Mobile Optical Pluggables Alliance (MOPA)

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The Race for Glass: 5 Critical Insights from OFC 2026

Why optical standardization is the foundation for 6G success

While Mobile World Congress in Barcelona captured headlines with wireless announcements, the true foundation of 6G networks was being built at the 2026 Optical Fiber Communications Conference (OFC) in Los Angeles. The message from OFC is clear: 6G success depends on optical transport infrastructure—the "invisible" glass that connects everything.

The mobile industry's greatest challenge isn't spectrum availability; it's the fiber transport layer. Without standardized, high-performance optical solutions, the transition to 6G will stall. Here are five critical insights from OFC 2026 that reveal why optical standardization must lead the way.

1. The Standardization Timeline: Why We Can't Wait

A critical lesson from previous mobile generations: waiting for radio specifications before addressing transport infrastructure creates catastrophic delays. With 3GPP Release 21 (2025–2026) marking the start of normative 6G work, the urgency is immediate.

Optical standardization must precede radio specifications by years. To meet 2029–2030 commercial 6G deployments, optical hardware for initial systems test must be available 2026–2027, and in volume production by 2028. This lead time is non-negotiable for manufacturers to integrate solutions into 6G platforms.

As highlighted at OFC: optical standardization is a prerequisite for successful network evolution, not an afterthought to address once radio specifications are complete. Waiting guarantees expensive proprietary silos and a 2030 launch that lacks the hardware to scale.

2. 50G Becomes Essential: The GenAI Tipping Point

For years, 25G served as the industry workhorse. That era is ending. Multiple forces are converging: Fixed Wireless Access (FWA) saturation, multi-operator RAN sharing, and the evolution of Massive MIMO from 64TR to 128TR configurations.

Most critically, Generative AI is rewriting uplink requirements. We're seeing 3x to 5x increases in uplink capacity driven by cloud-assisted AI applications—think real-time

video processing for diagnostics that offload compute to preserve device battery life. These applications demand massive, high-quality video uplinks that 25G architectures cannot sustain.

The evidence is clear: Gen 4 hardware like Ericsson's AIR 6494 and AIR 3267 radios are already utilizing 2x50G eCPRI in field deployments, while Nokia's latest AirScale Doksuri Radios and Habrok Massive MIMO products—announced at MWC 2026—support Open RAN fronthaul standards with next-generation SoC architectures designed for AI-native networks.

3. The Power Revolution: Linear Pluggable Optics (LPO)

For operators managing tens of thousands of sites, power consumption has shifted from a sustainability metric to economic survival. The breakthrough? Linear Pluggable Optics (LPO).

Traditional optical modules rely on Digital Signal Processors (DSPs)—internal "digital brains" that correct signals but generate significant heat. By removing the DSP, LPO modules achieve 50% reductions in power consumption and heat generation.

This environmental hardening is critical for uncooled outdoor deployments like cell towers, where thermal management presents constant challenges. For an operator with 50,000 sites, a 50% reduction in transport power consumption represents the difference between sustainable operations and economic crisis.

By eliminating the DSP's thermal load, the industry can deliver 50G and 100G rates within existing radio unit space constraints while surviving harsh outdoor temperature ranges.

4. AI-Native Networks Demand Precision Transport

In today's networks, AI is no longer an add-on—it's fundamental architecture. Leading equipment vendors are integrating neural network accelerators and programmable matrix cores directly into radios, enabling AI-managed beamforming and instant coverage prediction.

However, this radio intelligence requires a precise transport "nervous system." As networks become smarter, the optical layer must provide deterministic performance. If the fiber layer introduces latency fluctuations or jitter, the radio's AI

capabilities become liabilities rather than assets. Sophisticated beamforming degrades into interference without consistent transport performance.

The paradox: as radios get smarter, the "dumb" glass must become more precise.

5. Avoiding the Fragmentation Trap

The optical transport market is the critical foundation for massive global investments in mobile infrastructure. To convert this CapEx into high-margin enterprise revenue through network slicing and ultra-reliable low-latency communications (URLLC), the industry must avoid proprietary fragmentation.

MOPA's standardization work—defining blueprints for fronthaul and transport—ensures supply chain resilience. Historically, proprietary silos have created lead-time bottlenecks of 4 to 6 months. Standardized interfaces enable operators to:

- Source from multiple vendors to bypass supply chain disruptions
- Simplify logistics through common sparing strategies across networks
- Drive economies of scale that make 100G and 50G economically viable for global deployment

The Path to 2030

The 2025–2031 window represents a one-time opportunity. Decisions made today regarding 50G and 100G optical standardization are effectively permanent. As the industry moves from technical demonstrations at OFC to 6G reality, the "race for glass" will determine which operators can scale AI-native networks.

OFC 2026 made the stakes clear: we must move from recognition to unified action to meet the 2030 commercial 6G window. The alternative is networks that are intelligent in the air but broken on the ground.

MOPA's Role Going Forward

MOPA continues to lead optical standardization efforts for mobile transport. Our technical papers provide the blueprints the industry needs to move forward confidently. Working with our Operator Advisory Board and member companies,

we're ensuring that optical transport enables—rather than constrains—6G capabilities.

The next MOPA technical paper update will incorporate learnings from OFC 2026 and address emerging requirements for AI-native networks, power-efficient solutions, and 100G evolution.

The race to 6G is indeed a race for better glass. MOPA is committed to ensuring the industry wins that race together.

About MOPA: The Mobile Optical Pluggable Alliance publishes technical papers describing requirements and optical solutions for mobile transport in 5G and emerging 6G networks. For more information, visit mopa-alliance.org