小马智行·pony.ai

Royal Flush of ADV Deployment



Royal Flush of a success ADV deployment

♠A



AD Technology

♥A

♠K



Regulatory Support

♥K

♠Q



Mass Production Capability

♥Q

♠J



Operation Capability in Scale

♥J

♠10



Linkages across industries

♥10

Readiness of L4 Automated Driving Solution

1. Confidence of Driverless AND in scale

Phase 1
2004–2020



Safety Operator Onboard

- Human responsible as the safety backup
- Not considered full L4 robotaxi

Phase 2
2020 – 2025



No Safety Operator Onboard Limited/Small-Scale Operation

- Features redundancy in many systems
- Safety approaches that of a human driver

Phase 3
2025 –∞



Large-Scale Operation of Fully Driverless Fleets

- 1,000+ of **fully driverless** Pony.ai robotaxis in fleet, provides 24/7 services, even in extreme weather

2000+ ADVs deployed

Public Operations in 9 countries, 15 cities

Robotaxi + Robotruck + RoboVan

40 million+ / 100 million+

Driverless Autonomous mileage / Autonomous mileage

24 / 7 Operation

Full Driverless Operation in All Hours and Inclement Weathers

Readiness of L4 Automated Driving Solution

2. Safety First, Multi-Layered Redundancy Delivers

20+ Safety Redundancies

7
Autonomous Driving **Software** Redundancies

7
Autonomous Driving **Hardware** Redundancies

5
Vehicle Platform Redundancies

3
Redundant **User Interaction** Services

1000+ System monitors

ensuring 24/7 operational safety

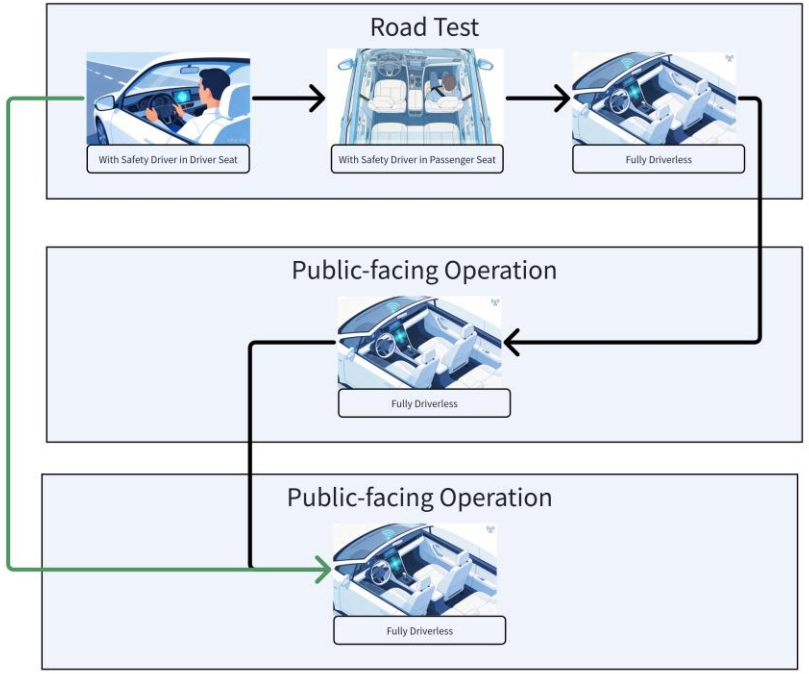
Graceful degradation

in case of a failure, enabled by multi-layered degradation strategies

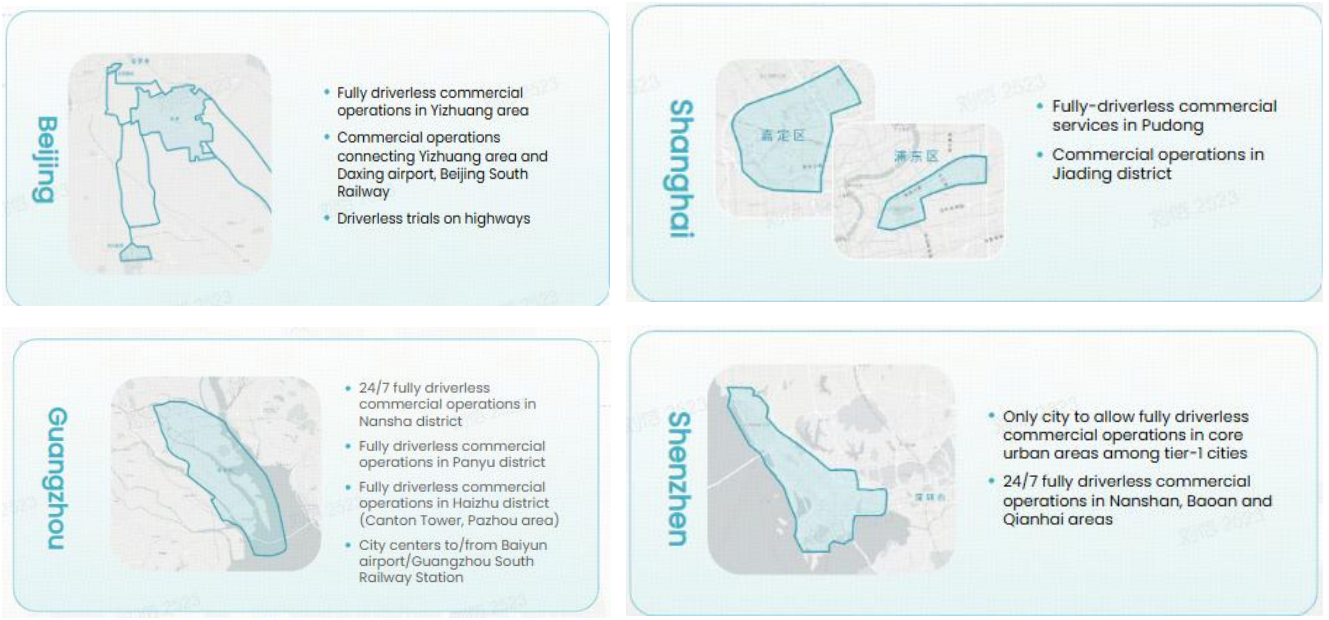
Regulatory Support

A comprehensive but practical path towards driverless-commercialization

Example of China practice



A meaningful testing & operation ODD



Mass Production Capability

Readiness of autonomous driving technology company

+

Readiness of automotive OEM vehicle redundancy platform



2017

Gen-1 Robotaxi ❯



2018

Gen-2 Robotaxi ❯



2018

Gen-3 Robotaxi ❯



2019

Gen-4 Robotaxi ❯



2020

Gen-5 Robotaxi ❯



2022

Gen-6 Robotaxi ❯

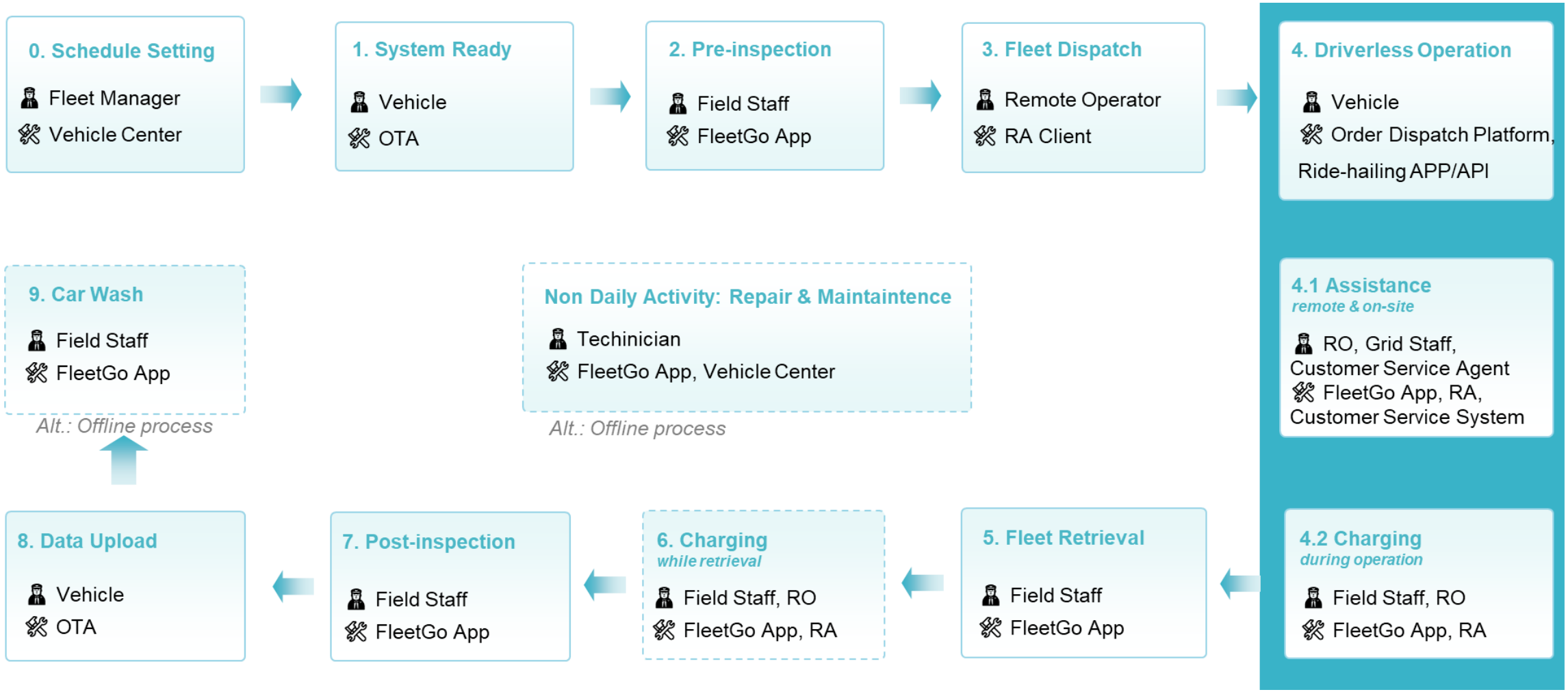


2025

Gen-7 Robotaxi

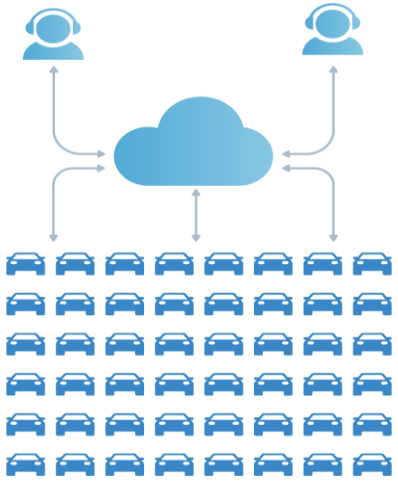
Operation Capability in Scale

A typical ADV fleet daily routine



Operation Capability in Scale
Highly Automated Fleet Operations

Pony Remote Assistance 1:X0 achieved in 2026



Request-base architecture design; provides high-level advisory instructions to help the vehicle exit complex or unexpected scenarios



Autonomous Charging Operations

Fast charging; ~60 minutes per vehicle



Autonomous Cleaning Operations

Conducted in parallel with vehicle charging



Autonomous Inspection Tasks

Performed concurrently during charging

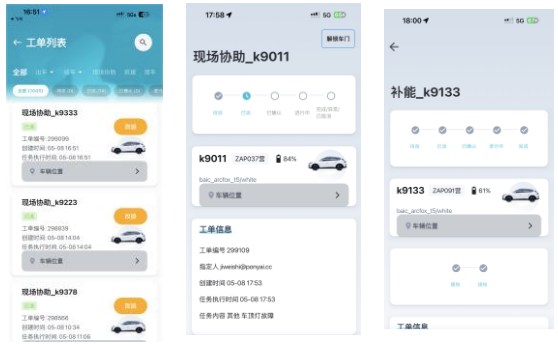


By leveraging idle time during charging, all maintenance operations can be completed simultaneously—improving operational efficiency.
One operator can service up to **20 vehicles** during a single charging cycle.

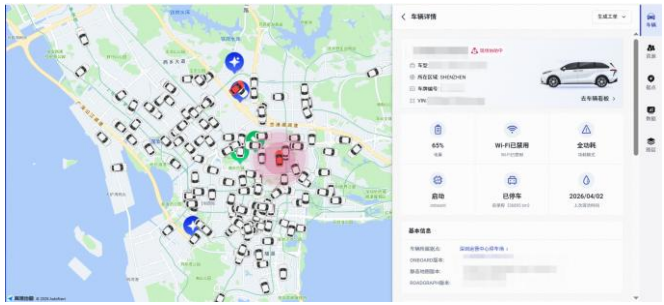
Operation Capability in Scale

Full set of digital tools

On-site operator App



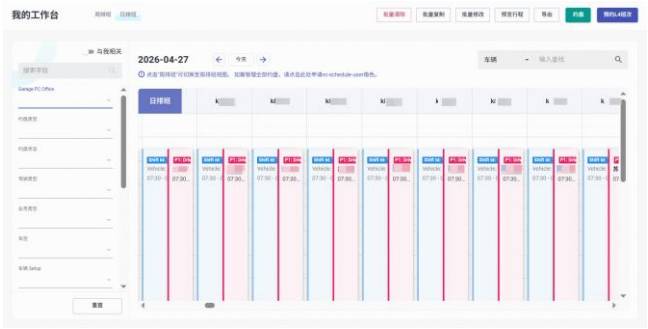
Operation status monitoring



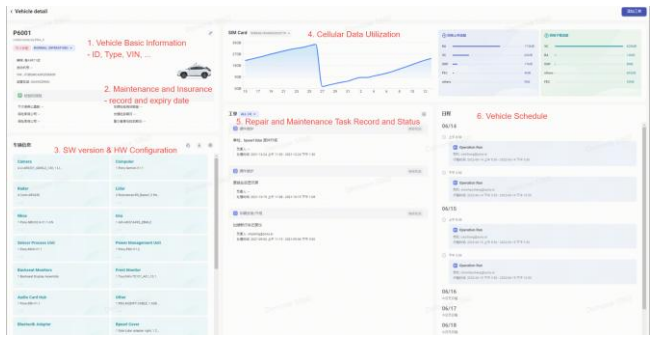
Depot and resource management



Fleet Scheduling



Fleet info. overview



Customer service





Linkages across industries

01 / CIVIL INFRASTRUCTURE

Municipal Roads & V2X

Physical Bedrock & Non-Line-of-Sight Sensing

- C-V2X Roadside Units (RSU): Holographic intersection sensing eliminates occlusions and blind spots.
- Digital Twin Road Grids: Dynamic HD vector layers stream roadwork and signal states in real time.
- Dedicated Right-of-Way: Dynamic tidal lanes and automated signal priority for commercial AV fleets.

SYSTEMIC LINKAGE

Supplies ground-truth real-time perception data to cloud AI, amortizing on-vehicle hardware costs while mitigating extreme edge cases.

02 / ENERGY & GRIDS

Smart Charging & Microgrids

Operational Backbone & Fleet Uptime

- Megawatt Fast-Charging Corridors: High-power automated hubs enable 10–15 min rapid energy turnaround.
- Automated Plug & Charge (A-P&C): Robotic gantries and wireless induction pads enable unmanned charging.
- Bidirectional V2G Integration: Inactive AV fleets act as decentralized mobile energy buffers for peak shaving.

SYSTEMIC LINKAGE

Safeguards 24/7 continuous asset utilization for AV fleets while stabilizing grid peak loads generated by hyperscale AI compute clusters.

03 / AUTO OEM & SUPPLY CHAIN

EV Supply Chain & Hardware

Automotive-Grade Redundancy & Execution

- Drive-by-Wire Redundant Chassis: Full dual-fail-safe architectures across steering, braking, and power nets.
- Integrated Sensor Suites: Low-power, automotive-grade solid-state LiDAR, radar, and HD cameras.
- Skateboard Platform Manufacturing: Modular platforms tailored for rapid derivation into Robotaxis and logistics pods.

SYSTEMIC LINKAGE

Serves as the physical carrier executing algorithmic intent, while continuously feeding petabytes of multi-sensor telemetry to city & cloud systems.

04 / AI INFRASTRUCTURE

AI Compute & Foundation Models

Decision Engine & Continuous Cognitive Evolution

- End-to-End World Models: Replaces brittle heuristic logic with unified multimodal spatial representations.
- Heterogeneous Supercomputing: Petabyte-scale shadow data loops coupled with generative edge-case simulation.
- Global Fleet Dispatch Optimization: Dynamic routing balancing passenger demand, tariffs, and charging availability.

SYSTEMIC LINKAGE

Maximizes vehicle hardware safety envelopes via over-the-air model updates while continuously balancing municipal traffic flow and charging demand.

Cross-Industry Value Flywheel

Civil Infrastructure Anchoring → Energy Network Continuity → Automotive Hardware Execution → AI Cognitive Feedback Loop

Commercial Scale Unlocked


AUTONOMOUS
MOBILITY
EVERYWHERE