

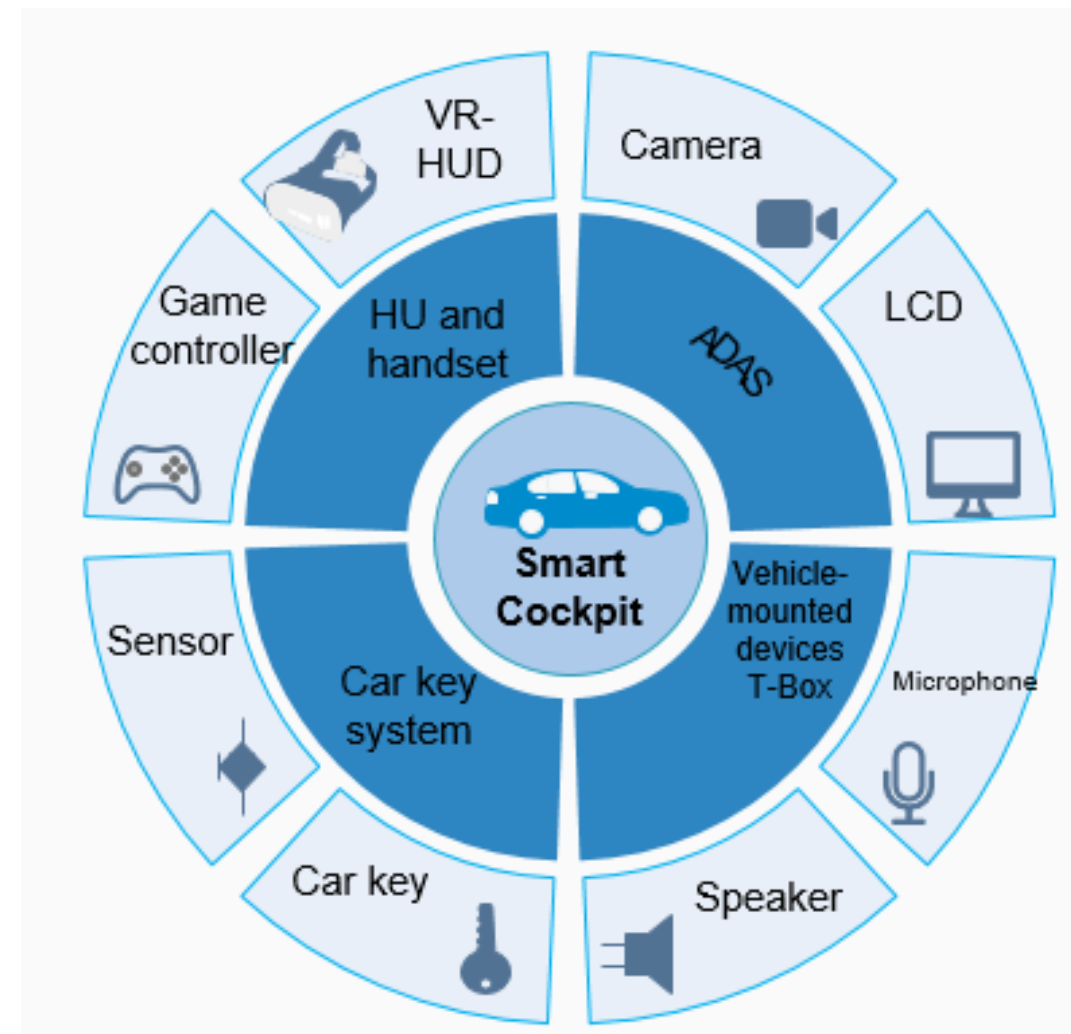


Introduction of SparkLink Alliance

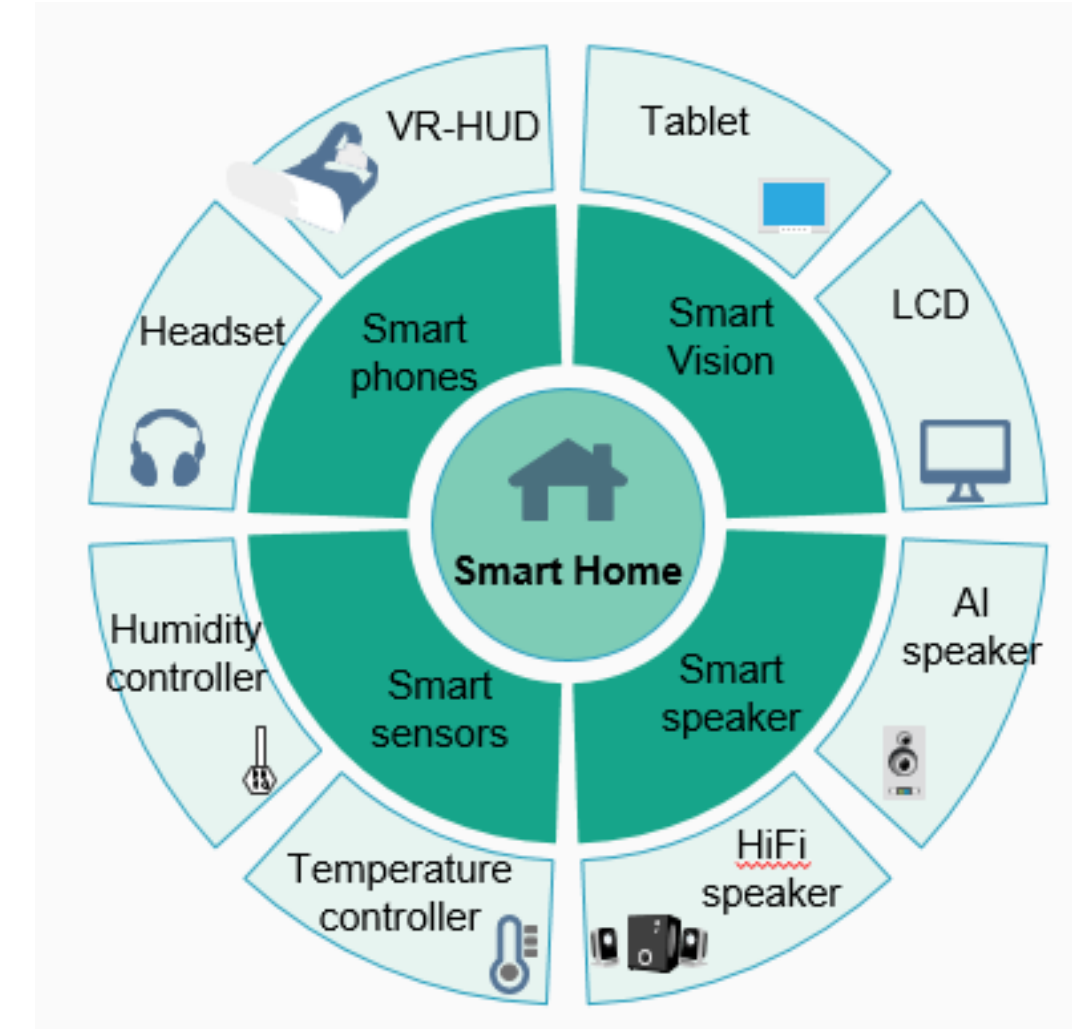
2021-08

Huge Market of Wireless Short-range Communication

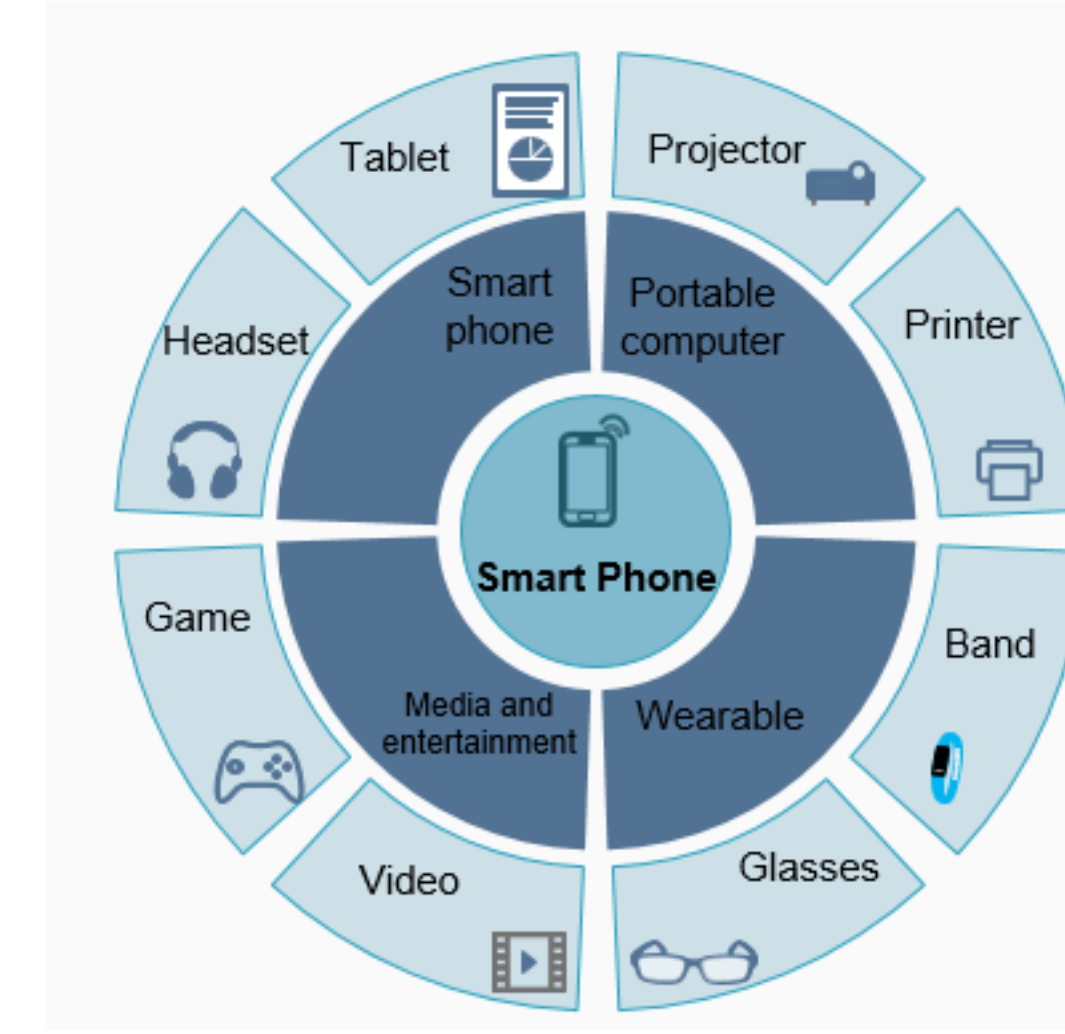
Smart Car



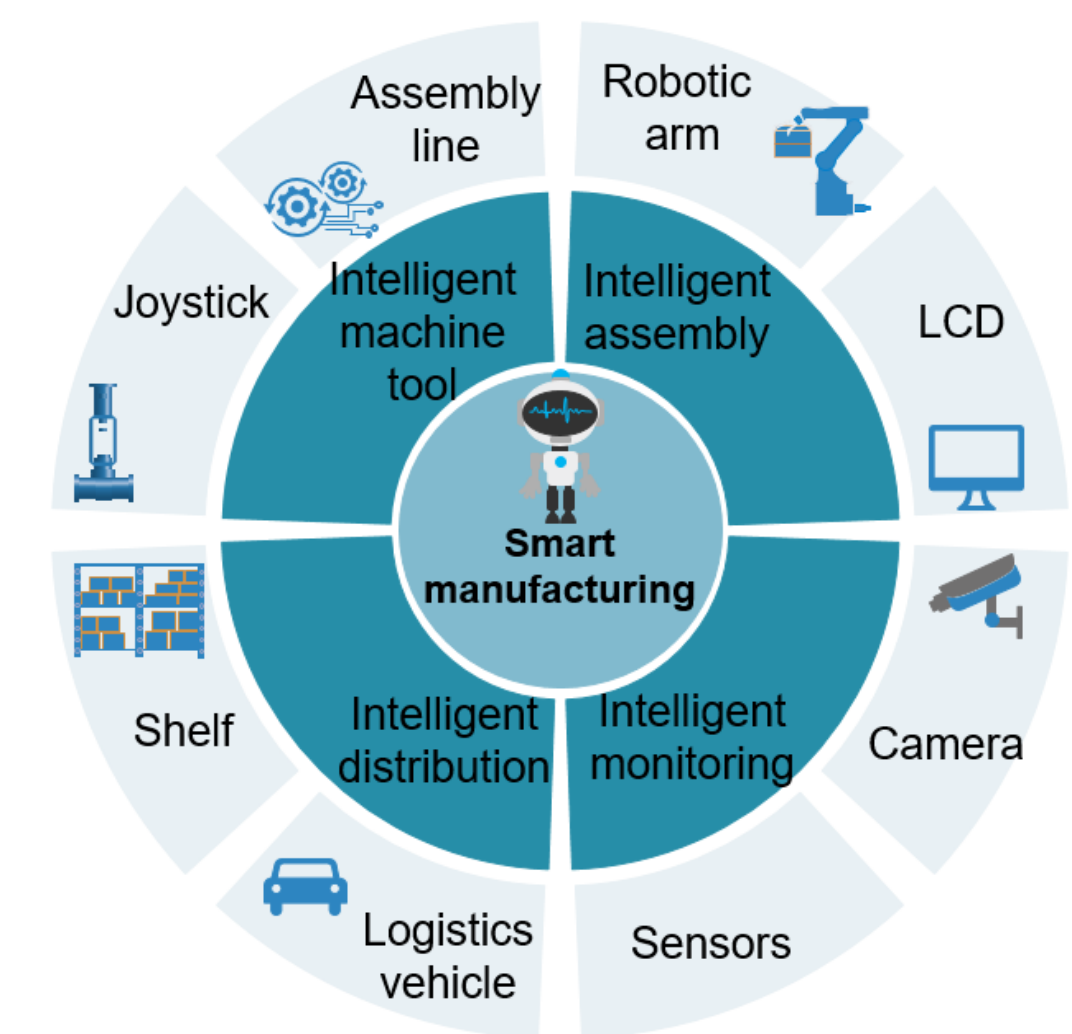
Smart Home



Smart Terminal



Smart Manufacturing

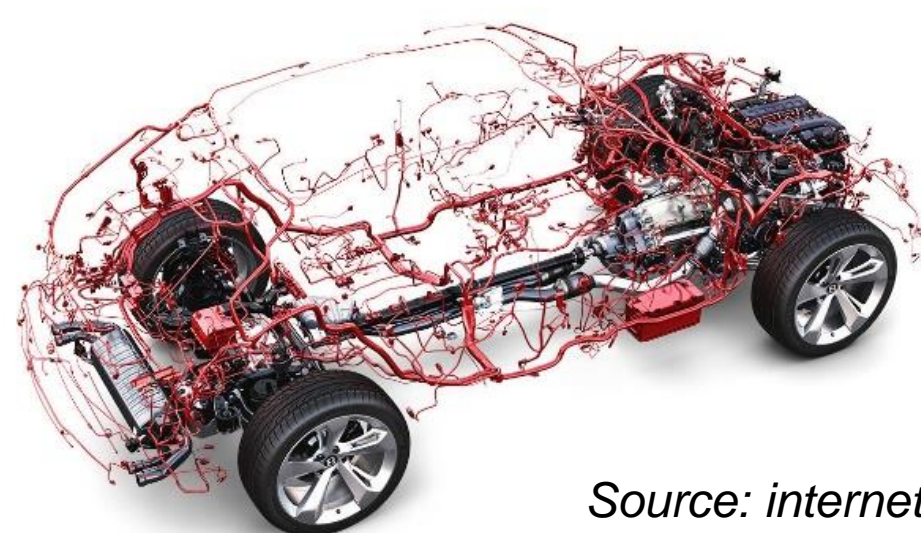


Challenges of Wireless Short-range Communication in Smart Car

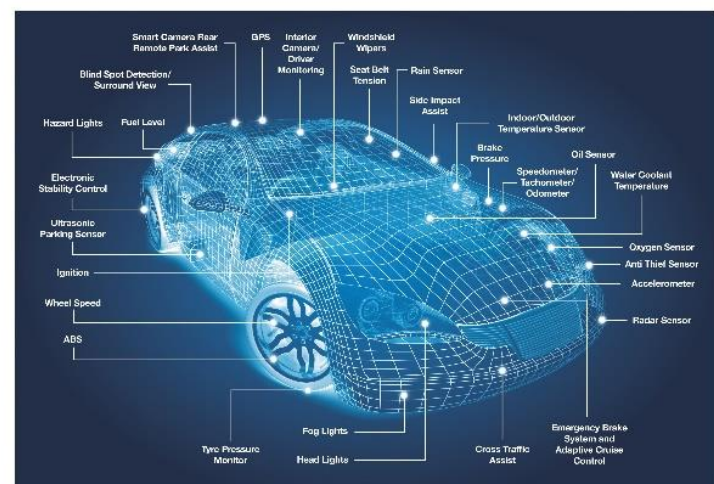
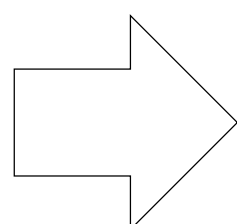


Benefits to car OEMs

wireless communication vs. wired communication



Source: internet



- **Reduce vehicle weight:** reduce the length of on-board cables and the number of connectors
- **Reduce manufacturing cost:** reduce manual intervention during vehicle production, then improve automation and efficiency
- **Improve service scalability** and enable innovative smart car applications

In-Vehicle Sound & Active noise reduction



- E2E Latency < 100us
- Sync Accuracy < 1us

Screen Interaction



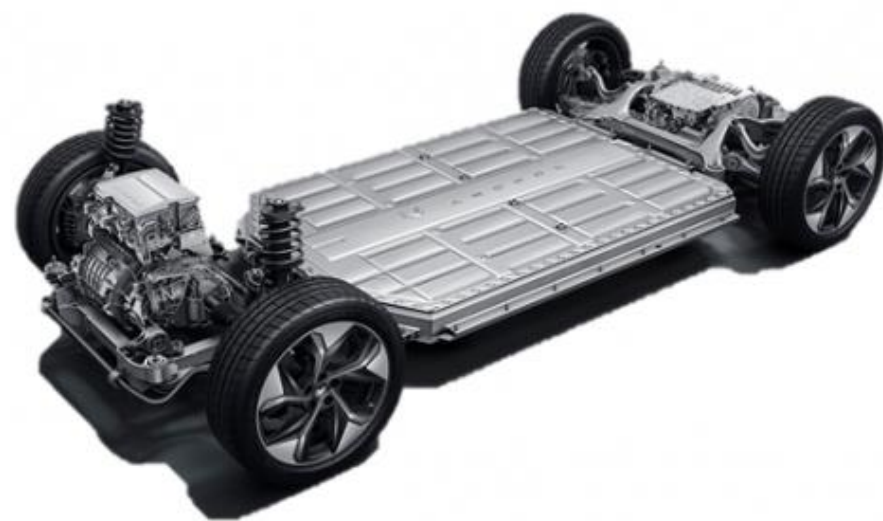
- Unidirectional latency < 2ms
- Accurate synchronization

Passive Entry Passive Start



- High positioning accuracy (10~20cm level)
- Reliability > 99%

Wireless BMS

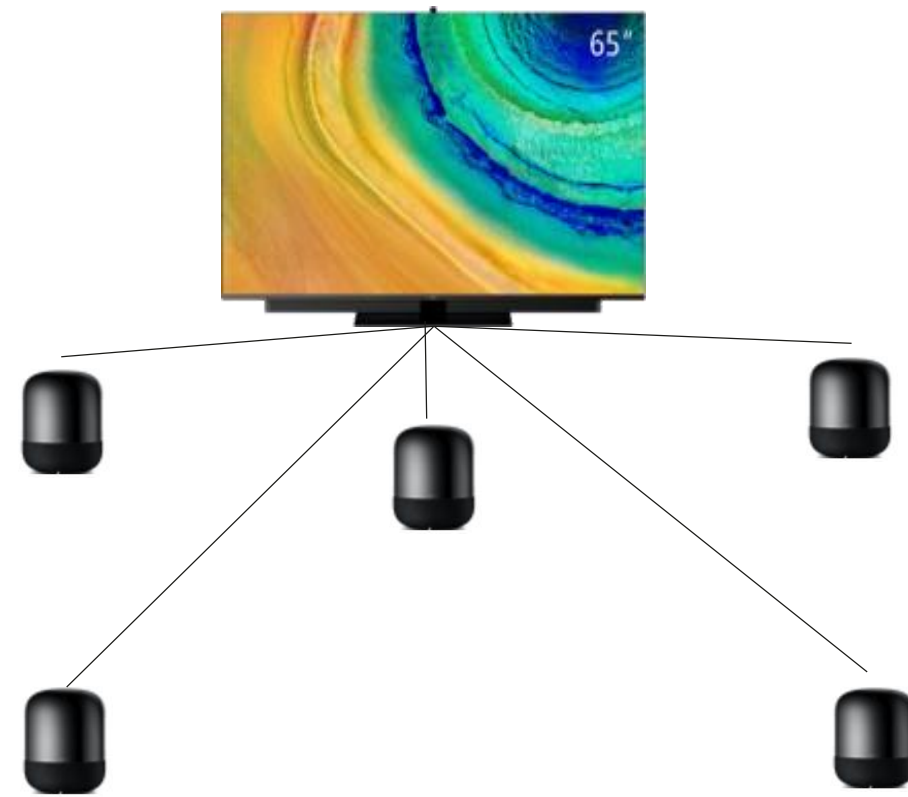


- Support concurrent service (256 cells)
- Reliability > 99.999%

* there are more challenging use cases than above examples

Challenges of Wireless Short-range Communication in Smart Home

Smart Speaker



- Sync accuracy < 1μs
- Soundtrack Sync with picture (1ms)
- Support low latency transmission for 96kHz*24bit lossless audio sound

Smart TV/ Projection screen



- Transmission latency < 2ms
- Support 4K/8K HD-video transmission

Smart camera/ Visual application



- Transmission latency < 5ms

Positioning & Perception



- Ranging accuracy $\leq \pm 5\text{cm}$
- Angular Accuracy $\leq \pm 3^\circ$

* there are more challenging use cases than above examples

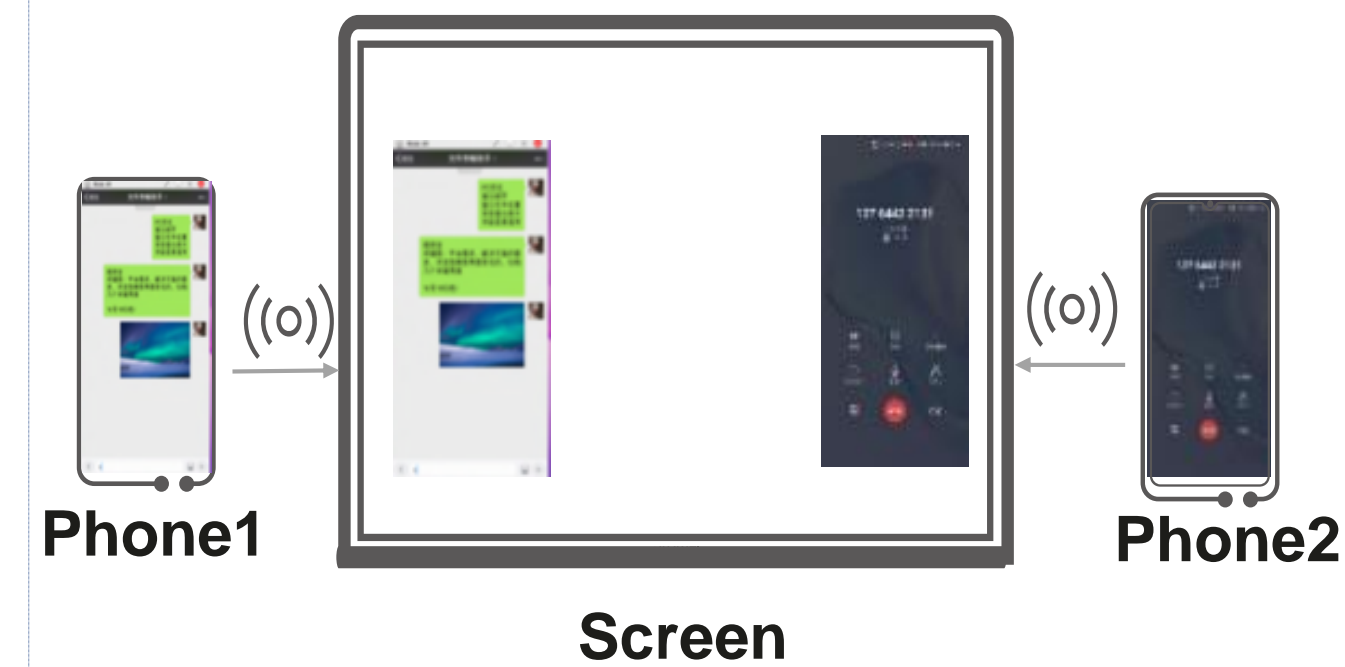
Challenges of Wireless Short-range Communication in Smart Terminal

Phone + wearable (audio service)



- 48 kHz/24bit 2 channels lossless & no-compression transmission
- Ultra-long standby time

Projection screen



- Transmission latency < 2ms
- Multi-devices coordination

Real-time mobile games



- M2P latency < 20ms
- Sensor report frequency > 1kHz

Wireless game keyboard&mouse



Update frequency > 4kHz
(Latency < 250us)

* there are more challenging use cases than above examples

Challenges of Wireless Short-range Communication in Smart Manufacturing

Motion Control



- Transmission Latency < 1ms
- Reliability (99.999%~99.999999%)
- Sensor Number > 50

AGV coordination



- Transmission Latency < 2.5ms
- Reliability (>99.9999%)
- Vehicle Number > 4

Sensor-based progress Control



- Transmission Latency < 100ms
- Reliability > 99.9%
- 100+node connections (density: 1 node/m²)

* there are more challenging use cases than above examples

SparkLink Alliance Target and Scope



Target

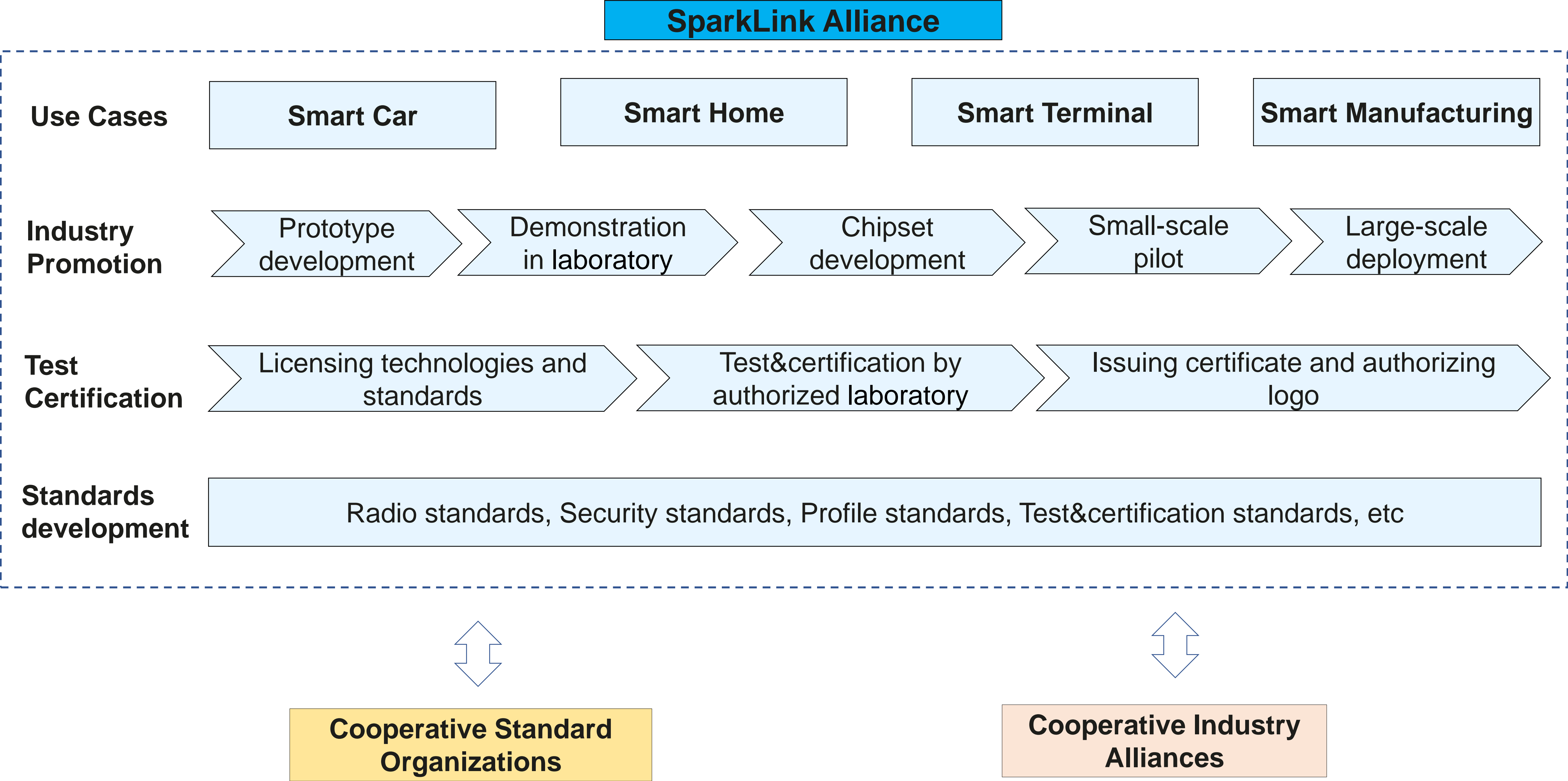
Promote next-generation wireless short-range communication technology innovation and industry ecosystem, and support applications in **smart cars, smart homes, smart terminals, and smart manufacturing.**



Scope of Work

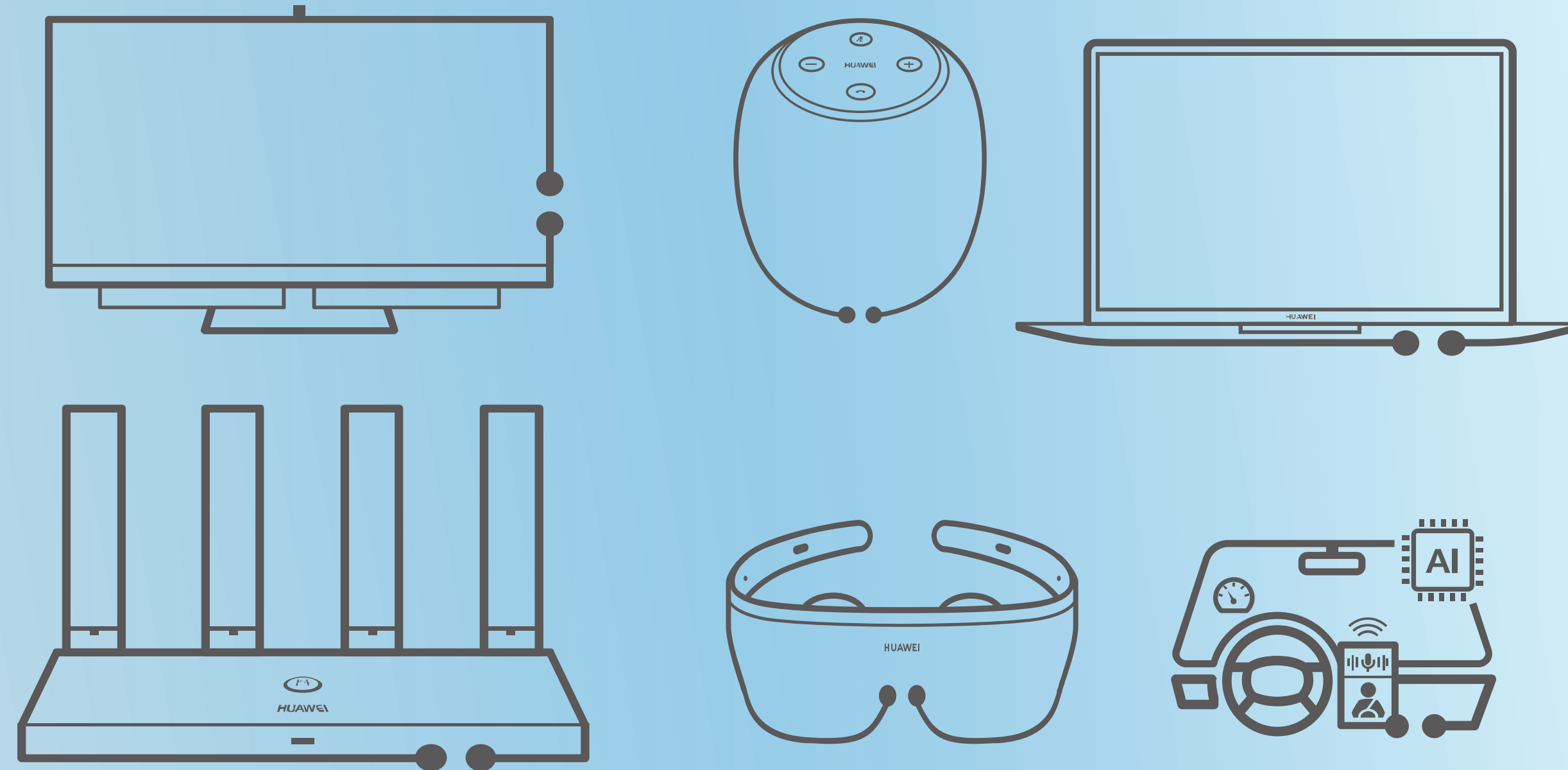
1. **Standardization:** develop standards, with the collaboration with relevant SDOs.
2. **Test Certification:** Certify testing, authorize technologies and trademarks, and provide other related services.
3. **Strategy Development:** study industrial development strategies, etc.
4. **Ecosystem Construction:** Leverage the industry's upstream and downstream resources to promote the commercial use of innovative technologies and standards developed by the Alliance, thereby building a prosperous ecosystem.
5. **Application Demonstration:** cooperate with industry partners to develop and demonstrate applications based on the Alliance's technical achievements.
6. **External Cooperation:** seek cooperation with external organizations to globalize the industry and standards.
7. **Information Exchange:** facilitate information exchange and cooperation among members of the alliance.

SparkLink Alliance Operational Framework

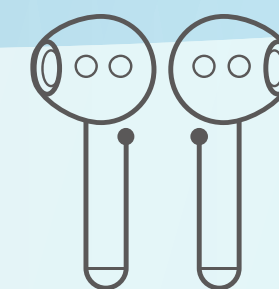
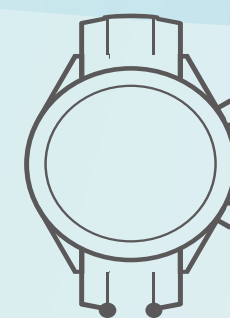
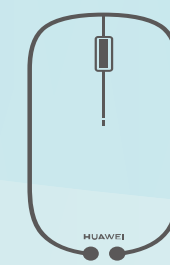
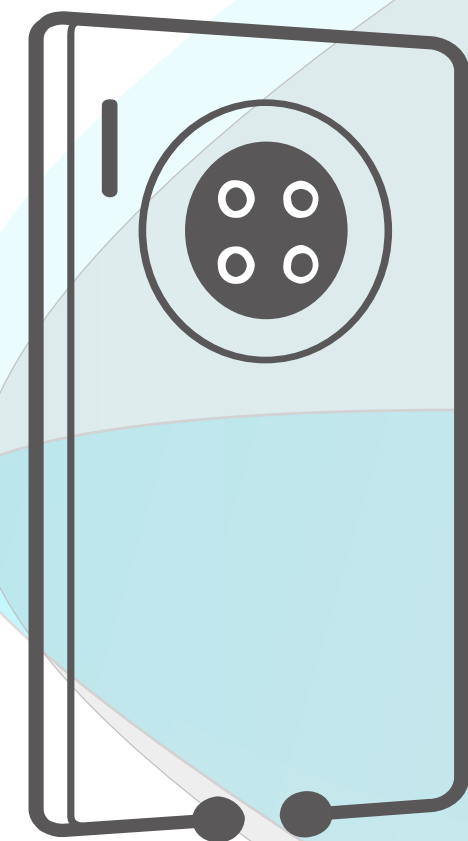


SparkLink Technology Family

SparkLink-Basic(complete)
Low latency and high reliability connection



SparkLink-Low Energy(ongoing)
Low energy and light weight connection



Performance of SparkLink Technology

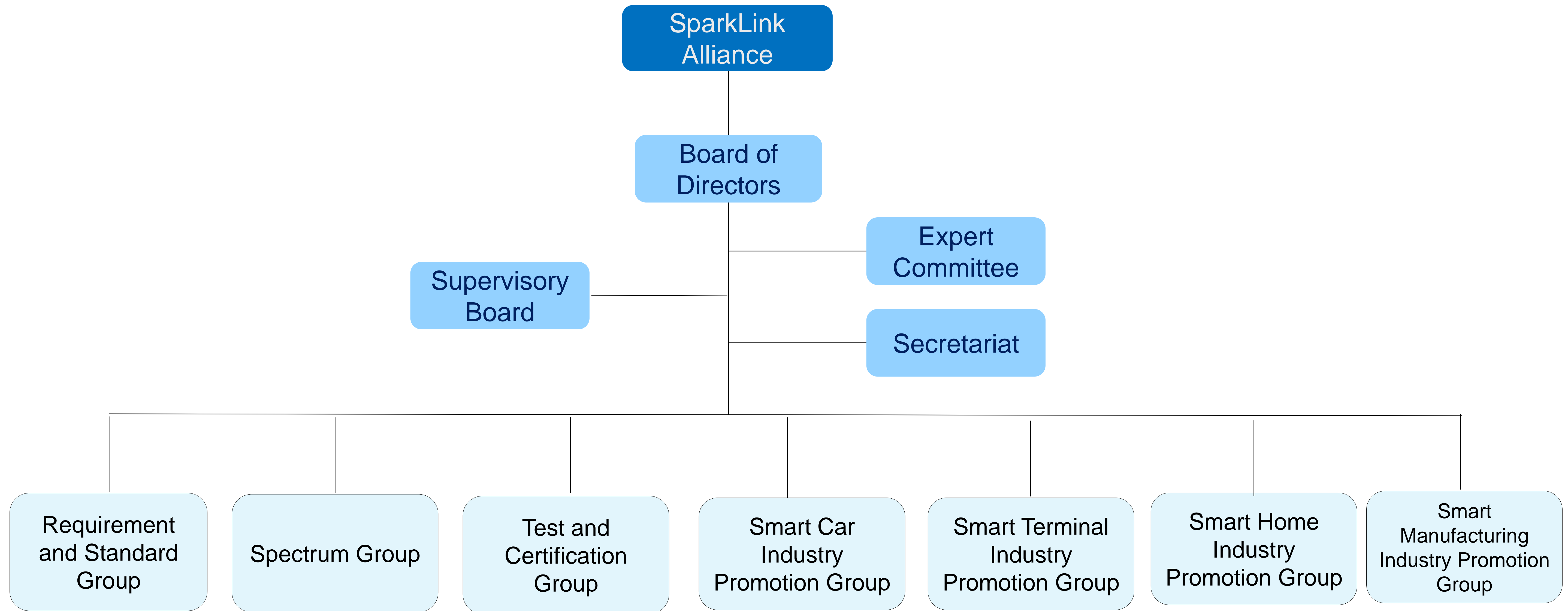
Performance of SparkLink-Basic (after evaluation by SparkLink Alliance)

Metrics	Value
Peak Data Rate	G Link > 900Mbps@20MHz T Link > 450Mbps@20MHz Support up to 320MHz using 16 carriers
Latency in Air Interface	< 20us
Reliability	BLER < 1e-5
Synchronization Accuracy	< 1us
Multi-user Capability	Up to 4096 users
Coverage	Minimum SINR -5dB
Security	High (mutual authentication, algorithm negotiation)

Performance of SparkLink-Low Energy (design target)

Metrics	Value
Peak Data Rate	12Mbps
Latency in Air Interface	< 250us
Multi-user Capability	Up to 256 users
Coverage	Minimum SINR -3dB
Security	High (mutual authentication, algorithm negotiation)
Electric current	Data Communication: <2mA@2Mbps Keep Alive: <0.3mA

Organizational Structure of SparkLink Alliance



SparkLink Alliance Members (123 members to date)



Members cover the entire industry chain, including industry organizations, universities, academic institutes, chipset manufacturers, module manufacturers, car OEMs, car Tier1/2, smart device manufacturers, consumer electronic manufacturers, test instrument manufacturers, application developers, IT companies, mobile operators, etc

Join SparkLink Alliance



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THANK YOU!