



Statement of Requirements

Access to Advanced Mobile Networks That Enable Reliable Teledriving and Connected Mobility at Scale

Teledriving depends on continuous, reliable mobile connectivity so that a remote driver can receive live video streams from a vehicle and safely control it in real time.

Elmo, the company behind the world's first road-legal teledriving technology, is releasing this Statement of Requirements that sets out the demand for mobile network operators to support standardised, interoperable network APIs that can provide predictable connectivity for safety-relevant remote driving use cases.

The primary requirement is for Quality on Demand (QoD), supported where relevant by complementary capabilities such as location, device identity and network status information.

Market Demand

Teledriving is becoming relevant for taxis, rental cars, logistics vehicles, vehicle repositioning, remote assistance and future autonomous mobility operations. In car-sharing and similar fleet applications, dynamically repositioning vehicles where demand is highest can reduce the required fleet size by up to 40% without reducing capacity (based on Elmo's own data, as referenced by e-Estonia and Trade with Estonia). Teledriving can also provide a human-in-the-loop safety layer for autonomous vehicles when they encounter hazards or technical issues they cannot resolve independently.

Elmo's case study identifies the business problem as the need for highly reliable and continuous mobile connectivity for teledriving, including real-time video streams from the vehicle to the remote driver.

As these services scale, enterprises require more than best-effort connectivity. They need mobile networks to expose standardised capabilities that allow an authorised application to request, confirm and maintain appropriate network quality for a defined remote driving session.

Proven Deployments and Validations

The document expresses Elmo's requirements and preferences and does not create binding contractual obligations on any party.

Elmo's work with GSMA and Open Gateway partners has already validated teledriving across different real-world conditions:

- **MWC Barcelona®** – Starting at MWC25, Elmo allowed visitors to experience low-latency cross-border teledriving in real time. Visitors sat in the GSMA booth in Barcelona and remote drove a vehicle stationed a record-breaking 3,400km away in Helsinki. The QoD API was used to support stable and reliable video feeds for the remote driver to navigate the Finnish roads.

The following year at MWC26 as part of the CircuitX showcase, and according to our knowledge, Elmo set a new remote driving speed record, reaching 157km/h over a live commercial 5G network with their vehicle at the iconic Circuit de Barcelona-Catalunya. QoD APIs were in the spotlight once again to support the consistent, low-latency connectivity required for teledriving.

- **MWC Doha™** – Elmo once again pushed the boundaries of remote driving by setting a new cross-border teledriving distance record of 4,300km over public commercial mobile networks. During MWC25 Doha, Elmo allowed visitors sat in Doha to successfully drive a vehicle through the snowy public streets of Tallinn, Estonia.

Requirements for Mobile Network Operators

Teledriving requires mobile networks to support real-time, safety-relevant application performance. The vehicle must transmit video and operational data to the remote driver, while control commands must be sent back to the vehicle with sufficient reliability and responsiveness.

In current deployments, enterprises often rely on general mobile connectivity. However, remote mobility use cases need greater assurance that the network can support the required experience at the moment it is needed, especially where congestion, uplink constraints, mobility, venue density or coverage variation may affect performance.

The requirement is therefore for operators to expose programmable, standardised network capabilities through CAMARA APIs so that remote mobility platforms can request and manage the required connectivity characteristics for a remote driving session.

Requirement	Priority	Description
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Quality on Demand	MUST	Operators should support a standardised QoD API that enables an authorised remote mobility application to request enhanced network quality for a defined remote driving session.
Service continuity	MUST	Operators should support mechanisms that help maintain suitable network performance during a remote driving session or provide clear status if the requested quality cannot be maintained.
Uplink performance	MUST	Operators should recognise uplink as a critical requirement, because teledriving depends on sustained video and data transmission from the vehicle to the remote driver.
Low-latency support	MUST	Operators should support network capabilities that reduce latency variability for real-time vehicle control and video streaming where technically available.
API status feedback	MUST	API responses should provide clear feedback on whether the requested quality has been applied, rejected, changed or become unavailable.
Location context	SHOULD	Operators should support location-related APIs where these can improve operational awareness for remote mobility use cases.
Device identity context	SHOULD	Operators should support device or SIM identity-related capabilities where these help verify the correct endpoint, vehicle or device involved in a session.
Cross-market consistency	SHOULD	Operators should implement these APIs consistently across markets using CAMARA / Open Gateway specifications to reduce bespoke integrations.
Cross-network / roaming continuity	SHOULD	Operators should support consistent access to relevant network capabilities when vehicles move across operator and national network boundaries.

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Timeframes

Immediate priority: Quality on Demand, service continuity, uplink performance, low-latency support and API status feedback.

Over the next 12–18 months: broader and more consistent availability of these capabilities across operators and markets, including cross-network continuity, together with complementary location and device identity capabilities.

Markets

Estonia is Elmo's home and development market. Beyond Estonia, Elmo sees significant potential across Europe, North America, South America, the Middle East and Africa. The requirement is not limited to individual countries: for teledriving to scale, these capabilities need to be consistently available and interoperable across operators and markets.

In the immediate term, we would welcome initial discussions with mobile network operators from Germany, the United States, and Ukraine on how to implement the priority requirements, but this does not preclude engagement with operators from other markets.

Applications

Applications across these markets include carsharing and fleet repositioning, remote taxi and mobility services, logistics, remote assistance, autonomous vehicle fallback and human-in-the-loop safety, as well as defence and other safety-critical remote driving applications.

Call to Action

Elmo's deployments and validations show that teledriving is technically reliable and commercially relevant even at high speeds or from very long distances, but wider deployment requires mobile operators to make network quality capabilities available in a standardised and scalable way to ensure predictable connectivity under varying network conditions.

Mobile network operators are urged to prioritise support for QoD and related CAMARA APIs for remote mobility use cases, enabling enterprises to build services that can operate across operators, markets and real-world environments.

Teledriving can only scale if the mobility and telecoms industries move together. Standardised network APIs give remote mobility providers a practical way to request the network performance their services require, while giving operators a clear role in enabling the next generation of connected vehicle services. As teledriving scales across mobility, logistics, autonomous vehicle support and defence applications, it also creates growing demand for advanced network capabilities such as QoD.