

## Abstract

Building on the AR0–AR5 capability-threshold framework and the five-dimension instrument introduced in the flagship report, this paper conducts a systematic empirical assessment of electrical/electronic (E/E) architecture maturity across 22 major global automakers, applying a **dual-time-horizon** method that scores each firm both in its currently deployed state (Snapshot, 2026-01-31) and against its publicly confirmed near-term trajectory (Roadmap, 2027-07). All scoring follows a graded evidence standard and a fully transparent, reproducible equal-weight summation of the five dimensions, such that any reader may independently recompute every total and AR tier from Appendix A.

The central empirical finding is structural: **on the dimension of architecture maturity, the global landscape has been substantially reordered—leadership has migrated away from the traditional centers of the industry toward late-moving firms with lighter legacy burdens and toward cross-industry entrants.** Two facts give this judgment its sharpest form. First, **only two firms reach AR4 (Multi-Embodiment Physical AI Platform)—Tesla and Huawei HIMA—one a disruptor automaker, the other an ICT entrant; no traditional incumbent qualifies.** Second, the AR3 leading cluster is dominated by Chinese new players (Xpeng, NIO, Li Auto, Xiaomi), which have traversed in roughly a decade the architectural-centralization path that incumbents have yet to complete; in the same distribution, the European premium triad and the Japanese/Korean majors—despite their longstanding strengths in mechanical engineering and functional safety—occupy the lower end.

A methodologically central observation runs through the report and is, in our view, the single counterintuitive insight readers should carry away: **functional-safety certification is not a proxy for architecture maturity.** European OEMs retain global leadership on functional safety (D4), yet trail across architectural centralization, software-hardware decoupling, and compute concentration. The two capabilities measure orthogonal things—the rigorous maintenance of an existing design on one hand, the active reconstruction of an architecture on the other—and treating ASIL D certification as evidence of architectural advancement carries a systematic bias, increasingly so as the locus of automotive value migrates from driving safety toward continuous evolution as an intelligent terminal.

The dual-time horizon offers one signal favorable to the followers—the Roadmap aggregate narrows the paper gap, and the firms farthest behind commit to the largest leaps—but a roadmap is a commitment, not an accomplished fact, and the implementation gap is typically wider for incumbents bearing larger legacy systems. Each roadmap in this report is annotated with a delivery-risk rating.

**Keywords:** architecture maturity; software-defined vehicle; E/E architecture; functional safety; Architecture Readiness; dual-time-horizon assessment; architectural debt