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PORTCOMMS 2026

From private 5G trials to operational value

An independent 3G4G executive briefing | London, 7–8 October 2026 | Four-page overview

The central message

Port connectivity is entering a more demanding phase. The question is no longer simply whether private 5G can be installed in a terminal, but whether the resulting service solves an operational problem, works in difficult physical conditions and remains manageable long after the launch announcement.

Across presentations and discussions at PortComms 2026, participants described live deployments, migrations, trials and projects still taking shape. Their experiences pointed to a market making real progress, but without a single blueprint for success. The choice between private cellular, Wi-Fi, fibre, public mobile and hybrid approaches depends as much on the port's operating model and existing infrastructure as it does on headline technical performance.

Perhaps the most useful shift was towards realism: the right answer for one quay, warehouse, container terminal or port authority may not be the right answer for another.

THREE MESSAGES WORTH TAKING AWAY

Value first	Design for reality	Prove the service
Start with the business process and its constraints, not a preferred radio technology.	Steel, moving assets, vessels, devices and access restrictions shape real performance.	A successful trial is only part of the journey towards a dependable operation.

A market with more than one story

Some speakers discussed mature connectivity supporting demanding port work. Others described programmes where the main challenge lies in integration, stakeholder alignment or proving an application. The conference also provided examples where existing connectivity remains a defensible choice. Together, these experiences challenge simplistic claims that every port needs its own 5G network or that private cellular is still only an experiment.

The implication is significant: the next phase of adoption will be shaped less by the number of networks announced and more by the quality, resilience and measurable usefulness of the services they enable.

About this briefing: this is a selective, non-exhaustive overview of themes identified in the independent 3G4G research report. It is not an official conference publication, and presented claims should not be treated as independently audited performance results.

MARKET AND COMMERCIAL LESSONS

Making the technology earn its place

1 The network is not the business case

Ports invest in connectivity to support things that matter: efficient cargo movement, safe working, reliable communication, remote operation, better visibility and future automation. Private 5G can help enable these goals, but the value usually emerges from a wider package of devices, applications, processes and people.

A technology-led business case is therefore vulnerable. A compelling use case needs to explain what changes operationally and why existing arrangements cannot meet that need economically or reliably. The conference reinforced the importance of distinguishing a new network from a new operational outcome.

2 The real deployment challenge is often outside the radio

A port is an unusually difficult engineering environment. Radio coverage changes around containers, cranes and vessels; installation windows are constrained by continuous operations; equipment is exposed to weather, vibration and movement. Industrial devices, integration with legacy systems and permission to use sites may become decisive factors.

Several discussions made clear that successful implementation depends on practical engineering and operational agreement, not just the advertised capability of 5G. An otherwise sound network design can lose its value when the endpoint, installation approach or support model does not fit the real workplace.

3 Spectrum, responsibility and shared infrastructure matter

There is no universal answer to who should own or operate a port network. A port authority may coordinate shared access; a terminal may want dedicated control; an operator or specialist provider may deliver a managed service. Each approach introduces different questions about spectrum, tenancy, charging, data governance and fault responsibility.

These are not administrative details to resolve after the technology decision. They influence which services are possible, how they scale across users and what happens when something goes wrong. The most effective delivery model is the one that assigns clear accountability for the whole service.

THE UNDERLYING SHIFT

From buying a network *to procuring a dependable operational capability.*

Three different measures of progress

A network can be technically commissioned without becoming essential to daily operations. An application can be operational without yet demonstrating an independently tested financial return. And a promising trial may still be some distance from dependable routine use. The conference featured initiatives at different stages, sometimes within the same organisation. Recognising those differences helps decision-makers ask more useful questions and avoids comparisons that treat every announced project as equivalent. The detailed report examines these distinctions more closely, using the evidence available for individual cases.

TECHNICAL AND OPERATIONAL LESSONS

Where the next set of decisions becomes harder

4 Security and resilience cannot be bolted on later

More connected cranes, cameras, vehicles and operational systems expand both capability and exposure. The cyber discussions highlighted why private connectivity must be considered alongside operational technology security, access control, segmentation, monitoring and continuity of service.

Owning more of a communications environment may provide greater control, but it also brings responsibility. Resilience must be understood at the level of the service being delivered, not inferred from a list of redundant network components.

5 Wi-Fi and private cellular should be judged on the job

One of the most constructive conference themes was a move away from treating Wi-Fi and private 5G as a simple winner-takes-all contest. Wi-Fi offers an established device ecosystem and deployment familiarity. Private cellular can be well suited to wide areas, planned mobility and coordinated service quality. Fixed links and fibre remain valuable wherever they meet the requirement.

The practical question is which combination serves each workflow with acceptable cost, risk and complexity. In many ports, the result will be a mixture of technologies rather than a wholesale replacement.

6 Evidence from real operations is the differentiator

The difference between an attractive demonstration and a dependable service becomes visible only under real working conditions. Coverage where a machine actually operates, behaviour during movement, device compatibility, recovery after faults and support over time can be more revealing than a peak data-rate claim.

PortComms 2026 offered encouraging examples of practical measurement and learning from limitations. That willingness to discuss constraints, as well as successes, is a positive signal for the maturity of the market.

FIVE QUESTIONS FOR DECISION-MAKERS

- Which specific operation improves, and how would we know?
- What do existing networks already do sufficiently well?
- Who owns the service, its risk and its ongoing support?
- Will the proposed solution work with the actual industrial devices and environment?
- What evidence would make this a defensible investment?

These questions matter especially when proposals combine operational technology, new wireless infrastructure and longer-term digital transformation. The conference suggested that successful delivery depends on the interfaces between those elements, and on the people accountable for them, at least as much as on the underlying radio standard.

OUTLOOK AND FURTHER RESEARCH

What happens next?

The prospects for private wireless in ports remain positive, but adoption is likely to be selective. The strongest projects will connect clear operational demand with workable spectrum arrangements, realistic installation plans, usable devices, cyber assurance and a sustainable model for running the service. New capabilities will be welcomed where they solve a recognised constraint rather than merely extend a feature list.

The broader lesson is not that private 5G is always the answer, or that incumbent networks should never change. It is that ports need a disciplined way to decide what belongs where. That is where independent comparison, operational evidence and experience from multiple deployments become valuable.

For readers who need the full picture

The full 3G4G report, PortComms 2026: From Private 5G Trials to Operational Value, is a more extensive research and decision-support document (approximately 40 pages). It goes beyond this briefing to examine what each presentation contributes, how the cases compare and what the findings mean for organisations planning or supporting port connectivity.

INSIDE THE FULL RESEARCH REPORT

- Individual analysis of all 24 conference sessions, including presentations and audience debates.
- A comparison of deployment approaches, operating models and levels of evidence across reported port initiatives.
- Deeper examination of business cases, spectrum, technology choice, physical deployment constraints, resilience and cybersecurity.
- Practical decision and delivery tools, implementation considerations and recommendations for key stakeholder groups.
- A traceable source register and explicit cautions on claims requiring further confirmation.

Who would benefit?

Port authorities and terminal operators; mobile and private-network providers; equipment suppliers and systems integrators; government, regulators, industry bodies and research teams; and analysts seeking a balanced, evidence-aware view of this developing market.

PURCHASE THE DETAILED REPORT

The full research report is available for purchase. To request the price, content outline and professional circulation terms, please contact us at reports@3g4g.co.uk, quoting “PortComms 2026 Research Report”.

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