

ENCQOR 5G Technology Development Challenge

Digital Reality for Operations and Network Enablement - DRONE

Challenge Launch Date	October 10, 2019
Challenge Deadline	November 7, 2019
Challenge Statement	<p>5G and Edge Compute promise to unlock the potential of content-rich, real-time interactive and immersive digital reality (VR/AR/MR) applications that will forever transform how we work, collaborate and interact with each other and the environment. As the connected “X” comes on-line, existing 2D operations and management tools cannot keep up with the complexity of multi-layer, multi-domain and multi-dimensional network services and associated data analytics.</p> <p>The Digital Reality for Operations and Network Enablement (DRONE) Project aims to research, design and deliver a prototype holographic network platform (HNP) based on VR/AR/MR technologies and powered by network intelligence to enable the next generation of Network and Field Operation Services.</p>
Project Partner	Ciena
Timeline	2 years
Available funding	Up to \$250,000 CDN
Applicant Type	Ontario based SME company
Location	Ontario
Project Details	<p>The advent of Software Defined Networking (SDN), Network Functions Virtualization (NFV) and the increasing use of Cloud Native technologies are enabling network operators to bring much needed agility, flexibility and programmability to their networks. In addition, 5G and IoT technologies are accelerating the level of inter-connectivity across people, things and machines, resulting in very complex dependencies and network life cycle management which existing tools and processes were not designed for.</p> <p>Solution vendors are delivering point solutions to visualize, operate and manage assets within their respective technology domains using traditional 2D technologies that don't lend themselves to real-time shared experiences for planning, engineering, installation, activation, operation and analysis of networks and services. Current systems also do not abstract network complexity from the end user and presentation methods use complex multi-screen, multi-step processes requiring highly skilled users.</p> <p>Intelligent automation and AI-assisted systems will go along way in enhancing the operator's experience, but the missing link is a new age</p>

engagement platform that leverages Immersive Reality technologies to reduce cognitive effort, improve remote collaboration, enhance productivity, eliminate errors and accelerate network life cycle decisions from the field to the front office and back office systems. We envision the Digital Service Provider empowering their end customers, field technicians, operations personnel and partners with mobile 5G AR/MR applications to manage their services as well as build similar applications for other industries.

This project aims to answer the following questions and proposes to implement a holographic / 3D network framework for visualization, management and analysis of multi-layer networks and equipment:

- What are the key uses cases with highest pay-off in harnessing the power of holographic network management and tools?
- What is the architecture for a highly distributed, compute intensive, real-time interactive system to support network operations processes?
- How do existing AR/MR frameworks adapt to ingest, process and render physical and virtual network models with associated configuration and data analytics – object models and standards?
- What is a common set of network software services that enable mobile AR/MR network operations and field support?
- What are the tangible technical benefits, performance metrics and business outcomes in introducing 5G AR/MR technologies in this space?

To answer these questions Ciena is interested in partnering with an Ontario based SME to develop a prototype of this network framework on the ENCQOR 5G Network.

The Holographic Network Platform (HNP) will be implemented using state-of-the art cloud-native technologies and principles to facilitate rapid prototyping and on-boarding of new applications and easy integration with existing commercial AR/MR frameworks.

To demonstrate the value of the platform, three sets of use cases will be considered for the initial “path finder” application development and showcase:

- 1) Remote assistance, maintenance and field tech support
- 2) Network planning, design, implementation and analysis
- 3) Collaborative network troubleshooting and repair

We expect that the prototype HNP and path finder applications will be deployed on the ENCQOR testbed to validate its capabilities and enable

	<p>the ENCQOR ecosystem to develop their own immersive network applications.</p> <p>As 5G edge infrastructure matures and networks become more in-tune with high intensity application needs (multi-agent, high throughput, ultra-low latency, ultra-resilient), real-time digital reality applications will proliferate across the 5G eco-system and drive a virtuous cycle to scale demand and investment in future 5G networks and services. As a result, the DRONE project is well positioned to attract application developers to the ENCQOR iPaaS to experiment with real-time digital reality use cases that have not been thought of yet.</p>
<p>Project Goals/ Outcomes</p>	<p>This project has 3 key objectives:</p> <ol style="list-style-type: none"> 1. Understand the value of and produce measurable results in the introduction of AR/MR technology in network and field service operations 2. Produce a functional Holographic Network Platform that can be deployed and used by the ENCQOR network operations team and well as the user ecosystem 3. Develop 3 leading ‘path finder’ application use cases (listed in the project details section) to enable the next generation 5G Network and Field Operations Services <p>The actual deliverables of the project will consist of:</p> <ul style="list-style-type: none"> - Architecture and requirements analysis - Design, implementation, integration of the applicant SME’s technology and new artifacts into the HNP - Data and test results to validate functionality and performance <p>This research and development project will likely lead to new technologies and innovations in the areas of immersive/3D network management, distributed rendering of complex data models as well as edge application & network data delivery. As such, the applicant will be required to develop a plan for the ownership of this intellectual property with Ciena if invited to develop a full application.</p>
<p>Applicant Capabilities</p>	<p>Companies with products, technologies or services in the following areas are encouraged to submit an expression of interest:</p> <ul style="list-style-type: none"> - Telecom network management software - VR/AR/MR platforms and applications for enterprise space - Deep expertise in 3D model rendering, visualization, meta-data management, digital twin applications and IoT - Network modeling, visualization, design and engineering - Cloud-native application development and management - Industrial, engineering, health care, logistics platforms for immersive experiences

	<ul style="list-style-type: none">- Experience with the telecommunications industry, carrier networks operations, field support, site planning and network design
Additional Information	None

Launched in 2018, the [ENCQOR 5G SME Technology Development Program](#) partners Ontario based SMEs with ENCQOR 5G Anchor Firms on 5G technology development projects. Areas of research interest are defined by Challenge Statements submitted to OCE by the [ENCQOR 5G Anchor Firms](#) and posted to the [OCE website on a rolling basis](#).

If you are interested in developing an expression of interest, please visit the [program guidelines](#) for information on next steps.

For any questions about new Challenge Statements or the ENCQOR 5G SME Technology Development Program please contact Jennifer Moles at Jennifer.Moles@oce-ontario.org.