

**ICT Virtual Organization of ASEAN Institutes and NICT
ASEAN IVO Forum 2016
Call for Presentations**

Submission and Registration Form

I. Title—Title of presentation: On the Cogitation of Primary User Reappearanc
e in Reliable Video Transmission over Cognitive Radio Network for Emergenc
y Communications

II. Author(s)—Full name (First name family name):

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III. Organization(s):

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IV. Topic selection:

Smart Community

IV. Abstract:

In an emergency communications, cognitive radio is a promising medium to transmit signals in an ad-hoc manner, especially when the situation is critical and free frequency spectrum is available. The project considers video transmission using cognitive radio, in order to relay the scenario of affected areas in real-time and in a more cohesive manner. Here, the issue of primary user reappearance may greatly affect the reliability of this emergency communications.

In general, a cognitive radio (CR) technology allows opportunistic access of secondary users (SUs) to the unused spectrum that are allocated to primary users (PUs), if SUs do not cause harmful interference to PUs. In a SU operation,

sensing activities is carried out to identify active PUs. Consequently, SU is able to access and establish communication whenever PUs of the allocated spectrum are temporarily detected inactive. However, it may happen that the PU becomes active during the transmission period. This mode of PU behaviour is referred as the PU reappearance, in such case, the conventional linear test statistic is irrelevant.

The project tackles several issues to increase reliability in the face of Malaysian and Japanese environments: i) SU needs to transmit multimedia data services (video transmission) at low power and low data rate when the PU is using the spectrum. Hence SU can still enjoy uninterrupted video services with minimum tolerable quality. This can be achieved by providing error-free video transmission to SU by using an error resilience method, namely Multiple Description Coding (MDC).ii) optimisation of transmission rate and transmission power in consideration of PU reappearance in the middle of an SU transmission. Thus, the fundamental cogitation on the PU traffic pattern is needed to guarantee prompt reaction and channel vacation to minimize the interference inflicted to the licensed system. iii) Experimental system level setup to test the integration of PHY and MAC layer optimization issues with MDC at APP layer will be conducted to observe the performance of this adaptive system proposal.

V. Speaker information:

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VI. Support for speaker—circle or underline any that you wish to request:

- Round trip fare at discount economy class: RM1,000.00 (~USD240.00)
- Accommodation: (~USD200.00)