Technical Note

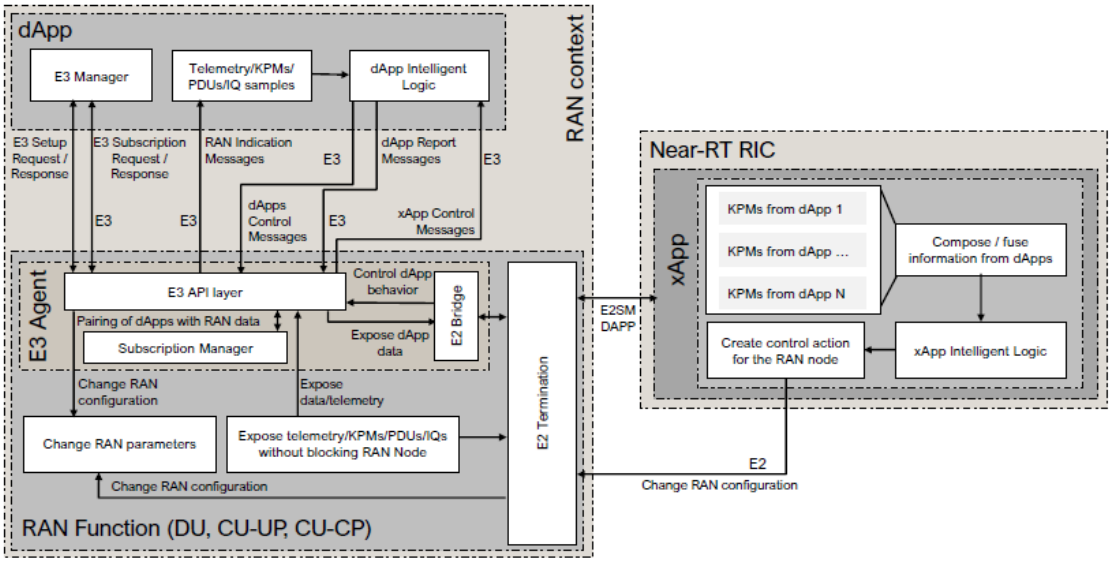
ISCO IMC dApp

It is widely accepted that xApps and rApps serve as an important driver for O-RAN innovation. They reside in the Near-real-time RIC and Non-real-time RIC, offering closed loop RAN control and optimization. However, the O-RAN innovation does not have to be limited to higher levels of 5G stack. The current conversations about AI native RAN and 6G standards are focused in part on the innovations at the lower levels of the 5G stack.

The concept of the dApps capable of operating at the lower levels of the 5G stack (L1, L2) was first introduced in 2022 in the following paper: *S. D'Oro, M. Polese, L. Bonati, H. Cheng, and T. Melodia, "**dApps: Distributed Applications for Real-Time Inference and Control in O-RAN**," IEEE Communications Magazine, vol. 60, no. 11, pp. 52–58, Nov. 2022.*

Operating in the DU or CU, the dApps are capable of sub 10ms or even real-time control loops of the RAN. The suggested use cases include beam management, integrated sensing, interference detection, and other uses that rely on having access to the user plane IQ streams.

After the introduction of the dApps concept, several approaches for implementing dApps have been proposed. For example, the following paper proposes dApps framework and a new E3 interface focusing not only on dApps implementation methodology but also on functionality of dApps working collaboratively with xApps and rApps in the RIC.



Graphics credit: ***dApps: Enabling Real-Time AI-Based Open RAN Control***
Andrea Lacavaa,b, Leonardo Bonatia, Niloofar Mohamadia, Rajeev Gangulaa, Florian Kaltenbergera,c, Pedram Joharia, Salvatore D'Oroa, Francesca Cuomob, Michele Polesea, Tommaso Melodia

Technical Note

ISCO IMC dApp

While the full set of standards and the implementation framework have not been placed yet around dApps, ISCO believes that it is important to continue to innovate and develop solutions that follow the concepts of the dApps functionality. ISCO's Interference Management and Cancellation (IMC) software integrated within the BBU or DU is a form of dApp.

ISCO IMC

The plan of record is to integrate ISCO IMC into the O-DU. Along with the ISCO IMC functionality, a custom API will be developed to allow communication and the exchange of the IQ data between ISCO IMC and 5G stack. In the future, ISCO IMC can be easily extended to accommodate any emerging dApps standards.

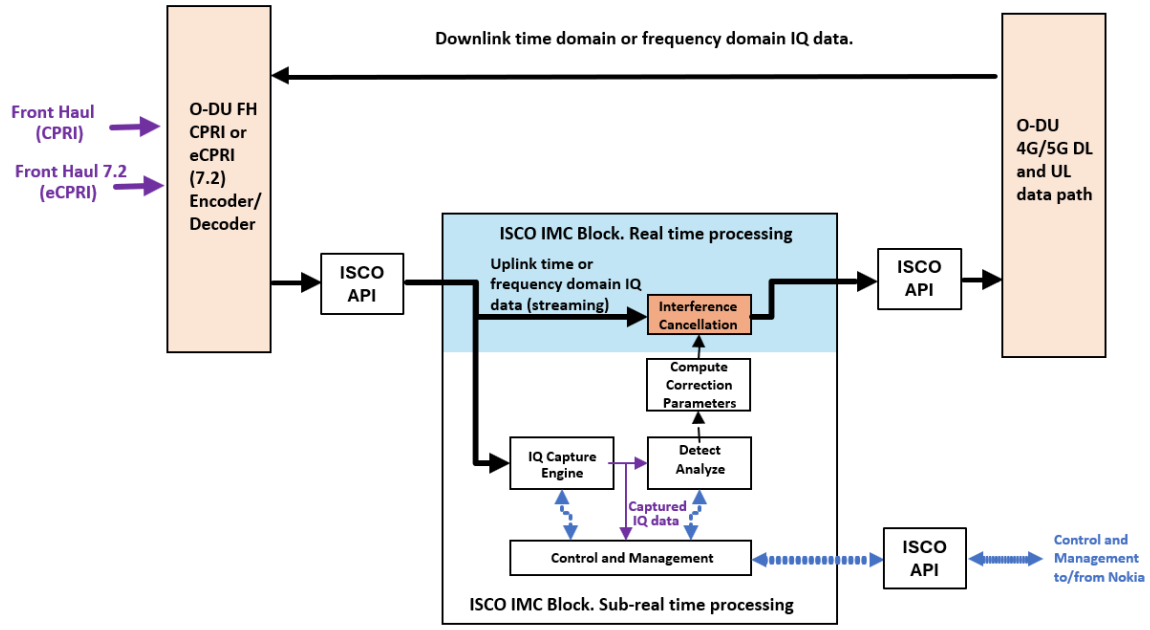


Figure 1 – Diagram of the proposed ISCO IMC Integration into O-DU

ISCO International, 900 National Parkway, Suite 100, Schaumburg, Illinois 60173
+1 630-283-3100 iscointl.com