Report from the CGMS WGI Task Group on RFI detection, monitoring, and mapping (incl. latest ToR, status on current & proposed/planned activities)

Presented to CGMS-52 Working Group 1 session, agenda item 3.1
CGMS-52-WGI-WP03

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Executive summary of the WP

The Task Group on RFI Detection, Monitoring and Mapping (TGRFI) was established in response to CGMS-49 request to establish the initial ideas about mechanisms regarding the detection, monitoring, and mapping of RFI, including the passive bands. The group began meeting in May 2022 and has continued meeting periodically since that original kick off.

This presentation briefly summarizes the status of TGRFI, its activities to date, and its planned upcoming activities.

Task Group on RFI detection, monitoring and mapping

TGRFI List of Members (13)

Organization	Name		comments
CMA	NIE	Jing	
CMA	WU	Shengli	
ECCC	Alec	Casey	
ESA	Yan	Soldo	
EUMETSAT	Markus	Dreis	
EUMETSAT	Simon	Elliott	
EUMETSAT	Karolina	Nikolova	Rapporteur
KMA	Junghun	Choi	
KMA	Dohyeung	Kim	
NOAA	Beau	Backus	
NOAA	Skip	Dronen	
WMO	Jesse	Andries	
	Phillippe	Tristant	*supporting guest*

Terms of Reference

The tasks of the TGRFI team for this year include:

- Analyze the inputs provided by CMA, EUMETSAT, KMA, and NOAA on spectrum concerns and activities on RFI detection, monitoring, and mapping and…
- Continue to pursue the establishment of a proposed set of best practices by CGMS-52 based on the common aspects of the approaches already adopted by members.
- Explore the potential / existing uses of AI/ML and pattern recognition in RFI detection.

WGI, at the request of Simon Elliott, agreed that Beau Backus from NOAA would lead TGRFI.

Current Activities – TGRFI Team met four times

1. TGRFI I (5 Oct 2023)

Review of team members and discussion on any additional members recommended to be invited. Discussion on the inputs previously provided by CMA, EUMETSAT, KMA, and NOAA regarding RF spectrum interference concerns and any activities on RFI detection, monitoring, and mapping. Began discussion on development of a draft set of best practices for CGMS-52 based on aspects of the approaches already adopted by members. Recognized upcoming World Radiocommunications Conference and planned to conduct further review of best practices just prior to the next meeting on 18 Jan 2024. Brief review of the potential or existing uses of AI/ML and pattern recognition for RFI detection. Members were not readily aware of this use of AI/ML.

2. TGRFI II (18 Jan 2024)

Members briefly reviewed roster of team members. Two additional members identified. Most of the meeting spent in review and discussion of the member provided "Best Practice Brainstorming for RFI Detection, Monitoring, and Mapping" document. Members determined that additional time was needed for developing the Best Practice document and agreed to meeting again on 14 March.

3. TGRFI III (14 Mar 2024)

Members continued to review and discuss the updated version of the "Best Practice Brainstorming for RFI Detection, Monitoring, and Mapping" document. It was noted that the document had a primary focus on the passive band RFI issue, primarily viewed as the most pressing need for a best practice document. It was determined that an additional meeting would be needed prior to the CGMS-52 WGI meeting. Fourth meeting scheduled for 26 March. Team ran out of scheduled time to discuss the AI/ML action item and noted it for the next meeting.

4. TGRFI IV (26 Mar 2024)

Members continued to review and develop the next version of the "Best Practice Brainstorming for RFI Detection, Monitoring, and Mapping" document. Added additional material to include "who" and "when" information. Determined that the document was not ready for endorsement at CGMS-52 and should be provided for review. Discussed the AI/ML and pattern recognition for RFI detection. Team recognized that AI/ML was a rapidly growing technical area and that members would review their agencies activities in this area for application to RFI identification and mitigation.

Primary focus on best practices with emphasis on passive band RFI

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Upcoming Activities - Requested for CGMS-53 cycle

The Task Group's next requested tasks, as an updated TOR, are:

- To complete a draft proposed set of best practices by CGMS-53 based on the common aspects of the approaches already or planned for adoption by members for endorsement by CGMS-53.
- To continue to explore the potential / existing uses of AI/ML and pattern recognition in RFI detection.

Once established, the best practices can be endorsed by CGMS-53 and used to:

- Assist members implement a standard approach for assessing RFI and
- Develop more robust systems and processes for minimizing remote passive band sensor corruption.

Four intersessional meetings have been scheduled: on 12 September 2024, 14 November 2024, 9 January 2025, and 20 February 2025. Additional dates may be scheduled depending on the progress made by the team.

Key issues of relevance to CGMS:

- ☐ TGRFI has identified common ways of using collected input information as a basis for a set of best practices.
- ☐ Information, as best practices, can help members implement a standard approach for assessing, processing, and potentially mitigating RFI.
- ☐ The current best practice being developed is primarily focused on the most challenging of RFI, that of passive band corruption.
- ☐ Reference to HLPP - 2.2 Radio Frequency (RF) protection

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To be considered by CGMS:

- ☐ CGMS WGI is invited to:
  - ☐ Take note of the development status of the ‘best practices’ being developed for RFI handling
  - ☐ Consider and approve the updated TOR for TGRFI
- ☐ CGMS-52 Plenary is invited to approve the updated TOR

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