celona

CASE STUDY

Private 5G in Oil and Gas:

An Insider's Guide to Operational Efficiency and Digital Transformation

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ACCELERATING DIGITAL ENERGY

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Executive Summary

The oil refining and petrochemical industries are facing new and unusual pressures, including overcapacity, shifting energy demands, decarbonization mandates, and intense competition for growth. To stay competitive, processing facilities need a new suite of technologies that address these pressures while maintaining recent gains in cost, safety, and productivity. As my research[1] has shown, facilities now need robust, secure, and reliable wireless connectivity, which is tricky to deliver in large-scale, intense industrial settings.

Private 5G network technology (P5G) is right for these challenges. It features excellent signal range, low latency, and enhanced security, and enables the kinds of deep process improvement that have so far eluded the industry, such as connected workers, IoT integration, and real-time monitoring. These are the new capabilities needed to capture the next round of operational improvements, cost reduction, and productivity gains.

In my conversations with networking specialists at bp and LyondellBasell, I sought to learn how they were overcoming organizational barriers, positioning their facilities for ROI through their use cases, and accelerating deployment with leading practices.

It is clear to me that pace setter organizations have already embarked on their private 5G network journey. They recognize that this powerful technology will provide a strategic edge to meet today's demands and adapt to tomorrow's innovations.

Introduction

Commodity industries, such as oil refining, gas treatment, and petrochemicals, are at the front end of virtually all supply chains in the modern world but most survive on the thinnest of margins. To succeed, processing facilities aim to achieve high levels of efficiency, reliability, and safety, while running as close as possible to their nameplate capacity. Over the past two decades, the best in the industry have tuned their operations to achieve this consistent performance level. At this stage, any further gains require tackling process improvements that have been out of reach.

The underlying enabler of this next wave of improvement is wireless connectivity. Reliable, secure, and scalable wireless is the necessary minimum for capturing the benefits of the connected worker, the labor savings of IoT-enabled devices, and the revenue gains of accelerated turn arounds. Yes, there are alternative solutions such as Wi-Fi and public 5G networks, but these are shown to fall well short in industrial settings. Wi-Fi is too costly at scale, while public 5G creates unacceptable risks related to data security, latency, and seamless integration.

Private 5G (P5G) offers a new approach that is a much better fit for the industrial processor. P5G's key differentiation is through its superior coverage, including high above the ground, better data security, and much lower cost deployments.

In this paper, I set out the role of private 5G networking in enabling deeper operational efficiencies in commodity processing industries. Through case studies from leading organizations, the paper describes the challenges they faced, the solutions they implemented, and the measurable outcomes they achieved.

Industries Under Siege

As the planet heads in the latter half of the 2020's, commodity processing industries such as oil refining, gas treatment, and petrochemicals are facing deep structural challenges driven by macroeconomic forces, shifting market dynamics, and evolving environmental targets. These pressures will separate winners from losers, forcing businesses to overhaul cost structures and productivity strategies.

Shifting Supply and Demand Dynamics

The global oil refining sector is finally facing structural overcapacity. China, the world's largest vehicle market and the primary driver of oil demand growth for the past two decades, is transitioning much faster than expected to electric and hybrid vehicles, capping the demand for gasoline[2]. This shift is also flattening China's oil demand, starting in 2023, with declines expected by 2026.[3]

China is not alone. Decarbonization commitments among signatories of the Paris Climate Accord will eventually push other large vehicle markets in the same direction. Markets fully expect reduced demand for mobility fuels, which account for up to 50% of refinery output. Two important refineries in the OECD have announced their permanent closure in the second half of 2024. Others will follow.[4,5]

This structural surplus is not limited to gasoline. Sustainable fuel alternatives are increasingly replacing diesel and jet fuel, yet these cleaner products are produced outside the petroleum refining sector from non-fossil fuel feedstock. Some refiners are looking to expand into the petrochemical industry, but the petrochemical sector is both structurally smaller and growing more slowly.[6] The risk of overcapacity in this industry is now looming.

Intense Regional Pressures

European sanctions on Russian oil and gas flows have disrupted continental feedstock supply chains, forcibly altering cost structures for the continent's refineries, petrochemical plants, and their downstream customers (automakers, manufacturers, airlines). [7] To remain globally competitive, Europe's refineries will need to quickly embrace operational improvements, or their customers will turn to refined product supply from the Middle East and North America.

The Margin Business Model

Commodity industry players contend with razor-thin margins. To compensate, assets must run at the pace defined in their design parameters, with high levels of safety and reliability. Operators are quick to agree with me that they have extracted as much value from their cost structures as possible given their constraints, and that meeting these new pressures will force them to tackle deeper, harder to achieve changes.

Connectivity as a Bottleneck

All industrial companies exposed to the rigors of competition, including the processing industries, have started to embrace digital innovations and technologies, from remote sensing and connected devices to robotics, autonomy, and connected worker solutions. However, these advancements depend on robust wireless connectivity. The original designs of most plants have no accommodation for new connectivity solutions. This gap is now a huge hurdle to overcome and greatly limits the potential of digital solutions to help address competitive and growth challenges.

The Wireless Connectivity Conundrum

Industrial facility managers face a much more complex wireless connectivity challenge than light commercial buildings and office settings. Unlike these pleasant, carpeted office settings, plant environments—the "uncarpeted" world—require solutions designed for harsh climatic conditions, continuous operations, and high reliability. Connectivity failure is simply unacceptable. These environments are not homogenous—plants often feature a layered stack of telecommunications technologies, each suited to specific tasks. Operators expect these connectivity solutions to interact completely seamlessly.

Scale and Reach

The standout difference in the industrial setting is scale. Plants cover vast areas, often spanning hundreds of acres. While working in Australia, I charted a helicopter to survey the latest LNG facilities from the air, and their scale is incredibly challenging to take in. The single largest industrial site globally is the Jubail Industrial City in Saudi Arabia, almost 400 square miles of refineries, plants, and desalination facilities.[8] To achieve blanket coverage of a small industrial plant using Wi-Fi requires hundreds of individual Wi-Fi Access Points (AP), along with associated power, cabling and junctions, which is cost prohibitive and a logistical challenge to deploy in a reasonable timeframe.

Safety and Regulatory Requirements

Hazardous areas in plants, classified as Class 1 Division 2, impose strict safety requirements on any gear to eliminate the risks of sparks and leaks. These standards increase costs, requiring specially designed closets and enclosures, hardened junctions, shielded cabling and conduit, and installation practices that meet regulatory guidelines. Devices must be either intrinsically safe, or be inside an intrinsically safe case, as Suncor has achieved in its collaboration with Otterbox.[9]

Regulators require plant operators to have effective control of the assets under their supervision at all times, which translates into real time signaling and low latency in signal propagation. As a result, Supervisory Control and Data Acquisition (or SCADA) systems are hardwired directly from the physical asset to the instrumentation panel to achieve effective real-time communications. Facilities managers expect the same low latency in their wireless communications.

Unforgiving Environments

Many industrial facilities are sited in environmentally demanding places where people don't live. Plant settings also are electrically noisy, because of the concentration of highly energized equipment and steel structures which can disrupt some radio signal frequencies. Technologies that work well in office environments often struggle in these conditions, where signals must be delivered at height, and where any interference can degrade performance and reliability.

As the case companies highlight, wireless connectivity will be required throughout large facilities, including at the tops of tall processing units and vessels, where the connected worker actually works. Placing an AP to these locations can be uniquely cost prohibitive, at many tens of thousands of dollars each.

Weather conditions can also impact network performance. Connectivity solutions must be robust enough to continue working regardless of dust and sand (Middle East), smoke (northern forested areas), steam vapors, heavy rain (tropics), hurricane wind forces (Gulf of Mexico), dense fog, and temperature extremes (Arctic and equatorial zones).

Legacy Designs

Most plants rely on legacy systems, such as SCADA and analogue devices, that were not designed for wireless networks. Older kit often predates the internet. The older the plant, the more likely it is that it lacks adequate conduit, power provision, cabling runs, and housings to deliver asset-heavy wireless solutions such as Wi-Fi. Analogue gauges dominate and are cost prohibitive to hard wire back to control rooms.

A Stack of Technologies

Given this connectivity context, I have found that modern plants rely on a mix of connectivity technologies.

Wired networks provide for SCADA process control, instrumentation, data backhaul, and real time asset supervision.

Radios are used for person-to-person communications in the field.

Bluetooth, near field communications and even infrared may be used within control rooms.

Wi-Fi provides access for desk computers, laptops, tablets and phones in climate controlled settings.

Public 5G may be used for phone services for the permanent staff and service company workers.

In many cases, there is a mismatch between the communications technology installed and its practical usage, such as costly and unreliable Wi-Fi zones scattered about the plant.

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Plant managers prefer to view their communications as an integrated seamless monolith. Devices are expected to hand over smoothly between networks—moving from a meeting in the control room to a truck for a trip into the plant—without requiring manual reconnection or reauthentication. A seamless uninterrupted handoff helps maintain productivity where workers and devices are constantly moving between control rooms to the field, from Wi-Fi to wireless networking.

Future Proofing

Plant managers now recognize that they must keep pace with a rapidly evolving industry and regular technology shifts. Connectivity solutions must be adaptable, supporting both current needs, such as allowing workers to use video conferencing in the plant, and future innovations, such as enabling robot surveillance in the plant. This ability to scale and integrate with unknown future applications will help future-proof the industry.

In this light, the industry's interest in private 5G network technology is compelling.

Why Private 5G?

While existing connectivity options such as Wi-Fi and public 5G have their place, they cannot meet the needs of the uncarpeted world. Private 5G offers a purpose-built solution.

1. Tailored for Industrial Settings | Private 5G networks are designed to handle the vast scale of industrial plants. Unlike Wi-Fi, which requires hundreds of access points to cover large facilities, private 5G offers superior signal range, reducing the number of access points by a factor of 8-10, and in some instances, up to 20. This makes private 5G much more cost-effective and faster to deploy. A 13 million square foot refinery can be covered entirely with as few as ten P5G access points.

Operators have learned that placing a private 5G access point outside the Class 1 Div 2 zone can often provide coverage needed inside the zone. In this instance, the network gear need not be compliant to Class 1 Div 2 standards. Where this is not practical, operators can instead deploy equipment that is certified for use in the Class 1 Div 2 zone.

The radio frequencies used in private 5G networks are much more resistant to the electrical noise and interference that are common to large industrial facilities.[10]

2. Reliable and Low-Latency Connectivity | Private 5G consistently operates at less than 25 millisecond latency in its coverage zone, providing more than adequate performance in applications involving close to real-time control or monitoring, such as the use of industrial robots and Internet of things (IoT) sensors. Flexibility in radio frequency selection can eliminate conflicts with other site communications, such as voice radio.

3. Enhanced Security | Private 5G networks keep confidential plant data onsite within the fence line, unlike public 5G networks, where data must flow over third-party external infrastructure.

4. Cost-Effective Deployment | Compared to Wi-Fi, with its numerous costly access points, cable runs, conduit, back hauls, junctions, power provisioning, and safety enclosures, private 5G requires significantly less infrastructure (between 85 and 90% less) for equivalent or better coverage. Unsurprisingly, installation time is dramatically less. Even scaffolding costs, a significant budget item, are minimized. This translates to lower total cost of ownership and faster time to value.

5. Future-Ready Infrastructure | A huge range of new technologies and solutions with excellent potential for operators are like dry powder, sitting on the sidelines and waiting for opportunity. Other sectors are already deploying internet-of-things (IOT) devices, wireless video[11], connected worker solutions, wearables and man-down detection, connected rail cars, smart tools, and autonomous vehicles.[12]

6. Simplified Network Management | Best in class private 5G solutions offer centralized control and management, allowing plant operators to monitor, configure, and optimize their networks in real time. This feature proves its value during infrequent events such as turnarounds, shutdowns, and unplanned outages.

Case Studies

Case Study:

bp

CUSTOMER:
bp

INDUSTRY:
Oil and Gas Refinery

LOCATION:
Multiple Global Locations

SIZE:
#47 on Global 2000

CHALLENGE:
Poor connectivity for frontline maintenance workers

Stranded data from unconnected equipment

"With private cellular, we're building our own networks, so the data stays within our fence. Public cellular may work for basic applications, but when you start accessing internal systems, the user experience falls apart. Keeping data on-premise was a key reason for choosing private 5G."

- Stefan Garrard, Enterprise Network Engineer, bp

bp, a global integrated energy company, has embarked on an enterprise-wide initiative to modernize site networks as part of its broader digital transformation program. This includes both office workers as well as its industrial facilities, including refineries, offshore facilities, terminals, and more.

To deliver on this vision, bp established a dedicated team to focus on field and industrial network engineering and tasked them with developing and deploying modern connectivity solutions. bp subscribes to a "wireless-first" approach along with its broader vision of the Internet of Everything and SaaS-driven solutions delivery.

One aspect of this modernization is the adoption of private 5G (P5G) networks from Celona in its plant settings. bp concluded that Wi-Fi was not a viable plant solution due to the sheer number of access points required, the high costs of deployment, and Wi-Fi's limited scalability. Public 5G was also ruled out—fragmented third-party telcos could not meet bp's need for global consistency, ease of use, seamless handoff, high data security, and low latency. Additionally, bp strongly desired to build and operate P5G networks in-house without reliance on third parties or telcos for solutions.

In bp's situation, the initial driver for P5G deployment centers around the connected worker. Historically, frontline oil and gas workers have been "second-class information citizens," lacking digital access to key information such as maintenance records and procedures, engineering drawings, and permits that are easily accessible in office environments. P5G lets front line workers access the same data just as they would if they were in the office, where and when they need it, including during key events such as shutdowns and turnarounds.

bp's roll out strategy builds on the close working relationship it has fostered between corporate IT and plant teams. Deployments are a joint effort between its central network teams, Celona, and local engineering, with the infrastructure managed and operated in a similar way to Wi-Fi deployments. This model provides consistency in deployment and support across the globe while still delivering immense value to each site.

Through P5G, bp is now redefining what operational connectivity means at the edge of the business, enabling its workforce to connect seamlessly, no matter the location.

Case Study:
LyondellBasell

CUSTOMER:
LyondellBasell Industries

INDUSTRY:
Chemical Manufacturing

LOCATION:
Multiple Global Locations

SIZE:
#401 on Global 2000

CHALLENGE:
Poor connectivity for frontline maintenance workers

Driving efficiency, reducing cost, enhancing safety

LyondellBasell (LYB), one of the top four global petrochemical companies, set out on a multi-year Value Enhancement Program (VEP) under the leadership of new CEO Peter Vanacker, who assumed the role in 2022. The VEP is a bottom-up transformation effort which is expected to drive operational improvements across the company's global facilities.

Workshops with front-line workers surfaced all manner of possible improvements, but few were realistically achievable without improved wireless connectivity. Again, plant managers briefly considered Wi-Fi as a possible connectivity solution but learned it can be up to eight times more costly than private 5G. They also rejected public 5G networks due to concerns about latency, data security, and limitations in satisfying specific needs like precise GPS tracking and man-down alerts.

Following extensive research, LYB adopted private 5G (P5G) from Celona to address the challenges it faced. The extensive number of productivity, cost, and safety use cases created a sufficiently compelling business case to proceed with the roll out.

Similar to bp, one key use case is aimed at improving time on tools for front line workers. Examples include reducing permitting time, allowing field workers to access asset documentation while in the field, and using video conferencing to connect with remote experts while carrying out field tasks.

> "We quickly realized going through the Value Enhancement Program early on was that there's a lot of initiatives that required a connectivity solution out in the field and we just did not have that."
>
> - Michael McDowell, LyondellBasell

The rapid deployment of P5G lowers the cost to set up temporary assets, such as blast-resistant buildings (BRB) during plant turnarounds, or vast lay-down yards during periods of capital spend.

At the time of writing, deployment at LYB is still in the early days. LYB has rolled out P5G to six sites and will expand as part of the VEP funding schedule and when facilities are ready. Like bp, the roll out team at LYB also notes the importance of involving plant teams in figuring out where to place the access points.

ROI and Funding

Early adopters have concluded that P5G is a strategic investment with solid long-term returns. Nevertheless, P5G still requires thoughtful planning, alignment with broader business goals, and a clear understanding of the funding dynamics.

> "Our number one driver was really around the connected worker, which is increasing our field workers time on tools... We wanted to give our workers information and the tools they needed to stay out in the field and do their job."
>
> - Michael McDowell, LyondellBasell

ROI Driven by Use Cases

Unlike traditional IT investments, to this point private 5G's ROI has not been tied to a single "killer use case." Instead, it is derived from a basket of applications that collectively drive efficiency, reduce costs, and enhance safety. Use cases such as connected workers, IoT integration, and real-time asset monitoring offer cumulative benefits that justify the initial investment.

"One of our early deployments covered a 150,000-square-foot maintenance shop with just four Celona APs. A Wi-Fi solution would have required 60 to 80 APs, plus extensive cabling and air-conditioned racks. The cost savings and simplicity of private 5G were undeniable."

- Stefan Garrard, Enterprise Network Engineer, bp

Funding Models

Private 5G deployments can be funded at either the enterprise or plant level, depending on the organization's structure and priorities. Enterprise-level funding tends to be more tightly aligned with strategic objectives, as seen in both bp's and LyondellBasell's initiatives. Plant-level funding, on the other hand, allows facilities to take full ownership of the deployment, often tying it to plant readiness and operational needs.

The better practice is to fund at the enterprise level to minimize the risk that plants select multiple different private 5G technology providers, create unnecessary network complexity, and erode the economies of scale from single vendor sourcing.

Cost Dynamics

The cost of deploying private 5G is heavily front-loaded, driven by the capital expenditure incurred to apply the Management of Change (MOC) process, infrastructure installation, and network commissioning. This initial investment may include:

- Provisioning access points, and where needed, in compliance with Class 1 Div 2 safety standards.
- Upgrading or replacing front line devices (tablets) for 5G compatibility, which may obsolete devices ahead of plan.
- Fitting out devices with protective cases to make them intrinsically safe.

Operating costs, such as ongoing support, can often be shared between corporate IT and operations. Facilities that have already adapted their front-line applications for smaller screens like tablets will not face additional migration costs. LyondellBasell reports that some lightly used applications at the plant level, such as SAP, have suddenly experienced heavier use (and improved ROI!) because private 5G enables persistent seamless use throughout the plant.

Strategic Lens

As a strategic investment, P5G networks do force corporate decision-making to balance enterprise-level goals with plant-level readiness. Early deployments may take time to bed down as plants adapt to the new network.

Perspectives on Deployment

Plant managers routinely greet unfamiliar technology with skepticism, rightfully concerned about exaggerated performance claims versus practical fit in their plants. Private 5G is no different, but I continue to hear numerous myths about this technology that are inconsistent with the reality experience at the early sites.

The Myth	The Math
P5G interferes with other site telecoms facilities.	P5G radio frequencies can be successfully isolated from existing frequencies used in plant settings.[8]
P5G may not satisfy requirements for Class 1 Div 2 safety.	P5G gear can often be set up outside Class 1 Div 2 zones and still provide coverage. Where required, P5G gear that is compliant can be deployed.
P5G requires significant time to roll out.	P5G is much faster to deploy than alternatives, requiring far fewer access points to achieve the same coverage level.
Private 5G can't coexist with public 5G.	Celona Private 5G (Neutral host) allows devices to seamlessly shift to public 5G networks when needed, such as contractors working offsite.
Private 5G is hard to manage and requires dedicated staff with training.	Private 5G from Celona is as simple to manage as Wi-Fi, with no special expertise required.
Private 5G won't work in an electrically noisy environment.	P5G generally works well in industrial settings and may require additional access points but still needs far less infrastructure than Wi-Fi.[8]
Private 5G is too costly to deploy.	Costs of P5G technology are modest relative to the Management of Change (MOC) process costs, which are the true cost driver.

Leading Practices for Private 5G Deployment

Deploying private 5G in large-scale industrial facilities requires careful planning, collaboration, and adaptability. The case studies illustrate some of the leading practices that help promote effective and efficient deployment:

1. Collaboration Between Enterprise IT and Plant Operations

Private 5G deployment should be a joint effort between corporate IT and plant operators. While enterprise IT brings wireless networking expertise, plant operators bring pragmatism and deep insight into the reality of operations. Deployments driven solely by corporate IT are unlikely to succeed.

2. Inclusive Site Survey Teams

Site survey teams should include representatives from across the plant structure, including operations, maintenance, turnarounds, services, engineering, safety, and labor. This combined team approach helps surface the functional needs and builds consensus on access point placement and network design.

3. Educate on the Differences Between Wi-Fi and Private 5G

Plant managers and teams benefit from having a deeper appreciation of the unique capabilities of private 5G compared to Wi-Fi. Project leaders should plan to devote considerable energy to educating stakeholders on the differences between Wi-Fi and P5G in terms of coverage, cost, latency, security, and management.

4. Focus on a Basket of Value, Not a Single Use Case

Early private 5G deployments focus on the cumulative value from many use cases rather than the single "killer app." Stakeholders should aim for a portfolio of innovations to drive the business case, which underscores why a team approach at the plant is most sensible.

5. Plan for Installer Supervision

With private 5G networks still relatively novel, the availability of qualified installers is still limited. Plants need to allocation supervisors, often shared plant resources, to support the installers, promote compliance with safety protocols and satisfy site installation standards. These supervisors are tightly scheduled at the plant and can limit the pace of roll out.

6. Adapt to International Deployment Challenges

Deployments in international settings may face more rigorous Management of Change (MOC) processes, requiring engineering signoffs, CAD drawings, and detailed specifications. These steps are non-negotiable, can extend timelines, and must be respected for local compliance.

7. Leverage Nimble Technology Providers

Instead of large 5G providers, consider working with smaller, agile firms capable of implementing creative and unique enhancements quickly. These firms, such as Celona, often bring tailored solutions and greater flexibility to meet very specific industrial requirements. bp shared an instance where Celona adapted their technology to satisfy one of bp's particular requirements—something that is often difficult for larger private 5G providers, who are typically less willing to modify their standard equipment, even for major customers.

8. Foster Open Communication Among Stakeholders

Establishing a combined deployment team of equipment providers, installers, carriers, and plant management can lead to a faster and more effective deployment. Private 5G is still a new technology for many in the industry, and open communication enables joint problem-solving and smooth implementation.

By following these leading practices, industrial organizations can overcome deployment challenges, optimize network performance, and maximize the value of private 5G.

Quotes from the Field

"Our customers at the plants where we're installing 5G and Wi-Fi view them as one solution—advanced wireless connectivity. I've had to spend a lot of time educating the customers on the differences between the two and how they can be used differently."

"Private 5G is causing us to question our Wi-Fi strategy. So, we might be able to reduce Wi-Fi a bit.""

- Michael McDowell, LyondellBasell

"Our refineries are highly complex, highly mechanical areas, and providing workers the right kinds of digital tools is imperative for us to stay competitive. A big driver is connecting workers with the data and information they need in real time, wherever they may be."

"You have to create demand by working closely with the business. Sites know their pain points and must make the case for funding. At bp, we've built credibility by delivering reliable solutions that align with business needs, and that's created a pull for private 5G."

"The good news is we can swap radios over time as new 3GPP standards and features emerge. By investing now, we're laying a foundational infrastructure that we can upgrade to meet future requirements without a complete overhaul. You have to start somewhere."

- Stefan Garrard, Enterprise Network Engineer, bp

Conclusion

Wireless connectivity has emerged as a key enabler for improvement goals. Alternative solutions like Wi-Fi and public 5G fall well short of meeting the unique demands of the uncarpeted industrial environment. Private 5G is an excellent purpose-built solution, delivering the reliability, security, and scalability required for the next round of productivity gains through innovation.

The real-world case studies from bp and LyondellBasell illustrate how private 5G addresses pragmatic issues such as low-cost deployment and seamless communication in the plant setting. The flexibility of private 5G helps meet both today's needs as well as future technologies like IoT, autonomous systems, and advanced analytics.

Rolling out private 5G is not without its challenges, but with the right tactics—including joint IT and operations teams, collaborative planning, and nimble technology providers—the hurdles can be overcome. Organizations that embrace private 5G now stand to gain a competitive advantage in an increasingly complex, cost-sensitive and rapidly evolving market.

Private 5G is more than a connectivity solution—it is the foundation for the next generation of industrial efficiency and innovation. Pace setters have already moved ahead and so must the rest of industry.

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Calculate The Private 5G Business Case

To help network planners assess the business case for deploying private 5G, Celona offers a Total Cost of Ownership (TCO) Calculator. This tool provides insights into the infrastructure costs associated with implementing private 5G at a specific facility, allowing planners to compare potential savings and deployment efficiencies against alternative solutions.

Access the TCO Calculator here:
https://www.celona.io/tco-calculator

About Celona

Based in Silicon Valley, Celona is a pioneer and leading innovator of enterprise private wireless solutions. The company is credited with developing the industry's first 5G LAN system, a turnkey 4G/5G system that enables enterprises and mobile network operators to address the growing demands for more deterministic wireless connectivity for critical business applications and vital use cases not met by conventional wireless alternatives.

Celona's products and technology have been selected and deployed by a wide range of customers including Verizon, NTT, SBA Communications, Standard Steel, and Haslam Sports Group. To date, the company has raised $135 million in venture funding from Lightspeed Venture Partners, Norwest Venture Partners, NTT Ventures, Cervin Ventures, DigitalBridge and Qualcomm Ventures.

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