5G Modernization of CORS Network

As technology continues to advance, it's important to keep our communication systems up-to-date. This presentation will detail the benefits and challenges of 5G modernization for CORS networks.

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The Current State of CORS Network

1 **What is CORS Network?**

CORS (Continuously Operating Reference Station) is a global network of GNSS (Global Navigation Satellite System) receivers used to provide highly accurate position, navigation, and timing information for a variety of applications.

2 Current Limitations

Although CORS networks play a significant role in many industries, the current system has limitations such as low accuracy and the inability to penetrate obstacles such as buildings and trees.

What Is 5G?

Put simply, **5G is the fifth generation of cellular wireless networks** and will feature significant improvements in bandwidth and latency. 5G home networks, with their potential for unlimited high-speed

data, will be a remedy for consumers struggling with data caps and throttling.

While 5G has ostensibly already seen a soft launch in some parts of the US, the reality is that true 5G will not be usable for most people until a new generation of phones is released within the next couple of years. *Useful 5G enabled apps will likely be released around 2022.*

Controversially, some U.S. cellular providers offering "5GE" cell service is not actually real 5G wireless, but rather, just a small improvement over their existing 4G LTE network.

What is 5G CORS Network Modernization?

Improved Communication

5G is the fifth generation of wireless communication technology. It provides improved speed, capacity, and reliability for communication systems.

Hardware Component Upgrade

Modernizing CORS networks with 5G technology requires an upgrade of hardware components such as antennas, receivers, and transmission equipment.
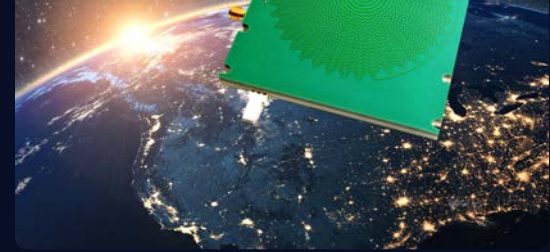
New Technological Advancements

5G modernization also opens up the possibility of new GNSS receiver technologies such as multi-frequency and multi-GNSS receivers.

Benefits of 5G CORS Modernization

1

Increased Accuracy

5G modernization will improve the accuracy of CORS networks,

Improved Signal Penetration

5G will increase the penetration of signals through obstacles such as buildings and trees, making it easier to obtain GNSS data in remote, weak signal or difficult-to-reach areas.

2

them more reliable for industries such as transportation, surveying, agriculture, ranching and construction.

3

Better Network Coverage

5G modernization will also lead to better network coverage, enabling users to receive more reliable and accurate data, even in remote areas.

Challenges of Implementing 5G CORS Modernization

Cost

Compatibility

Regulatory Challenges

The upgrade to 5G technology can be costly for CORS network operators, as it requires significant investment in new hardware and infrastructure.

Upgrading to 5G technology requires ensuring that all hardware components are compatible with the new system, which can cause issues for existing hardware that are not compatible.

Regulatory compliance is essential when upgrading to 5G, as certain frequencies may require licenses or permits, adding an additional layer of complexity to the upgrade process.

Private 5G Networks: Advantages and Disadvantages

Challenges of Implementing 5G Modernization

Regulatory - Spectrum Allocation

Securing the necessary spectrum for a private 5G network can be a complex and time-consuming process, especially in regions with limited available spectrum. Spectrum licensing

and regulatory compliance can pose challenges, potentially delaying the deployment of the network

Challenges of Implementing 5G Modernization

Regulatory - Scalability

While private 5G networks can be highly customized and optimized for specific industries and sectors, scaling the network to cover a large geographic area can be challenging. Expanding network reach and coverage may require additional investments and careful planning to ensure seamless integration with existing infrastructure

Challenges of Implementing 5G Modernization

Compatibility - Interoperability

Private 5G networks are inherently isolated, limiting the ability to roam or interoperate with other networks. This lack of seamless connectivity with public networks may hinder mobility for devices and users moving between private and public spaces.

Case Studies of Successful Implementation

Corporate Buildings

5G modernization of CORS network in corporate buildings has led to better network coverage and improved location-based services.

Farms and Ranches

5G modernization of CORS network in construction sites has resulted in increased efficiency and accuracy in crop and herd managment tasks.

Urban Areas

5G modernization of CORS network in urban areas has led to improved navigation systems and location-based services as well as better connectivity for users.

Future Possibilities with 5G Modernized CORS Network

1 **Increased Innovations**

5G modernization of CORS network can lead to increased innovation and new applications in industries such as transportation, agriculture, and emergency services.

2 **Increased Business Opportunities**

5G modernization can lead to new business opportunities in areas such as location-based services, smart cities, and autonomous vehicles.

Conclusion and Next Steps

Conclusion

Next Steps

5G modernization of CORS network has the potential to improve network coverage, increase accuracy, and lead to new innovations in various industries.

Next steps involve continued research and development on 5G technology as well as investment in hardware and infrastructure upgrades for CORS network operators.