深圳巴士集团
SHENZHEN BUS

Building Trust in Autonomous Mobility through Everyday Safety

An Operator-Led Approach from AV Trials to Scalable Bus Operations

Shenzhen Bus Group Co., Ltd.

September 2026

SZBG: Operating at Scale, Transforming at Speed

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Bus Services

- 5,000+ buses
- 300+ regular bus routes
- 600+ on-demand bus routes

Taxi Services

- 5,000+ taxis

Charging Services

- 3,000+ charging terminals


Sightseeing


Car rental


Coach


Charging service


Urban bus

SHENZHEN BUS


Taxi


Smart O&M


Depot property


Study tour


Advertisement

Electrification Timeline



2010 — Launched the 1st Electric Taxi Fleet



2011 — Initiation of Pure Electric Buses

2017 — 100% Bus Fleet Electrification







2018 — 100% Taxi Fleet Electrification

- Optimizing Charging Operations for Efficiency
- Upgrading In-House Capabilities for E-bus Maintenance
- Advancing Charging Infrastructure through Smart Integration









2025

From Pilot to Practice: Bridging Autonomous Trials and Daily Operations

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1 PILOT & VALIDATE



AlphaBus autonomous bus pilot



Robotaxi license with safety driver



Driverless robotaxi license



Shenzhen's first autonomous bus route



Autonomous logistics line



Driverless minibus service

- Multi-sensor perception
- Risk assessment and decision logic
- Vehicle-control integration
- Real-world scenario validation

2 RECOGNIZE THE SCALING GAP

Current Constraints on Large-scale Autonomous Deployment

- **SYSTEM CAPABILITY**
  Complex urban traffic scenarios require further validation.
- **REGULATORY SCOPE**
  Commercial autonomous operation of standard 8–12 m high-capacity buses is not yet permitted nationally.
- **ORGANISATIONAL READINESS**
  Workforce transition, operating standards and emergency-response protocols require further development for fleet-wide deployment.

Practical safety at scale

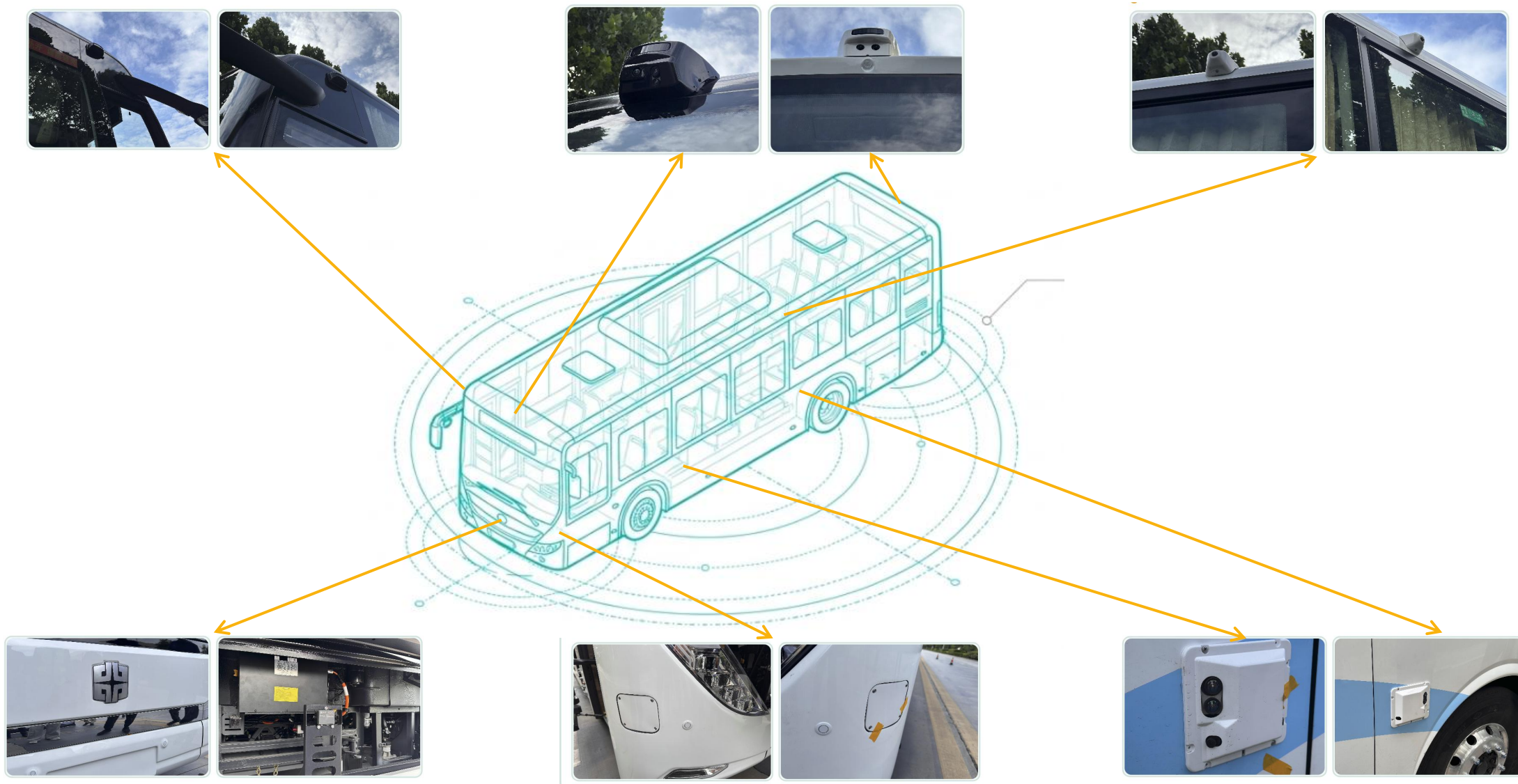
- Retain the driver as primary operator
- Reuse mature perception, decision and control capabilities
- Redesign around bus-specific operating risks

3 Advanced Active Safety System





Hardware Integration Across the Bus



Advanced Active Safety System (AASS): Architecture & Core Functions

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1 Sensing Layer

- LiDAR
- mmWave radar
- Camera array
- Ultrasonic radar
- Driver-monitoring camera

→

2 Central Computing & Controller

- Sensor fusion
- Risk prediction
- Intervention planning

→

3 Drive-by-wire Chassis

- Electronic commands translated into braking, steering and drive actions

→

4 Vehicle Response

- Warning
- Speed control
- Braking assistance
- Controlled stopping

BUS-SPECIFIC SAFETY SCENARIOS

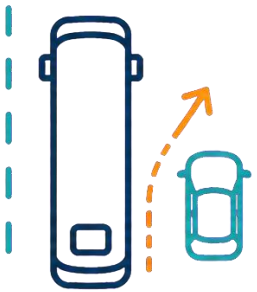
1. **Active Speed Control**



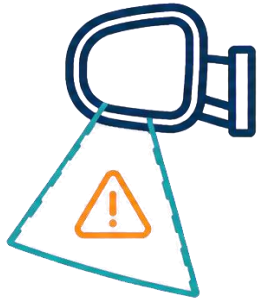
2. **Front & Rear Collision Protection**



3. **Side Collision Avoidance**



4. **Blind-Spot Protection**



5. **Driver Emergency Detection & System Takeover**



Building Trust Through Defined Intervention

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ADAS

- Detect, alert and record
- Supports safety management and driver review
- No active speed or brake control

AEBS

- Automatic braking in defined emergency scenarios
- Primarily focused on collision mitigation
- Not a full multi-scenario perception-and-control architecture

ADVANCED ACTIVE SAFETY SYSTEM

- Predicts risks earlier through multi-sensor fusion
- Warns first; if the driver does not respond, controls speed or braking
- Controlled intervention for driver incapacitation

INTERVENTION LOGIC

1. **Risk detected**
   Multi-sensor perception and prediction
2. **Driver warned**
   Human-led operation continues if response is effective
3. **Critical risk / no response**
   System controls speed or braking
4. **Driver incapacitation**
   Controlled stop and event upload

CLOSED-LOOP SAFETY MANAGEMENT

Event recording → Operational review → Targeted training → Parameter optimization

NORMAL OPERATION
Driver remains the primary operator

DEFINED CRITICAL CASES
Safety intervention can take priority

A Practical Pathway from Autonomous Technology to Real-World Safety

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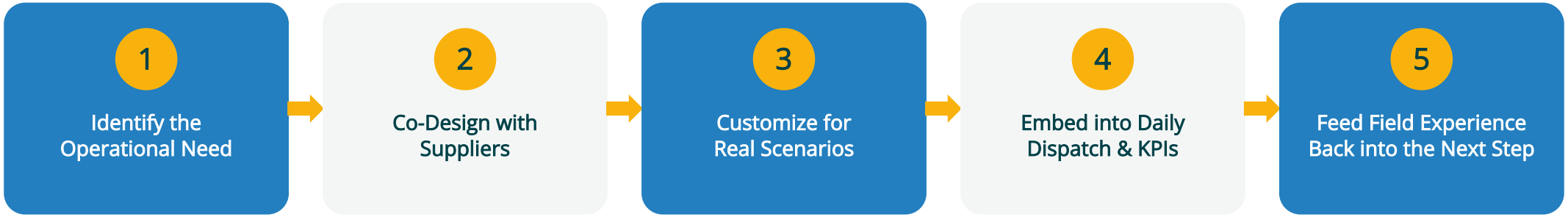

For a public transport operator, building trust in autonomous technology is not about waiting for full autonomy to arrive.

It is about shaping those capabilities around real operational needs and turning them into solutions that can be trusted in everyday service.

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Thank You

Vera Huang

International Business Manager

Shenzhen Bus Group Co., Ltd.

SCAN FOR MORE INFO

- Case study of bus electrification
- Video presentation of Shenzhen Bus Group
- 2026 Training Programme in Shenzhen