG meetings on the fact that administrations do not always provide regular updates of the information to the BR, are still valid.

Furthermore, information contained in the maritime-related service publications, in particular the List of Ship Stations and Maritime Mobile Service Identity Assignments (List V), are also used for other administrative procedures (e.g. eligibility for additional MIDs).

#### 9.1.2.1 List of Coast Stations and Special Service Stations (List IV)

No edition of List IV has been prepared since the 2018 RAG meeting.

Information pertaining to the 2017 edition of this list is made available via the online information system ITU Maritime mobile Access and Retrieval System (MARS). In addition, the Bureau continues to provide, every six months, a compilation of all changes notified to the ITU for this period.

#### 9.1.2.2 List of Ship Stations and Maritime Mobile Service Identity Assignments (List V)

One editions of List V has been prepared in April 2018. This List is composed of a paper booklet containing the Preface and Reference tables and a CD‑ROM with the contents of the booklet as well as the information notified to the BR on ship stations, search and rescue (SAR) aircraft assigned an MMSI, etc.

Information pertaining to this List is also made available via the online information system ITU Maritime mobile Access and Retrieval System (MARS), on a daily basis. A compilation of all changes notified to the ITU is provided every three months via ITU MARS.

#### 9.1.2.3 List of International Monitoring stations (List VIII)

No edition of this List has been prepared since the 2018 RAG meeting. The latest 2016 edition of this List contains the addresses and other relevant information of centralizing offices, particulars of monitoring stations measuring terrestrial and space emissions. A direct download facility is available, free of charge, for ITU (TIES) members only.

#### 9.1.2.4 List of service publications issued

Table 9.1.2.5-1 below summarizes the different publications prepared and delivered during the period 2015-2018:

TABLE 9.1.2.5-1

Summary information regarding the service publications issued in the period 2015-2018

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **2015** | **2016** | **2017** | **2018** |
| List IV (List of Coast Stations and Special Service Stations) | Edition of 2015(November) | - | Edition of 2017(November) |  |
| List V (List of Ship Stations and Maritime Mobile Service Identity Assignments) | Edition of 2015(March) | Edition of 2016(March) | Edition of 2017(March)Special Edition (June) | Edition of 2018(April) |
| List VIII (List of International Monitoring Stations) | - | Edition of 2016( December) | - |  |
| Maritime Manual | - | Edition of 2016(November) | - |  |

### 9.1.3 Study Groups and other publications

Since WRC-15, the preparation of ITU-R Study Groups and other publications followed the standard pattern, as foreseen in the Operational Plan, notably:

* All Recommendations issued from 2005 to 2016 (540) are now available in the six ITU languages (A/C/E/F/R/S);
* From 2017 to 2018, 107 ITU-R Recommendations were published (posted) on the ITU website in English (E); it includes revised and new Recommendations. Translation to the remaining five languages is in progress;
* ITU-R Reports: 158 reports were published (posted) on the ITU website (E) during the period of 2015-2018.
* ITU-R Handbooks (3 new Handbooks were published and 3 were updated during the period of 2015-2018).

### 9.1.4 ITU-R Publications Downloads

**9.1.4.1 Radio Regulations and the Rules of Procedure**

Concerning these regulatory documents, Table 9.1.4.1-1 compares the number of deliveries for the RR-2012 (released in December 2012), and RR-2015 (released in December 2016). The huge number of free downloads (compared to sold versions) illustrates the positive impact of this policy on the global dissemination of the Radio Regulations. Also, downloads for 2016 version of the RR were made from 130 countries, representing 67% of ITU Membership.

TABLE 9.1.4.1-1

|  |  |  |
| --- | --- | --- |
|  | **Sold** | **Free Download\*** |
| *RR-12 (48 months deliveries)* | 19,594 | 39,653 |
| *RR-16 (since December 2016)* | 6,565 | 5,342 |
| *RoP 2012* ***(****since Council 2014 decision)* | 26 | 3,776 |
| *RoP 2017* | - | 1003 |

*\*Up to Sept 2018*

**9.1.4.2 ITU-R Recommendations**

As a result of the free online access policy, ITU-R Recommendations are disseminated worldwide, becoming a universal reference. In a 60-month period (January 2014 to December 2018), more than six million downloads of ITU-R Recommendations from ITU web site were recorded. Table 9.1.4.2‑1 summarizes their distribution by year and series. At this time, there are 1,181 ITU-R Recommendations in force, hence the yearly average number of downloads is over one thousand per Recommendation.

Table 9.1.4.2

Distribution of ITU-R Recommendations

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SERIES** | **2015** | **2016** | **2017** | **2018\*** | **Total** | **2018%** |
| **P** | 187,575 | 364,869 | 316,019 | 280,201 | **1,148,664** | **20.6%** |
| **M** | 178,190 | 301,869 | 269,185 | 254,048 | **1,003,292** | **18.0%** |
| **BT** | 155,065 | 235,758 | 208,528 | 182,366 | **781,717** | **14.0%** |
| **F** | 109,187 | 187,344 | 147,502 | 136,164 | **580,197** | **10.4%** |
| **SM** | 102,711 | 187,123 | 152,305 | 135,637 | **577,776** | **10.4%** |
| **BS** | 77,553 | 135,300 | 131,647 | 107,795 | **452,295** | **8.1%** |
| **S** | 63,020 | 123,412 | 103,445 | 90,408 | **380,285** | **6.8%** |
| **SA** | 25,278 | 36,547 | 32,071 | 34,735 | **128,631** | **2.3%** |
| **V** | 15,135 | 22,757 | 25,168 | 25,301 | **88,361** | **1.6%** |
| **BO** | 18,651 | 32,637 | 28,578 | 21,263 | **101,129** | **1.8%** |
| **RS** | 16,055 | 20,044 | 18,827 | 19,778 | **74,704** | **1.3%** |
| **SF** | 13,704 | 22,779 | 18,354 | 17,323 | **72,160** | **1.3%** |
| **TF** | 16,662 | 20,511 | 15,181 | 15,584 | **67,938** | **1.2%** |
| **BR** | 11,240 | 15,632 | 16,844 | 15,014 | **58,730** | **1.1%** |
| **RA** | 7,744 | 12,514 | 9,589 | 9,100 | **38,947** | **0.7%** |
| **SNG** | 3,464 | 4,809 | 3,221 | 3,049 | **14,543** | **0.3%** |
| **TOTAL** | **1,001,234** | **1,723,905** | **1,496,464** | **1,347,766** | **5,569,369** | **100.0%** |

*\*Up to Sept 2018*

**9.1.4.3 ITU-R Reports**

As ITU-R Recommendations, ITU-R Reports have been promulgated worldwide touching most of the audiences and contributing to good technical practices in certain aspects of radiocommunications. In a 60-month period (January 2014 to December 2018), more than 1 million downloads of ITU-R Reports from ITU web site were recorded. Table 9.1.4.3-1 summarizes their distribution by year and series. At this time, there are 557 ITU-R Reports in force, hence the yearly average number of downloads is near 500 per Report.

Table 9.1.4.3-1

Distribution of ITU-R Reports

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SERIES** | **2015** | **2016** | **2017** | **2018\*** | **TOTAL** | **2018%** |
| **M** | 87,523 | 112,794 | 76,531 | 63,114 | **339,962** | **31.8%** |
| **SM** | 57,537 | 79,217 | 53,616 | 45,439 | **235,809** | **22.1%** |
| **BT** | 51,911 | 57,135 | 44,340 | 40,327 | **193,713** | **18.1%** |
| **BS** | 18,803 | 25,988 | 24,015 | 15,503 | **84,309** | **7.9%** |
| **P** | 12,828 | 16,268 | 12,572 | 9,315 | **50,983** | **4.8%** |
| **BO** | 12,567 | 15,321 | 10,541 | 7,520 | **45,949** | **4.3%** |
| **F** | 11,097 | 15,330 | 10,142 | 7,282 | **43,851** | **4.1%** |
| **S** | 6,701 | 8,330 | 6,152 | 5,177 | **26,360** | **2.5%** |
| **SA** | 4,557 | 5,886 | 3,764 | 2,966 | **17,173** | **1.6%** |
| **RS** | 4,274 | 4,148 | 3,292 | 2,502 | **14,216** | **1.3%** |
| **RA** | 3,196 | 4,316 | 3,106 | 2,860 | **13,478** | **1.3%** |
| **SF** | 545 | 506 | 303 | 266 | **1,620** | **0.2%** |
| **BR** | 65 | 66 | 65 | 35 | **231** | **0.0%** |
| **TOTAL** | **271,604** | **345,305** | **248,439** | **202,306** | **1,067,654** | **100.0%** |

*\*Up to Sept 2018*

**9.1.4.4 ITU-R Handbooks**

Table 9.1.4.4 provides the quantity of downloads of ITU-R Handbooks since the Council 2013 Decision. Following the BR Director’s decision in January 2017 to extend the free access to all ITU-R Handbooks, more than 16,000 downloads were registered. Also, the number of downloads originate from the 193 ITU countries. At this time, there are 42 ITU-R Handbooks published, of which 38 are in force, 1 is merged and 3 are suppressed but still available at the ITU website.

Table 9.1.4.4

Deliveries Distribution of ITU-R Handbooks 2014-2018

|  |  |  |
| --- | --- | --- |
|  | **Sales** | **Free Downloads** |
| **Handbook** | **2014-2016** | **2017** | **2018** | **2014-2016** | **2017**  | **2018\*** |
| Spectrum Management Series | 96 | 31 | 9 | 4,750 | 1,162 | 4,839 |
| Other Handbooks | 503 | 80 | 21 | - | 2,084 | 8,180 |
| **Grand Total** | **96** | **31** | **30** | **4,750** | **3,246** | **13,019** |

*\*Up to Sept 2018*

### 9.1.5 ITU Radio Regulations navigation and analysis tools

The Bureau continues to update and maintain software tools to facilitate the use and analysis of the Radio Regulations:

a) The Radio Regulation Navigation Tool was released during 2Q-2017 (RR Tool-16 v.1.0) based on the newest version of the RR. A free update is offered to purchasers of the previous version (RR Tool-12). This new version is available in English on Windows, macOS and Linux. Yearly free updates will be released to incorporate the latest available RoP until 2020 when a new version of the RR will be released, based upon the decisions of the WRC-19.

b) A software tool to conduct detailed search and analysis of the Table of Frequency Allocations of Article 5 of the Radio Regulations, enabling filtering and reformatting by frequency range, service, category of service, footnote, country, etc. The tool is based on RR-16 Edition and RoP-17 v.1. The beta test phase involved 50 volunteers from 15 countries and ended in November 2017. The package is now released on the ITU publication web site, and all software and data updates will be provided regularly to the subscribers.

## 9.2 Seminars and workshops

### 9.2.1 World and Regional Radiocommunication Seminars

Following WRC-15, BR started (as of January 2016) a new intra-WRCs World and Regional Radio Seminars cycle, aimed at disseminating worldwide the revision of the Radio Regulations made by WRC-15 and the associated Rules of Procedure.

This cycle encompasses the biennial World Radio Seminars, WRS, complemented by a set of Regional Radio Seminars, RRS.

The figures below show the participation in WRSs and RRSs from 2016-2018:

* In two WRS: 940 participants from over 110 countries
* In 8 RRSs: 787 participants from over 120 countries

During this period the BR provided more than 100 partial fellowships for RRS and over 60 full fellowships for WRS (one per administration for eligible countries).

#### 9.2.1.1 World Radiocommunication Seminars

The 2018 World Radiocommunication Seminar (WRS-18) was held in Geneva from 3 to 7 December, with the attendance of 485 participants from 98 Member States and 40 entities. WRS-18 focused on the regulatory aspects of the use of the radio-frequency spectrum and satellite orbits, in particular the application of the provisions of the ITU Radio Regulations,

Three-day workshops were held in parallel for both terrestrial and space services. The proceedings are available on the ITU website: [http://www.itu.int/ITU R/go/seminars](http://www.itu.int/ITU%20R/go/seminars).

#### 9.2.1.2 Regional Radiocommunication Seminars

As a complement to the biennial World Radiocommunication Seminars, the BR maintained its strategy for regional outreach through the organization of yearly cycles of Regional Radiocommunication Seminars (RRS), held in different regions of the world, fostering human capacity building on the use of the radio-frequency spectrum and satellite orbits, in particular, the application of the provisions of the ITU Radio Regulations.

RRSs include two days of theoretical sessions and one or two days of workshops on terrestrial and space services. They are complemented with a one or two-day forum, dedicated to spectrum-related topics of particular interest to the region.

Table 9.2.2-1 provides a summary of the RRSs held during this cycle. These seminars were hosted by governments, the regulators or spectrum management authorities of host countries, in cooperation with relevant regional organizations and the ITU regional/areas offices. RRS were conducted in a “paperless” environment. The proceedings are available on the ITU website: <http://www.itu.int/ITU-R/go/seminars>.

The following RRS are being planned for 2019:

* RRS-19-Africa: 13-17 May, Johannesburg, South Africa
* RRS-19-RCC: 10-14 June, Tashkent, Uzbekistan
* RRS-19-Europe: 24-27 June, Tirana, Albania

Table 9.2.2-1

ITU Regional Radiocommunication Seminars (2014-2017)

| **Date** | **RRS** | **Place** | **Host** | **Cooperation** | **Forum Topics** | **Languages** | **Participants/administrations** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **2016** |
|  | **RRS-16-Americas** | Port of Spain, Trinidad and Tobago |  Caribbean Telecommunications Union (CTU)  | ITU Americas Office | WRC-15 outcomes and WRC-19 Agenda: Regional Challenges and Opportunities for Spectrum Harmonisation | E | 31/14 |
|  | **RRS-16-Asia-Pacific** | Apia, Samoa | ICT Ministry. Samoa | ITU Asia&Pacific Office | Bridging the Digital divide on the region: role of Radiocommunications Technologies" | E | 78/15 |
| **2017** |
|  | **RRS-17 Africa** | Senegal | Ministère des Postes et Télécommunications (MPT) and the Autorité de Régulation des Télécommunications et de la Poste (ARTP) | African Telecommunications Union (ATU) | WRC-19 Agenda: challenges and opportunities for Africa | E/F | 185/35 |
|  | **RRS-17 Americas** | Peru | Ministerio de Transportes y Comunicaciones (MTC) | Inter-American Telecommunications Commission (CITEL) | Transition to 5G: Present and Future in Latin America | S | 70/12 |
|  | **RRS-17 Asia-Pacific** | Cambodia |  [Ministry of Posts and Telecommunications of Cambodia (MPTC)](http://www.mptc.gov.kh/) |  | Transition to 5G in the Region | E | 140/22 |
|  | **RRS-17 Arab** | Oman | [Oman Telecommunications Regulatory Authority (TRA)](https://www.tra.gov.om/)  | ASMG | WRC-19 Agenda: challenges and opportunities forArab Countries | A/E | 153/15 |
| **2018** |
|  | **RRS-18 Asia-Pacific** | Bhutan | Ministry of Information and Communications (MoIC) of Buthan | Asia-Pacific Telecommunity (APT) | Radiocommunication Systems evolution: challenges and opportunities for the Region | E | 70/15 |
|  | **RRS-18 Americas** | Costa Rica | Ministerio de Ciencia Tecnología y Telecomunicaciones of Costa Rica (MICITT) | Inter-American Telecommunications Commission (CITEL) | Spectrum Management: Challenges ahead | S | 60/13 |

### 9.2.2 Other Events

Support was also provided to other ITU seminars related to topics such as spectrum management, space radiocommunication applications, WRC-19 preparation, etc. Events organized within ITU-R can be found at: <http://www.itu.int/ITU-R/go/seminars> . Table 9.2.2-1 illustrates this activity. Some relevant events during 2018 period are:

* ITU WRC-19 Regional Workshop for Region 2; 21-23 March 2018, Havana, Cuba,
* ITU Regional Seminar for CIS and Europe "*Development of modern radiocommunication ecosystems"*, 6-8 June 2018, St. Petersburg, Russian Federation
* ITU Satellite Symposium; 28 -30 November, Geneva, Switzerland•
* ITU Regional Workshop on “*Furthering IMT Development: Policy, Spectrum Valuation and Auctions* *in the Arab Region*” 18-19 December, Riyadh, Kingdom of Saudi Arabia

## 9.3 Assistance to Member States

### 9.3.1 Assistance to administrations of developing countries

Since 2015, the Bureau provided assistance to the administrations of developing countries in more than 36 instances, in areas such as:

– Supporting national spectrum management activities in the rapidly changing regulatory environment (see Resolution 7 (Rev.WRC 03)) and providing technical assistance in the field of space radiocommunication (Resolution 15 (Rev.WRC 03); to this end, missions were undertaken upon request by administrations or jointly organized with the BDT. This involved the participation of BR experts, to provide capacity building in regional seminars organized by the BDT or regional organizations. Furthermore, experts from administrations of least developed countries were granted fellowships to attend BR radiocommunication seminars and workshops. Experts from administrations also received individual or group in service training at the ITU headquarters on radio regulatory procedures.

– Participation in the meetings of the regional coordination groups, as requested by Article 12 of the Radio Regulations.

– Participation in capacity building seminars on satellite communications.

– Provision of assistance in Long Term Frequency management and assignment for mobile broadband (IMT).

– Provision of guidelines and technical support for the transition to Digital Television and the allocation of digital dividend.

At the request of the Administrations, direct assistance were provided to several countries, including Bhutan, Dominican Republic, El Salvador, to support their national spectrum management activities, including long-term frequency management mechanism for mobile broadband.

Table 9.2.2 illustrates this activity.

Table 9.2.2

Participation of BR staff to events disseminating information

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | **2015** | **2016** | **2017** | **2018** | **TOTAL** |
| **Missions** | **Countries**  | **Missions** | **Countries**  | **Missions** | **Countries**  | **Missions** | **Countries**  | **MISSIONS** |
| ***SPECIALIZED UN AGENCIES***  | 24 | 9 | 33 | **13** | **23** | **11** | **21** | **11** | **101** |
| ***REGIONAL TELECOMMUNICATION ORGANIZATIONS***  | 74 | 34 | 57 | **32** | **49** | **37** | **46** | **37** | **226** |
| ***Non-ITU CONFERENCES & SYMPOSIA***  | 57 | 45 | 83 | **40** | **51** | **32** | **58** | **44** | **249** |
| ***ITU SEMINARS, WORKSHOPS & MEETINGS*** | 33 | 19 | 39 | **19** | **27** | **26** | **21** | **19** | **120** |
| ***ASSISTANCE REQUESTS*** | 14 | 7 | 8 | **5** | **8** | **8** | **6** | **5** | **36** |
| ***OTHER EVENTS*** | 31 | 14 | 14 | **10** | **15** | **11** | **20** | **6** | **80** |
| **TOTAL** | **233** | **128** | **234** | **119** | **173** | **125** | **172** | **122** | **812** |

### 9.3.2 Assistance to regional groups

The Bureau continued its participation in the meetings of the regional coordination groups
(e.g. HFCC), as requested by Article 12 of the Radio Regulations, providing the necessary assistance and collaboration. See also Section 9.5.

### 9.3.3 Assistance to other groups of countries

The Bureau organized the following frequency coordination meetings:

* A series of regional frequency coordination meetings on the use of the VHF/UHF bands were organized in Central America and the Caribbean. These meetings were organized in collaboration with CITEL, COMTELCA and CTU. The first meeting took place from 8 to 10 March 2017 in Managua, Nicaragua. The whole process lasted 18 months and was finalized at the 4th meeting held in Belize from 11 to 14 September 2018 with 94% of assignable channels for digital requirements in the UHF band and 96% in the VHF band. The results are based on a minimum of 4 national layers (MUX) in UHF and 1-2 in VHF for the administrations;
* A multi-lateral coordination meeting between Italy and neigbouring countries to solve cases of harmful interference between FM broadcasting sound stations was held on held on 20 June 2018 with the assistance of the Bureau;
* A bi-lateral coordination meeting between Armenia and Azerbaijan on sound and television broadcasting was organized by the Bureau from 12 – 14 March 2019 at the ITU Headquarters in Geneva. The Bureau provided relevant technical assistance to both administrations;
* Four ITU/ITSO Capacity Building Workshops on Satellite Communications were organized in Dakar (Senegal) from 23 to 27 July 2018 (for French-speaking African countries), in Quito (Ecuador) from 10 to 14 September 2018, in Abuja (Nigeria) from 22 to 27 October 2018 (for English-speaking African countries) and in Rabat (Morocco) from 26 to 30 November 2018. These workshops are part of a capacity building partnership between the ITU and ITSO for the delivery of satellite communications related training. In addition, at the request of the notifying administrations, the Bureau hosted satellite coordination meetings in the ITU headquarters in Geneva.

## 9.4 Inter-sector Cooperation (see also Addendum 1 to this document)

### 9.4.1 Cooperation with ITU‑D

As reported in Sections 9.1 to 9.3 above, the BR continues to pursue its objective of informing and assisting the ITU membership, in particular in developing countries, on issues relating to radiocommunication matters. For this purpose, the BR organizes and participates in a number of spectrum related workshops, seminars, meetings and capacity building activities. These actions are being carried out in close cooperation with the BDT and the ITU regional and area offices, and other relevant international organizations and national authorities.

The Bureau also participated in the BDT assistance programme dealing with the development of regulations for maritime wireless communication for the Ministry of Communications and Information Technology (MCIT) of Indonesia.

#### 9.4.1.1 GSR

Recognizing the importance of expert information to Member States, the BR continues to support the BDT by providing technical expertise in relation to spectrum management, digital broadcasting and digital dividend. The BR contributed to the ITU Global Symposium of Regulators 2014, 2015, 2017) with the organization of, and participation in, sessions related to spectrum management, with emphasis in 5G and new spectrum management trends.

In 2018 the GSR agenda did not include a session on spectrum-related topics. BR is currently coordinating with BDT to include the topic in the agenda of GSR-19.

#### 9.4.1.2 ICT Survey and ICT Eye

ICT-eye and its survey form an essential tool for gathering data from administrations on key ICT metrics. The BDT does the tracking of such data on a yearly basis, and displays the data results in a meaningful way in the statistics portal. In order to capitalize from the existing platform provided by ICT-eye, the BR cooperated with the BDT to expand the current survey and include a chapter on key spectrum-specific information (i.e. auctions, caps, mobile technologies/standards, spectrum licensing). The spectrum chapter was developed by BR and published in the ICT survey for the first time in 2013. BR kept working closely with BDT in collecting, processing, and disseminating this chapter. This chapter is under review with the objective of aligning it to regulators way of classifying the mobile broadband technologies and include a new section on IMT frequencies national allocation and assignments, while considering KPIs on IMT National Spectrum Allocations and Assignments (see 8.4.1.3).

#### 9.4.1.3. World Telecommunication/ICT Indicators Symposium, WTIS

The BR cooperated with the BDT on the indicators and definitions for gathering data on mobile broadband technologies, especially when referring to standards.

In 2018, the BR participated in the meetings of Expert Group on Telecom-ICT Indicators (EGTI), and contributed in driving the discussions of the Ad-Hoc Group in the development of a new indicator on IMT National Spectrum Allocations and Assignments.

The BR made presentations during WTIS-15, WTIS-16 and WTIS-17. During WTIS-18, the BR participated in discussions relating to IMT National Spectrum Allocations and Assignments, which endorsed the recommendations from the EGTI.

#### 9.4.1.4 Spectrum Management Training Programme (SMTP)

BR has maintained close collaboration with the BDT on issues of mutual interest to ITU R and ITU D. The BR has participated in relevant meetings of ITU D Study Groups, Rapporteur Groups and TDAG, where liaison activities have involved topics such as spectrum management, digital broadcasting and migration from analogue systems, transition towards and implementation of IMT, and broadband wireless access technologies. These topics are in addition to the collaboration undertaken through ITU D Question 9-3/2 that calls for the identification of study topics in ITU R (and ITU T), considered to be of particular interest to developing countries.

In response to requests from the BDT, experts from ITU R and BR have participated in ITU seminars and workshops organized by ITU D (see also Section 9.2.4). Within the framework of Resolution ITU R 11-4 (Further development of the spectrum management system for developing countries), BR has been involved with the design, testing and training associated with the software SMS4DC (Spectrum Management System for Developing Countries), with advice provided on the use of relevant ITU R Recommendations. In addition, ITU R Study Group 1 has continued to work closely with the ITU D Study Groups in pursuing studies on spectrum usage in accordance with Resolution ITU D 9.

In view of some of the needs of developing countries, the production of Handbooks has continued to be recognized as a major Study Group activity. In this respect, new or revised Handbooks have been developed on topics such as spectrum monitoring, radiowave propagation information for designing terrestrial point-to-point links, amateur and amateur-satellite services, migration to IMT-2000 systems and use of radio spectrum for meteorology (weather, water and climate monitoring and prediction).

Since 2013, the BR actively participated in a joint project with the BDT to develop the Spectrum Management Training Programme (SMTP) through its different phases: design, material preparation, peer review, pilot test (conducted in 2015). In 2016, improvements were integrated on the basis of feedbacks. In 2017 a comprehensive revision was made, which provided ITU the opportunity to establish working relationship with some regulators in Latin-America, interested in an edition of SMTP specifically oriented to their Staff.

In 2018, BR and BDT took actions towards implementing special editions of SMTP. These actions are still in progress. In 2019 the BR plans to review and revise the material contained in the current SMTP.

### 9.4.2 Cooperation with ITU-T

In addition to climate change and emergency communications, topics of mutual interest between ITU R and ITU T include IMT-2020, the effects of human exposure to radio frequencies, power line transmission systems, intelligent transport systems, common patent policy and intellectual property rights and audio-visual media accessibility.

Therefore, there continues to be a requirement for close coordination on the various topics being addressed by ITU-T that impinge on radiocommunication issues in order to reduce the potential for overlap, duplication and avoid redundancies.

## 9.5 Cooperation with international and regional organizations (see also Addendum 1)

The Bureau continued to maintain close cooperation with international and regional organizations with the following objectives: 1) promote dialogue amongst bodies having common interests; 2) better coordination leading to more effective preparation for events such as WRCs; and 3) keep ITU‑R abreast of relevant activities in other organizations for a more strategic planning of work programmes.

The Bureau continues its close cooperation with the relevant international and regional organizations dealing with the use of spectrum (APT, ASMG, ATU, CEPT, CITEL and RCC), broadcasting organizations (ABU, ASBU, EBU and HFCC) or more generally with the use of radiocommunication services (e.g. ITSO, ESOA, GVF, GSMA) by organizing, promoting and participating in events to build capacity on the use of the RRs, including WRS and RRS, as indicated in Section 9.2.

The Bureau continues to participate in the activities of the Global Standards Collaboration (GSC). Involvement with the 3GPP and IEEE has been maintained, as well as several regional standardization organizations, given their importance and relevance to the work of Study Group 5. Other notable areas of liaison with Study Group activities include those with the World Meteorological Organization, the World Health Organization, ISO and IEC (including CISPR), Space Frequency Coordination Group and several others on an ad-hoc basis.

The Bureau ensured liaison and cooperation with the UN Committee on the Peaceful Uses of Outer Space (UN-COPUOS), the International Maritime Organization (IMO), the International Maritime Satellite Organization (IMSO), the International Telecommunications Satellite Organization (ITSO), COSPAS-SARSAT, the International Committee of the Red Cross (CICR) the International Civil Aviation Organization (ICAO) with regard to the application of ITU treaty texts. BR experts also participated in various meetings of these organizations.

## 9.6 Evolution of ITU-R Sector Members, Associates and Academia

Table 9.6-1 shows the stability of the number of ITU-R Sector Members, Associates and Academia during since 2015.

Table 9.6-1

Evolution of the ITU-R membership since 2015

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   | **2014** | **2015** | **2016** | **2017** | **2018** | **2018 vs 2014** | **% Increase** |
| **Sector Members** | 258 | 269 | 266 | 264 | 264 | +6 | +2% |
| **Associates** | 15 | 18 | 19 | 21 | 21 | +6 | +40% |
| **Academia** | 73 | 95 | 107 | 125 | 155 | +82 | +112% |

### 9.7 Communication and promotion

In order to position the ITU-R in line with its strategic objectives (create brand value, strengthen reputation, mobilize internal and external stakeholders, engage supporters and advocate in the interest of membership), the Bureau works in close collaboration with the Corporate Communications Division (CCD) and ITU Press Office, the membership Department and other relevant Departments of the General Secretariat. This work has included several ITU Inter-Sectoral meetings: WSIS Implementation Task Force, Communications Groups, Web Editorial Board, Emerging Trends and Gender Task Force Group.

### 9.7.1 Website

The BR continued to support the ITU-R Sector strategic goals with communications issued through the BR website [www.itu.int/ITU-R/](http://www.itu.int/ITU-R/), top-level pages which is regularly updated reflecting the work being undertaken by the Sector and, as far as possible, in the six official languages of the ITU.

ITU-R communications continued to distribute information via social media on the [ITU-R Newsroom](https://twitter.com/ITU_R) targeting the ITU membership, ITU-R Study Groups participants and delegates, academia members, specialized technical magazines, research institutions, media, ITU staff and the general public.

The BR Director’s corner was redesigned to include a visitors section with photos, the speeches and presentations by the Director as well as the meetings schedule, videos and photos.

### 9.7.2 Promotion and media relations

#### 9.7.2.1 Media Communications

In 2018, subjects of interest to the media were responded to, after careful coordination with BR and ITU Communications, BR Management and relevant radiocommunication experts.

The BR continued to support the ITU-R Sector strategic goals, with communications issued through the ITU Communications and Press Office and social media channels, the ITU-R Newsroom <https://twitter.com/ITU_R> and BR website [www.itu.int/ITU-R](http://www.itu.int/ITU-R) during 2018:

10 press releases and communiqués were issued in 2018 and weekly contributions to the ITU News weekly edition regarding new technologies and trending topics and ITU-R events.

During 2018, 90 media queries and requests for interviews, including additional requests for information were received. They were responded to, either by correspondence or through interviews given by BR experts, Chairmen of the ITU-R Study Groups or the BR Director.

#### 9.7.2.2 FAQs

BR continues to regularly update the various sets of Frequently Asked Questions (FAQs). They are available for consultation by the media, industry and general public and currently cover the following topics:

– Radio Regulations (RR), ITU-R Study Groups (SG), RRB, RAG, BR;

– International Mobile Telecommunications (IMT) and Wireless Broadband;

– Digital Dividend and the Digital Switchover (DSO)

– Universal Time Scale (UTC) – Leap Second;

– Satellite Filings and associated procedures.

They can be found online on the right-hand top of the ITU-R web page (<http://www.itu.int/en/ITU-R/Pages/default.aspx>.

#### 9.7.2.3 Branding communications

During 2018, standard branding (rollups, virtual e-banners, e-posters, e-certificates, social media announcements etc.) photos, videos, multimedia were prepared for the World and Regional Radiocommunication and Space Seminars and keynote meetings and events organized by the BR.

2018 saw the rebranding implementation of the ‘one ITU’ visual communications across the ITU- Sectors with templates and the UN blue as the basis for all top-level branding with the Radio Regulations red maintained for the BR Seminars and Workshops.

#### 9.7.2.4 Exhibitions and Demos

A technical demonstration was organized during the ITU Satellite Symposium 2018 of three Very Small Aperture Terminals (VSATs) in the Ka band operating with the Eutelsat Ka-Sat satellite, located at 9 degrees East. An [article](https://news.itu.int/international-experts-discuss-interference-free-satellite-services-itu-satellite-symposium/) was issued in the ITU News magazine and an exhibition was organized during the World Radiocommunication Seminar (WRS-18), held at ITU HQ in Geneva, Switzerland.

Annex 1

BR Space Information Systems Progress Report

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| **Phase 2: 1 April 2012 – 31 December 2015** |
| **Business Continuity and Disaster Recovery\***In 2018, the ITU set out to establish a global Organizational Resilience Management System with the help of external security consultants. This activity reached its halfway mark at the end of the year, with active participation from all levels of the Bureau, building on the work previously accomplished on establishing business continuity and disaster recovery plans and procedures.\*This work applies to both Space and Terrestrial Services**Rewrite legacy software for technical examination*** Rewrite PFD for protection of terrestrial services calculation: Ongoing
* Rewrite AP8 calculation: Internal tests of the new AP8 exam software started in the fourth quarter of 2018. Work is ongoing on a new reporting tool.
* Rewrite PFD for protection of space services: Ongoing
* Migrate technical examination software written in Fortran from Compaq Visual Fortran compiler to Intel Fortran compiler
	+ GIMS Fortran components: Not yet started
* Mspace – Migration of Visual Basic 6 components to .NET: Ongoing

**Design and develop the BR Space Information System (BR SIS)*** Rewrite SpaceVal written in Visual Basic 6

 A beta version of the new BR-SIS Validation was presented at WRS-18. The rewrite of SpaceVal involved automating 2000 test cases and automating the comparison of validation results from the old and the new application, taking into account the hundreds of improvements that were implemented during the migration. The production version of BR-SIS Validation is expected in the second quarter of 2019.* Rewrite SpaceCap written in Visual Basic 6Integration of SpaceCap into BR-SIS has started and will be achieved by integrating one type of notice at a time.
* Migrate SRS MDB to more modern technology

 The continued work on implementing WRC-15 decisions and other higher-priority issues precluded the introduction of SQLite in 2018. SQLite databases for testing will be made available to external users in Q1 of 2019, and the applications shipped on the BR IFIC DVD will be SQLite-compatible at the latest as of version 9 of the SNS database, which will implement WRC-19 decisions.Backward compatibility of BR Space Software with the MDB format, as well as conversion tools, will be retained for the foreseeable future, to allow external users sufficient time to adopt the new technology.* Migrate SNS database on Ingres to SQL Server

The migration of Ingres-environment specific internal processing applications continued in 2018. The remaining internal processing applications shall be rewritten or adapted in 2019. The future version of SNS Online, to be developed to satisfy resolves 4 of Resolution 186 (Rev. PP-18 Dubai), will run on the SQL Server database and be built on ASP.NET MVC technology, which has been used for e-Submissions and SIRRS.* Review SNTrack

 SNTrack will be replaced by a Space Management Information System in 2019, to complete the back office functionality of the e-Submissions system. |
| **Phase 3: 1 January 2016 – 31 December 2018** |
| The main themes of Phase 3 are:• Design common conceptual database for terrestrial and space.• Define standard application framework for Space and Terrestrial Systems including Maritime System (MARS) based on ITU maritime databases.• Redesign Space System – (apply Service Oriented Architecture).• Consider centralized risk, recovery and security managementThe work done during the previous phases, as well as the design and technology choices made, are all an excellent foundation for successful completion of Phase 3, as follows:* The Space databases shall be migrated to the SQL Server platform by the end of 2019.
* A schema redesign, preserving equivalence of data, but with the objective to eliminate certain redundancies and to align with a common Space/Terrestrial approach, would be rolled out together with the changes needed for the implementation of WRC-19 decisions.
* The desktop application frameworks for the Terrestrial System, the Space System and MARS have traditionally been quite different, and may continue to be so for the time being. The need to standardize on one framework diminishes as more and more functionality is offered through web applications.
* The standard web application framework used for new development (e.g. SIRRS, e-Submissions) and for the redesign of existing Space System web applications (SNS Online) shall be ASP.NET MVC, which is also endorsed and supported by the IS department and is the web application framework on which the MARS project has been re-implemented.
* The adoption of the .Net platform and the Prism design architecture will make it easier to transition from desktop applications to web applications, knowing that the preferred web application development framework is based on the same core technology and programming language.
* Activities on centralizing and streamlining risk, recovery and security management are on-going.
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