APPENDIX I: 2022 DSRG RESEARCH TITLES

List of Guided Research within the Digital Citizenship and Cyberwellness Category

No.	Code	Research Title
1.	DCC-1	*Exploration and Identification of MCMC Brand Health amongst the Industry and Public Sector*
2.	DCC-2a	*Are Malaysians Still Watching TV News? (focus on States and Federal Territories in Peninsular Malaysia)*
3.	DCC-2b	*Are Malaysians Still Watching TV News? (focus on Sarawak)*
4.	DCC-2c	*Are Malaysians Still Watching TV News? (focus on Sabah and Federal Territory of Labuan)*
5.	DCC-3	*Practice of Networked Content Self-regulation amongst Malaysian Users*
6.	DCC-4	*Industry Approaches in Handling Child Online Exploitation and Abuse*
7.	DCC-5a	*Readiness of the Workforce and Future Skilled Labour Competency Areas for 5G Network Deployments - An Assessment of Challenges*
8.	DCC-5b	*Readiness of the Workforce and Future Skilled Labour Competency Areas for 5G Network Deployments – An assessment of 5G Pilot Projects and Trial Demonstrations: Workforce Issues, Challenges and Opportunities*
9.	DCC-5c	*Readiness of the Workforce and Future Skilled Labour Competency Areas for 5G Network Deployments – Case Study of Service Providers Experiences related to 4G Network Tower Infrastructure Deployment*
10.	DCC-6	*Availability and Effectiveness of Skills and Competency Programmes contributing to Workforce Preparedness for 5G Deployment*
11.	DCC-7	*Assessment of Competency Gap to Enhance Workforce Performance in 5G Vertical Areas and Applications*

Title, Category, Gap and Target Group

1. DCC-1: *Exploration and Identification of MCMC Brand Health amongst the Industry and Public Sector*

The research falls within the Guided Research Category addressing the gap area of Communication Strategies related to Brand Health and Equity to target identified Communications and Multimedia Industry players and Public Sector stakeholders comprising identified Government Ministry Departments and Agencies.

Research Problem/Context

The Malaysian Communications and Multimedia Commission (MCMC) fully supports the Government's aspiration under the Malaysia Digital Economy Blueprint (MyDIGITAL) to transform Malaysia into a digitally-enabled and technology-driven high-income nation. We aim to contribute by facilitating digital transformation to uplift Malaysia as a high-income and high technology country in line with the 12th Malaysia Plan goals of having the digital economy contributing 25.5 percent of the gross domestic product (GDP) by ensuring compliance and regulation, collaboration and facilitation related to the identification, development and roll-outs of Digital Infrastructure and Data.

For commercial entities, an important predictor of success in terms of continued customer patronage, business sustainability and potential growth is its brand health. Brand health ought also to be accorded the same level of consideration for regulatory or governmental entities.

Malaysia's developmental aspirations and plans, which include the 12th Malaysia Plan and MyDIGITAL, are increasingly reliant on the synthesis of an ecosystem of stakeholders and state, federal and local government, and regulatory collaboration. To this end, the disparate elements of brand health and the perceptions of key stakeholders play a role in ensuring regulatory facilitation, multi-stakeholder buy-in, participation and collaboration, within a framework of regulations-based and self-regulatory compliance.

Research Aims

The roll-out of MCMC initiatives and additional challenges arising from the COVID-19 pandemic requires an examination of the brand health of the regulatory agency, as well as the various elements contributing to it.

Therefore, this Call for Proposal is to elicit research proposals providing an understanding of the extent and nature of MCMC's current brand health, stakeholder perceptions, gaps in the commission's brand health, and recommendations for improvement based on the views and feedback from Communications and Multimedia Industry players and Public Sector stakeholders comprising identified Government Ministry Departments and Agencies.

Research Objectives

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs):

a. RO 1 – In relation to brand situation analysis, what are the elements and status of MCMC's brand health;

b. RO 2 – In relation to brand equity and identification of what encompasses MCMC's brand value to identify the perception of MCMC's brand health amongst identified stakeholders;

c. RO 3 – In support of ongoing organisational realignment and in ensuring regulatory effectiveness to identify MCMC brand health gaps and areas which require improvement; and

d. RO 4 – To make recommendations on the key constituents of MCMC's brand health and the role branding plays for MCMC as a regulator, facilitator and collaborator for sectoral innovation and development.

Titles, Category, Gap and Target Group

2. DCC-2a: *Are Malaysians Still Watching TV News? (focus on States and Federal Territories in Peninsular Malaysia)*
3. DCC-2b: *Are Malaysians Still Watching TV News? (focus on Sarawak)*
4. DCC-2c: *Are Malaysians Still Watching TV News? (focus on Sabah and Federal Territory of Labuan)*

Three (3) research projects falling within the Guided Research Category addressing the gap area of Policy and Regulation Implications related to the Content Applications Service Provision (Individual) License Conditions to target Television news viewers are sought.

Research Problem/Context

The Malaysian Communications and Multimedia Commission (MCMC) wishes to investigate the merits of broadcasters' interest to vary the licensing conditions related to scheduled mandatory broadcast of news programming at particular times throughout the daily broadcast cycle. This issue was raised and discussed during the Malaysian Broadcasting Industry Lab (MBIL) attended by key stakeholders and was held from October to November 2021 at MCMC's Headquarters in Cyberjaya.

Historically, news broadcasts are seen as possessing a strong social imperative attracting strong viewership and playing an important element in promoting the cultural cohesion and identity of Malaysians.

MCMC is desirous of understanding the role, nature of consumption and perceptions and views of Broadcast News transmissions amongst television viewers. We would also like to understand the extent of viewers' readiness to any potential changes to the current status quo of new scheduled broadcast slots, and types of content. Another element consideration is to better understand and record whether there have been notable shifts in how viewers and listeners now acquire news content.

Research Aims

The findings of the research will assist in providing support for MCMC's decision on the terms and conditions of licensing conditions for future and existing broadcasters holders of the Content Applications Service Provider (Individual) (CASP-I) licenses issued under the Communications and Multimedia Act 1998 (CMA - Act 588).

This Call for Proposal is to elicit research proposals providing an understanding of the extent and nature of MCMC's current brand health, stakeholder perceptions, gaps in the commission's brand health, and recommendations for improvement based on the views and feedback from the Communications and Multimedia

Industry players and Public Sector stakeholders comprising identified Government Ministry Departments and Agencies.

Special Consideration on Geographical Scope of Research

MCMC seeks inputs pertaining to viewers distributed throughout Malaysia addressing the i) Peninsular Malaysia, comprising all states and Federal Territories in Peninsular Malaysia; ii) East Malaysia – Sarawak and iii) East Malaysia, comprising Sabah and the Federal Territory of Labuan. To address this Research Aim three separate research projects will be awarded to successful grant candidates. Applicants are therefore expected to include within their respective proposal the relative merits of their teams in being selected for grant award vis-à-vis the identified research locations.

Once awarded, MCMC will determine the research team which will administratively lead and align the research work of the three awarded research teams. All teams will apply the same research instrument but will also note and record any peculiarities of viewers; within their respective research areas. Details of administrative requirements related to aggregating research findings within a collective research report will be made available by the DSRG Secretariat at a future date.

Research Objectives

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs):

a. RO 1 – Identification of the elements pertaining to the current and future role of Broadcast News in relation to National Interests.
b. RO 2 – Viewer Perceptions on Television News broadcast;
c. RO 3 – Nature Audience News consumption; and
d. RO 4 – Viewer readiness to alternate/changing broadcast news formats.

Title, Category, Gap and Target Group

5. DCC-3: *Practice of Networked Content Self-regulation amongst Malaysians Users*

The research falls within the Guided Research Category addressing the gap area of Policy and Regulation Implications related to the consideration to extend the purview of the *Malaysian* Communications and Multimedia Content Code (Content Code) to encompass rural and urban Malaysian Users*.*

Research Problem/Context

The Content Code was developed as a voluntary industry code by the Malaysian Communications and Multimedia Content Forum of Malaysia (Content Forum). The Content Code is applicable to content providers under powers as a designated industry forum under the CMA – Act 588*.* Subsequently, the Content Code has been incorporated into the licensing conditions of all CASP-I) and Content Service Providers (CSP) license holders.

Research Aims

Presently, the Content Code is in use by industry players, however, there has not been a strong awareness of the code amongst the public. Therefore, there is a requirement to obtain insights into how the public make their decision in their content consumption.

This Call for Proposal is to elicit research proposals providing insights on the extent, nature and gaps pertaining to how rural and urban Malaysian exercise self-regulation when consuming content now consumed across multiple screens and platforms. This information will contribute to the further development and updates to the Content Code together with accompanying awareness and communications plans.

Research Objectives

Researchers are invited to submit proposals guided by the following overarching research objectives to understand rural and urban Malaysian content users and consumers (ROs):

a. RO 1 – Identification of the extent and nature of self-regulation when accessing, consuming and sharing networked content (broadcast, internet, Over-the-top (OTT), etc.) for oneself and for family members;
b. RO 2 – Elements incorporated by users when self-regulating, mediating or controlling use of networked media contents;
c. RO 3 – Awareness and Use of Content Code;
d. RO 4 – User readiness to learn about the Content Code; and

e. RO 5 – Users' expectations, readiness, and views on being subject to the Content Code.

Title, Category, Gap and Target Group

6. DCC-4: *Industry Approaches in Handling Child Online Exploitation and Abuse*

The research falls within the Guided Research Category addressing the gap area of Communications and Multimedia Industry players' standard operating procedures and incident handling and responses implemented related to child online exploitation and abuse. The research targets identified stakeholders including Internet Service Providers together with Public Sector stakeholders comprising identified Government and Industry Regulators.

Research Problem/Context

In 2020, the International Telecommunication Union (ITU) issued Guidelines on Child Online Protection (COP) as a response to the challenge of COP to ensure global action and both international and national coordination. The COVID-19 pandemic has aggravated existing risks for children online. In light of the growing challenge, ITU and partners have developed a Policy Brief on the importance of the protection and empowerment of children online.

In order to formulate a national strategy focusing on online child safety, inputs are required related to the following key areas below:

a. Policy development and regulatory framework; and
b. Tools, services and settings - the role of device setting, technical tools and child protection apps and setting that can help in child online protection.

The rapid advances in and proliferation of the Internet and evolving communications technologies have led to exposing children to issues related to privacy, illegal content, harassment, cyberbullying, misuse of personal data or grooming for sexual purposes and even child sexual abuse. Internet service providers (ISPs) act as both a conduit, providing access to and from the Internet, and a repository for data through their hosting, caching and storage services. As a result, they have been at the forefront of accepting responsibility for protecting children online. In this regard, the ISPs are expected to develop standard processes and procedures to handle child online exploitation and abuse in line with the guideline provided by the ITU.

MCMC wishes to identify the strategic recommendations on industry approaches handling child online exploitation and abuse, which includes but is not limited to, standard processes and procedures, as well as technical tools and child protection apps and setting that can help in child online protection.

Research Aims

The findings of the research will assist in providing support for MCMC's decision (as the C&M Industry Regulator) to consider and establish practical processes and procedures for implementation by the local Internet Service Providers (ISPs), which will help Malaysia in providing child online safety measure especially to overcome child online exploitation and abuse.

This Call for Proposal is to elicit research proposals providing information and recommendation on the best and practical way forward on the child online protection efforts in handling child online exploitation and abuse, at the industry level.

Research Objectives

Researchers are invited to submit proposals guided by the following overarching research objectives (ROs):

a. RO 1 – To identify standard processes and procedures implemented by the local Internet Service Providers (ISPs) on child online protection;
b. RO 2 – To identify industry approaches in handling child online exploitation and abuse being implemented by other governments and industry regulators;
c. RO 3 – To address the challenges and issues faced by industry (legal, regulatory and technical) in handling child online exploitation and abuse; and
d. RO 4 – Recommendation on the most effective industry approaches in handling child online exploitation and abuse, in line with the technology innovation as well the current legal and regulatory frameworks.

Title, Category, Gap and Target Group

7. DCC-5a: Readiness of the Workforce and Future Skilled Labour Competency Areas for 5G Network Deployments - An Assessment of Challenges
8. DCC-5b: Readiness of the Workforce and Future Skilled Labour Competency Areas for 5G Network Deployments – An assessment of 5G Pilot Projects and Trial Demonstrations: Workforce Issues, Challenges and Opportunities
9. DCC-5c: Readiness of the Workforce and Future Skilled Labour Competency Areas for 5G Network *Deployments – Case Study of Service Providers Experiences related to 4G Network Tower Infrastructure Deployment*

The research falls within the Guided Research Category addressing the gap area of understanding talent competency and literacy gaps in support of national 5G network deployments plans. The research targets identified stakeholders comprising Telecommunications Service Providers.

Research Problem

Globally governments are taking a proactive role to accelerate the rollout of 5G. Correspondingly, service providers are working towards this goal by ensuring that they are recruiting and retaining a skilled workforce able to contribute to 5G network deployments.

In implementing 5G, industry observers argue that the current workforce of service providers may be insufficient in executing the role[1]. They argue that operators are not always aware of the types of employees required to construct their systems. This problem could include out of date job descriptions which do not adequately take into account the fundamental differences between new and old technologies. Additionally the issues could be exacerbated when there are challenges related to skilled manpower shortages.

The United States' Federal Communications Commission has reported that telecommunications[2] crews "cannot keep pace with the broadband expansion without more skilled hands on deck." In the next ten years it is forecasted that 20,000 new jobs be added to existing pool of 29,000 broadband-related technicians employed in the U.S. These technicians will be required to accommodate broadcast repacking as well as expand universal broadband, public safety networks and 5G.

The construction of 5G networks requires significant effort with recruitment of the right employees being a key hurdle. In dealing with this issue, many operators

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[1] Seven challenges to expanding the broadband workforce, RCR Wireless, March 8, 2021. Retrieved from https://www.rcrwireless.com/20210308/workforce/seven-challenges-to-expanding-the-broadband-workforce
[2] BROADBAND INFRASTRUCTURE DEPLOYMENT JOB SKILLS AND TRAINING OPPORTUNITIES WORKING GROUP, Presented to the Broadband Deployment Advisory Committee (BDAC) of the Federal Communications Commission (FCC), October 29-30, 2020, Washington, DC. Retrieved from https://www.fcc.gov/sites/default/files/bdac-job-skills-training-opportunities-approved-rec-10292020.pdf

already struggle to find staff to update and maintain existing infrastructure and are now faced with new manpower requirements to produce new and fully upgraded systems.

Research Aims

The critical 5G network deployment challenges require targeted research to provide inputs at ensuring reskilling programmes and certifications focused on 5G technologies, enabling efficient management of network deployment workloads.

This Call for Proposal is to elicit the award of 3 separate research projects providing an understanding of the workforce skills, challenges and gaps for 5G Network deployment and recommendations for ensuring a sustainable 5G workforce.

DCC – 5a Research Objectives:

a. RO1 - To assess the workforce skills and challenges for 5G Network deployment;
b. RO2 - To conduct a gap analysis for capacity building and workforce requirements for 5G network deployment; and
c. RO3 - To recommend prioritisation of skilled labour competency areas/requirements to deploy 5G networks; and
d. RO4 - To identify required targeted/prioritised training programmes for development in support of industry rollouts of 5G networks. (This may include new areas of collaboration with other government agencies involved in human capital development).

DCC – 5b Research Objectives:

a. RO1 - To assess workforce issues, challenges and opportunities related to human resources and capacity building requirements during the deployment of completed 5G pilot projects and trial demonstration;
b. RO2 - To recommend solutions based on relevance and applicability of identified issues during the pilot projects and trial demonstrations to future national rollouts;
c. RO3 - To identify the competency and skills gaps experienced by service providers in completing the pilot and trial projects and steps taken to ensure competency development vis-à-vis these skills gaps.

DCC – 5b Special Consideration and Limitation

The scope of this research is limited to previously implemented 5G pilot projects and trial demonstrations in Langkawi, Cyberjaya, and the Federal Territories of Putrajaya and Kuala Lumpur.

DCC – 5c Research Objectives:

a. RO1 - To assess the workforce experiences in the setting up of the current tower infrastructure supporting 4G networks in Malaysia;
b. RO2 - To conduct gap analysis for capacity building and workforce requirements; and
c. RO3 - To recommend which areas of skilled labour competency areas/requirements for upskilling and reskilling the current workforce to meet the market demand of our nation's future industrial development. This includes potential areas of collaboration with other government agencies that are involved in human capital development.

DCC – 5c Special Consideration and Limitation

Beginning September 2020 until to date, approximately 35,110 telecommunication towers have been deployed throughout Malaysia in support of 4G network implementations to ensure expanded coverage of services. The scope of the research shall be limited to historical data beginning 2020 onwards.

Title, Category, Gap and Target Group

10. DCC-6: *Availability and Effectiveness of Skills and Competency Programmes contributing to Workforce Preparedness for 5G Deployment*

The research falls within the Guided Research Category addressing the gap area of Understanding talent competency and literacy gaps related to the availability and effectiveness of 5G deployment-related competency and skills programmes in Malaysia. The research targets identified stakeholders comprising universities, technical and vocational institution, Government agencies and training providers.

DCC – 6 Special Consideration and Limitation

The research shall take into account and address the following types of skills and competency programmes:
a. Internship Programmes;
b. Short-Term Certification Courses;
c. TVET - Polytechnic Courses;
d. In-house Programmes; and
e. Partnership Programmes (e.g. Private-Public, Government to Government and Inter-Industry partnerships)

Research Problem

The impact of full-scale 5G deployment has driven service providers to train, expand, and diversify their employees' skill sets in order to build and maintain the infrastructure needed. For example, in the United States, it is estimated that an additional 20,000 wireless service technicians (responsible for the maintenance of tower infrastructure) will be required to accelerate the deployment of 5G networks. Furthermore, an additional skilled workforce will be required to lay fibre for wireless connections, install radios, and deploy other essential equipment.

Other key competencies include small cell antenna installation, 5G equipment specifications, best practices for 5G construction, 5G infrastructure design, distributed antenna systems, and fibre work. Additionally, 5G will require new 5G specific jobs, including radio frequency engineers, site managers, and antenna installers.

In order to meet market demand for our nation's future industrial development, it is imperative to streamline skills and competency courses in order to sustain continuity and meet new demands. This will assist in addressing current issues about the programs/courses offered and in assisting our country in restarting and revitalising socioeconomic development for long-term sustainability and prosperity, as well as enhancing the nation's competitiveness to make it a more resilient and sustainable player in the world stage.

Research Aims:

The purpose of this Call for Proposal is to review the availability and effectiveness of competency and skills programmes in Malaysia to ensure workforce preparedness for 5G deployment. These findings will contribute to the development of a training and collaboration framework for the workforce preparedness of 5G deployment. The proposed conceptual training and collaboration framework can act as a foundation and guideline for the future skilled labour competency areas for 5G deployments.

Research Objectives

a. RO1 - To review and assess availability and opportunity of training and development approaches in Malaysia related to 5G deployment;
b. RO2 - To measure the availability and effectiveness of skills and competency programmes in Malaysia to ensure workforce preparedness for 5G deployment; and
c. RO3 - To recommend a training and collaboration framework for the workforce preparedness of 5G network deployment which includes the identification of required competency areas, certifications and collaboration partners.

Title, Category, Gap and Target Group

11. DCC-7 *Assessment of Competency Gap to Enhance Workforce Performance in 5G Vertical Areas and Applications*

The research falls within the Guided Research Category addressing the gap area of Understanding talent competency and literacy gaps related to the capacity building required across the following 5G vertical areas/application:

a. Telecommunication;
b. Agriculture;
c. Health;
d. Manufacturing;
e. Service Industry;
f. Retail; and
g. Transport.

The research shall target selected potential 5G industry users across all the seven (7) industry verticals above.

Research Problems:

According to a recent report from Frost & Sullivan, edge computing in wireless networks will grow from $64.1 million in 2019 to $7.23 billion in 2024, a 157.4 percent annual growth rate. By 2022, over 90 percent of industrial enterprises will be utilising edge computing. It is shown that our technological landscape is ever-changing. This is aligned with the advancement of 5G technology, which promises improved connectivity, faster speeds, and lower latency, or the amount of time it takes for a signal to go from a wireless device to a data centre and back.

IHS Markit Technology forecasts that by 2035, 5G technology will create approximately 22 million jobs globally. An anticipated headwind will take the form of human resource problems as 5G networks become increasingly ubiquitous. This is a consequence of the increased reliance on software for network services and management, as well as the rise in popularity of new skill sets.

However, the jobs created by 5G will not be a fine replacement for those lost in a one-for-one trade. Bus drivers, for example, will be unable to switch to a robotics career without further education. Moreover, at least some of the jobs created by 5G will very probably be new employment in new industries that require previously unknown skills. A case point is Amazon, which has announced a $700 million investment to retrain 100,000 of its employees in areas like machine learning and robotics.

Research Aims

This Call for Proposal is to elicit dipstick research providing an understanding of the capacity building required across the following 5G vertical areas:
a. Telecommunication;
b. Agriculture;
c. Health;
d. Manufacturing;
e. Service Industry;
f. Retail; and
g. Transport etc.

Research Objectives:
a. RO1 - To identify the perception of Malaysian Industry on the changes due to the 5G deployment related to human resource and capacity building requirements) - in 5G vertical applications.
b. RO2 - To identify the capacity building gap 5G vertical areas for capacity building programmes in the future; and
c. RO3 - To recommend critical capacity building programmes for future workforce competency requirements in vertical areas/application of 5G.