

SECTION 1: INTRODUCTION

The Malaysian Technical Standards Forum Bhd (MTSFB) is pleased to invite all eligible organisations to submit a project proposal(s) under the Industry Promotion and Development Grant (IPDG) programme.

The IPDG is designed to promote technology innovation and the development of Technical Codes and standards under the communications and multimedia industry.

The project grant is to be implemented in collaboration between universities and industry partners. MTSFB foresees that the collaboration will further enhance its capacity for effective and sustainable regulatory and policy formulation, while enabling the prioritisation of the most critical industry challenges to be addressed through the IPDG.

Projects under this IPDG will generate greater impact, which output will shape the new technical standards and best practices that are much relevant to the industry and ensuring widely adoption.

The objectives of the IPDG are as indicated below:

- a) To spur technology, standards development and adoption of Information and Communication Technology (ICT) within the field of communication network, infrastructure and applications.
- b) To discover new strategic mechanisms that will reduce cost, increase value, and contribute to a better, healthier and more conducive user experience.
- c) To encourage members of MTSFB or the industry to develop innovative projects that can benefit the communications and multimedia industry.
- d) To contribute to the development of new standards as use cases in developing recommendations to the regional as well as international platform to be equipotential with developed countries.
- e) To provide solutions to common problems confronted by the industry in its own effort to enhance the services offered to the consumers.
- f) To contribute to the realisation of national policy objectives and support the achievement of transformative national visions and goals.

This IPDG Cycle 1 2026 initiative focuses on supporting the safe and effective integration of UAS operations over IMT networks through comprehensive simulations and field measurements, leading to the development of evidence-based technical guidelines that safeguard terrestrial IMT network performance. Hence, the project proposal is to address the coexistence of UAS and IMT networks.

SECTION 2: THE PROBLEM STATEMENT

2.1 The Problem Statement

In Malaysia, the Malaysian Communications and Multimedia Commission (MCMC) issued the Guidelines on the Use of Radio Spectrum for Unmanned Aircraft Systems in 2024, establishing the regulatory framework and high-level requirements for UAS spectrum usage. However, the current guidelines do not explicitly address the use of LTE bands for UAS operations. MCMC is planning to update these guidelines. For effective implementation, particularly for UAS operations over IMT networks, robust, locally validated technical evidence is required to define practical operational parameters that avoid harmful interference or degrade service quality.

While some vendors have conducted isolated, silo-based trials to demonstrate interference scenarios, a comprehensive, coordinated national trial involving all major mobile network operators in Malaysia is necessary to determine whether interference occurs under real-world operational conditions. Such trials are required to generate credible data supporting the development of operational requirements and protection criteria for UAS operations over IMT networks.

To address this gap, there is a need for independent and trusted technical studies, supported by both simulations and field measurements, to be conducted by Institutions of Higher Learning or qualified industry participants acting as independent validation parties beyond the mobile network operators themselves.

2.2 Critically of the Problem

There has been a growing number of requests from Unmanned Aircraft System (UAS) operators seeking approval to operate over International Mobile Telecommunications (IMT) networks, driven by the rapid expansion of UAS applications in areas such as delivery services, logistics, surveillance, and public safety. As interest in these emerging use cases increases, it is important to understand their implications for existing mobile network operations.

International studies indicate that UAS operations within IMT bands may influence the quality of service (QoS) experienced by terrestrial users. Unlike ground-based user equipment (UE), UAS typically operate at higher altitudes above surrounding buildings and clutter, where line-of-sight (LoS) propagation conditions are more prevalent. Under such conditions, UAS may simultaneously receive and transmit signals to multiple neighbouring base stations, creating interference dynamics different from those of conventional terrestrial users. This phenomenon, including the potential for increased uplink interference and noise rise affecting terrestrial IMT performance, has been recognised by industry studies and documented in 3GPP TR 36.777.

Without credible data supporting the development of operational requirements and protection criteria for UAS operations over IMT networks, tailored to Malaysian deployment conditions, there is a risk that UAS operations over IMT networks may adversely affect the QoS experienced by terrestrial mobile users. It is critical to ensure safe coexistence between UAS and terrestrial IMT networks, to support consistent industry adoption, and to enable the sustainable growth of Malaysia's low-altitude economy without compromising the performance of national mobile communications infrastructure.

SECTION 3: PROJECT REQUIREMENT

3.1 Objective

To support the growth of the low-altitude economy while ensuring that UAS operations can be safely and effectively integrated into IMT networks, through the development of evidence-based technical guidelines that safeguard the QoS for terrestrial mobile users. The specific objectives of this project are as follows:

1. To characterise the radio behaviour and network performance impacts of UAS operations over IMT networks through comprehensive system-level simulations across realistic Malaysian deployment scenarios, including urban, suburban, and rural environments.
2. To assess the uplink interference characteristics introduced by UAS operations, including UAS transmit power behaviour, multi-cell reception effects, and their potential impact on terrestrial user equipment performance at different flight altitudes and network densities.
3. To validate and refine simulation outcomes through field measurements, capturing real-world UAS transmit behaviour, uplink signal reception at multiple base stations, and observable effects on terrestrial IMT network performance.
4. To establish locally validated technical evidence and operational parameters that can inform the development of national technical codes, guidelines, and protection criteria for Beyond Visual Line of Sight (BVLoS) UAS operations over IMT networks in Malaysia.

3.2 Scope

The project shall be implemented in two complementary phases comprising system-level simulations and field measurements. Together, these phases are intended to generate objective, locally validated technical evidence on the coexistence of UAS and IMT networks under realistic Malaysian deployment conditions.

a) Phase 1: System-Level Simulation Study

The appointed project team shall conduct comprehensive system-level simulations to characterise radio behaviour, interference dynamics, and network performance associated with UAS operations over IMT networks. The simulations shall be designed to reflect realistic Malaysian deployment scenarios and shall not assume predetermined outcomes.

Table 1 outlines the minimum simulation parameters and technical coverage requirements to be addressed under Phase 1. More relevant parameters can be added where necessary.

Table 1: System-Level Simulation Requirements

Category	Parameter	Simulation Requirements
Deployment Environment	Geographical scenarios	Urban, Suburban, Rural
	Representative network layouts	10–15 sites per scenario
	Average base station height	Urban: ~25 m Suburban: ~40 m Rural: ~55 m

	Inter-Site Distance (ISD)	Urban: ~600 m Suburban: ~1500 m Rural: ~3000 m
Frequency Bands	Low Band	700 / 800 MHz
	Mid Band	1800 / 2100 / 2300 MHz
	High Band	3500 MHz
UAS Density	Number of UAS units	Up to 100 simultaneous UAS
UAS Services	Service types	Command and Control (C2) Payload / Data communications
Traffic Conditions	Traffic modelling	Achievable radio conditions, including full buffer where applicable
Flight Altitudes	UAS altitude above ground level	30 m, 50 m, 70 m, 100 m, 120 m
Terrestrial Users	UE evaluation height	1.5 m above ground
Transmit Power Behaviour	TX power vs altitude	Assessment across all environments
	TX power distribution	Urban, Suburban, Rural
	Uplink interference	Impact on serving and neighbouring cells
	Power control analysis	Comparison of configured vs simulated outcomes
Performance Evaluation	Network performance metrics	Assessment of impacts on terrestrial UE and overall IMT network behaviour

b) Phase 2: Field Measurement and Validation Study

The project team shall conduct actual field measurements within Klang Valley (will be confirmed before the project start) to validate, refine, and compare against the findings from the system-level simulation study.

Field measurements shall include, but not limited to:

- UAS flight operations at various altitudes under real-world propagation conditions
- Measurement of UAS UE transmit power behaviour during flight
- Uplink signal reception levels observed at multiple base stations
- Assessment of observable effects, if any, on terrestrial UE performance and overall IMT network behaviour

The field data will provide the necessary real-world evidence to ensure robust and reliable technical conclusions.

c) Proposal on the development of new or updates of Technical Code based on the insights of the study.

3.3 Deliverables

The project shall prepare and submit the followings:

- a) solution development plan and implementation.

- b) project development report (deliverable based on milestone and site visit report).
- c) technical report which contains the following:
 - i. simulation results
 - ii. field measurement results
 - iii. operational requirements and protection criteria for UAS using IMT network to avoid interference to terrestrial IMT network including the maximum number of drones operating / using IMT network flying at the same area at any one time with acceptable uplink interference level caused to IMT network.
- d) draft of proposed new TC or revision of TC.

3.4 Project Timeline

The project timeline shall not exceed **3** months.

3.5 Quantum of Funding

The quantum of funding shall not exceed **RM120,000**.

3.6 Expected Benefit and Outcomes

The implementation of this project is expected to deliver the following outcomes, aligned with the stated project objectives:

1. **Locally Validated Characterisation of UAS-IMT Network Behaviour:** Provides comprehensive, Malaysia-specific technical characterisation of radio behaviour and network performance impacts arising from UAS operations over IMT networks across urban, suburban, and rural deployment scenarios.
2. **Quantified Uplink Interference and Coexistence Characteristics:** Delivers objective assessment of uplink interference dynamics associated with UAS operations, including transmit power behaviour, multi-cell reception effects, and their impact on terrestrial user equipment performance at varying flight altitudes and network densities.
3. **Verified and Credible Technical Evidence through Field Validation:** Strengthens the reliability of technical findings by validating and refining simulation outcomes using real-world field measurements, ensuring that conclusions accurately reflect operational conditions in Malaysian IMT networks.
4. **Evidence-Based Inputs for National Technical Codes and Effective Regulatory Implementation:** Provides locally validated operational parameters and protection criteria to support national technical codes and assist the effective implementation of the MCMC Guidelines on the Use of Radio Spectrum for Unmanned Aircraft Systems, enabling safe coexistence between UAS and terrestrial IMT services and supporting Malaysia's low-altitude economy.

SECTION 4: PROPOSAL SUBMISSION

4.1 This proposal is open to all members and must collaborate with all key telco providers and a drone service provider, of which the contacts will be provided by MTSFB.

4.2 Proposal Submission Period

The Call for Proposals (CFP) will be open for a period of three (3) weeks:

- Open: **Monday, 23 February 2026 at 9:00 AM**; and
- Close: **Monday, 16 March 2026 at 12:00 PM 3:00 PM**

4.3 CFP Documents

Applicants are strongly encouraged to refer to the Grant Application Guideline before submitting the application. The Grant Application Guideline and Grant Application Form may be downloaded here:

- a) Grant Application Guideline; and
- b) Grant Application Form

4.4 Proposal Submission Documentation

The proposal submission must include the below documentations.

- a) Cover letter;
- b) Grant Application Form;
- c) Project proposal in power point format to further describe and illustrate your project based on the grant application form; and
- d) All relevant supporting documentation

The submission documentations are to be submitted via email ipdg@mtsfb.org.my and marked "**IPDG SUBMISSION 2026 Cycle 1.**" Please ensure the following items are included in your submission:

A. Documentation to be submitted by Applicant:

- a. Fully completed and signed application form
- b. SSM Search Report from the link: <https://www.ssm-einfo.my/> (valid within two months from the date of submission)*
- c. Winding Up Report link: <https://e-insolvensi.mdi.gov.my/> (valid within two months from date of submission)*
- d. Board of Director Resolution on the appointment of authorised signatory*
- e. Proof of written contract or a committed arrangement with collaborator for the development and implementation of the project
- f. Proof of project completion (i.e: closure letter from the ministries/agencies). For applicant applying or previously received funds (if applicable)
- g. Audited and Management Account*:

Applicable for Company only:

- i. Incorporated more than 1 Year: Company's financial statements (Copies of 1 year latest Audited Accounts (from 2018 onwards) and as to date Management Accounts). A copy of latest audited account must be dated and certified by Commissioner of Oath/ Company's Secretary / Company's Auditor.
- ii. Incorporated less than 1 year: Company's financial statements (As to date Management Account).

- iii. If you cannot provide the above, please provide justification. (e.g. newly incorporated, previously dormant)

Applicable for Enterprises / Sole Proprietorships / Partnerships/Limited Liability Partnerships which providing a professional service which includes but not limited to Legal, Accounting, Surveying, Engineering, Architectural, Consultation, Management, Employment and Security (Private Agency) Services:

- i. The firms' latest tax return and supporting management accounts

B. Documentation to be submitted by Collaborator:

- a. SSM Search Report from the link: <https://www.ssm-einfo.my/> (valid within two months from the date of submission)*
- b. Winding Up Report link: <https://e-insolvensi.mdi.gov.my/> (valid within two months from date of submission)*
- c. Proof of successful deployment of similar projects which have achieved one of these outcomes (if any):
- i. Increase in revenue
 - ii. Savings in business cost
 - iii. Reduction of process time cycle
 - iv. Reduce man hours
 - v. Create new sources of growth

Note: For public university applicants, you may skip the fields marked with an asterisk (*).

4.5 Enquiries

Please be informed that the CFP briefing session is scheduled on **2 March 2026**. The details will be confirmed and announced later.

For any queries, kindly e-mail to ipdg@mtsfb.org.my and mark "IPDG QUERY 2026 Cycle 1" as the email subject line.

SECTION 5: TERMS AND CONDITIONS

All applicants seeking consideration must fulfil the following criteria:

- a) Membership in MTSFB as a registered organisation.
- b) Proven engagement and contribution to MTSFB standardisation activities.
- c) To actively contribute and participate in MTSFB standardisation activities for a minimum of three (3) years from the year Grant is awarded.
- d) To undertake the draft lead role for at least one (1) Technical Code (TC) within 3 years.