

Standards made in Europe: why the ETSI model matters for quantum technologies

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Analysis · European standardisation and quantum policy

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As the European Union defines its industrial ambitions for emerging technologies, an old question is acquiring new urgency: which standardisation model best equips Europe to lead, rather than follow, in fields such as quantum communications? Speaking at a recent Euractiv conference, ETSI's Chief Policy Officer made the case that the choice of standardisation architecture is not merely based on technical considerations but a determinant of competitiveness.

The framing is strategically timed. 2027 marks the 40th anniversary of the Commission's Green Paper, which helped establish ETSI. This milestone offers an opportunity to reflect on the role ETSI standards have played in deepening the integration of the EU Single Market, promoting competition and innovation, and supporting the global adoption of European technologies. Their success demonstrates that standards are not a constraint on competition, but an enabler of it. The timing is also relevant: Both quantum technologies, with the projected Quantum Act, and the evaluation of the European standardisation system's capacity to support new and emerging technologies are two strategic priorities as set under the Competitiveness Compass and the *One Europe, One Market* Roadmap. ETSI argues that its four decades of standards work demonstrate that standards are an enabler of competition, not a constraint on it.

Why standardisation matters for quantum

The case for early standardisation in quantum rests on three arguments. The first is interoperability. In emerging technologies where the landscape is still forming, innovation cycles are short, and leadership is concentrated among highly specialised players. The ability to influence standards at an early stage is linked to industrial leadership. Standards that establish technical interoperability promote competition on the merits between technologies and prevent lock-in to a single supplier.

The second argument concerns direct participation. Standards give companies of all sizes a direct channel to contribute their technologies and shape the rules they will later implement. For Europe to remain competitive, its industry must be positioned not merely to participate in standardisation but to drive it directly particularly in new domains where the underlying technology is still maturing.

The third is balance. Effective standardisation must reconcile the need to incentivise innovation with the imperative of keeping markets open. Standards must reflect the state of the art while

remaining technology-neutral and genuinely accessible. ETSI grounds its quantum credibility in a long track record: it has run quantum pre-standardisation work since 2008, including pioneering activity on Quantum Key Distribution and Quantum-Safe Cryptography. In 2025, ETSI created a dedicated Technical Committee on Quantum Technologies referenced in the Commission's 2025 European Quantum Strategy.¹

The ETSI model: direct participation and global reach

What distinguishes the ETSI model, on its own account, is direct participation. ETSI allows the organisations with the relevant expertise, companies, research bodies, societal stakeholders, and SMEs, to engage in standards work directly and on technical merit. ETSI has more than 950 member organisations across 64 countries, with SMEs forming a substantial share of its membership and more than 90 members active in quantum communications alone. The premise is that the right incentives and the removal of unnecessary barriers produce the most relevant standards.

A second feature is ETSI's dual role. It is simultaneously a European Standardisation Organisation, a globally recognised Standards Development Organisation, and a founding partner in global partnerships such as 3GPP and oneM2M. This lets European work translate into global outcomes, the route by which GSM became a worldwide mobile standard: "This combination, European roots with global participation, is, in today's geopolitical context, a strategic strength for Europe." ETSI also makes its standards available free of charge, with more than 26 million downloads a year, which lowers the barrier to implementation for smaller players in particular: "the value of a standard lies not in the document itself, but in the technology and interoperability it enables."

Underpinning this is the ETSI IPR Policy, which seeks to balance the protection of rights holders with the broad accessibility and implementability of standards. It focuses on technical necessity rather than commercial considerations. It encourages early disclosure of potentially standard-essential patents and asks members to commit to being prepared to grant irrevocable licenses on fair, reasonable and non-discriminatory (FRAND) terms. At the same time, ETSI itself neither sets FRAND rates, assesses essentiality, nor takes part in licensing negotiations.² Voluntary FRAND commitments are presented as the equilibrium that keeps standards accessible while rewarding the R&D investment that industry, which bears most of the cost of standards development, brings to the table. The ETSI IPR Policy enables innovative technologies to be incorporated into standards, strengthening the competitiveness and technical value of ETSI standards.

¹ ETSI dates its quantum pre-standardisation work to 2008, with QKD activity launched that year and Quantum-Safe Cryptography from 2015 (first standards published 2018).

² On the ETSI IPR Policy: balancing protection of IPR holders with broad accessibility, focus on technical necessity rather than commercial considerations, early disclosure of potentially essential patents (Art. 4.1), FRAND licensing declarations, and the principle that ETSI neither sets FRAND rates nor assesses essentiality.

The stakes for Europe

None of this resolves the broader policy debate. What is the right model for standardising new and emerging technologies, and quantum in particular? If Europe wants to lead in quantum technologies, it must rely on standardisation models that enable direct participation and set the right incentives for the right experts to voluntarily contribute. ETSI's globally recognised, open, and consensus-based approach is built on the technical merit of contributions, supporting European objectives while serving the wider international community and fostering open competition, accessible innovation, and fair outcomes.

If that case holds, the prize is considerable. The recurring ambition voiced by ETSI is that in a few years' time the world may be talking about global quantum standards made in Europe: the quantum-era echo of the GSM story. Whether Europe gets there will depend less on regulatory change alone than on which standardisation model it chooses to back, and how early it does so.

This analysis draws on remarks by ETSI's Chief Policy Officer at the Euractiv conference of 24 June 2026 and on the supporting ETSI materials cited above.

Disclaimer: Axel Ferrazzini is Managing Director at 4iP Council. All views expressed herein are those of the author and do not necessarily reflect the views of 4iP Council or any of its supporters.