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Five Theses on Artificial Intelligence and Its Infrastructure in Germany

Focus areas: Who Drives the Build-Out · Benefits · Law · Public Acceptance · Core Processes · Operating Model

DOCUMENT TYPE	Position paper on AI infrastructure in Germany
PURPOSE	A reliable assessment of where Germany stands, for operators, municipalities, investors, and policymakers
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AS OF	September 22, 2026 (English edition: November 2026)

This paper sets out five theses on artificial intelligence and the infrastructure it requires in Germany. It addresses who is driving the build-out, the benefits that can already be measured, the widening gap between technology and the law, public acceptance as a siting issue, and the coming leap of AI from support functions into companies' core processes. A concluding outlook asks who should hold which layer of a distributed data center business. The paper draws on data from Bitkom and the Borderstep Institute, the Federal Statistical Office of Germany, the transmission system operators, federal draft legislation, and documented municipal planning proceedings.

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1 Executive Summary

Artificial intelligence is changing the world. That is no longer a forecast but a statement of fact—and it lands in a German debate conducted almost entirely in terms of risk. The risks are real. But they are not the whole equation, and they are not the reason the necessary infrastructure is being built more slowly in Germany than elsewhere. This paper sets out five theses on the subject. The following summary is written to be understood without reading the chapters that follow.

Thesis 1: A World-Changing Undertaking—for the First Time Without the State at the Helm

World-changing undertakings such as the Manhattan Project or the Moon landing were commissioned, funded, and controlled by the state. With artificial intelligence, the private sector is in the driver's seat, while government operates on timelines that do not match the pace of development. The problem is not unwillingness; government is simply too slow. The exception is China. For Germany, this changes the question any location has to answer: not what subsidies are on offer, but whether permits and grid connections can be relied upon. In this constellation, the state is not the client; it is a precondition. How seriously the situation is viewed is shown by a Bitkom survey published on September 14, 2026: 91 percent of companies consider AI the most important technology of the future, yet 56 percent believe Germany has fallen behind on AI, and 34 percent worry about their own company's survival—up from 23 percent a year earlier.

Thesis 2: The Benefits Outweigh the Debate—and They Depend on Location

Two fields can already be quantified. In oncology, an individualized cancer therapy passed a Phase III trial for the first time in August 2026, with 1,137 patients; machine-learning models determine which features of an individual tumor can be targeted at all. In September, a second trial was stopped because more patients had died in the treatment arm—the approach holds up, but any single application remains uncertain. On Germany's roads, 2,832 people were killed in 2025, 62 more than the year before; the federal target of 1,537 deaths by 2030 is receding rather than drawing closer. The leading causes are speed, following distance, and distraction—precisely the factors that driver-assistance and automated driving systems address. The key conclusion for this paper: both fields require computing power close at hand—at the hospital, along the road—not on a mega-campus built wherever electricity is cheapest. Benefit and location are the same question.

Thesis 3: The Law Is Falling Behind the Technology, and the Gap Is Widening

The bottleneck is the grid connection. According to the explanatory memorandum to the federal draft bill reforming the grid connection process, applications totaling some 400 gigawatts are pending at the distribution and transmission levels, only a fraction of which can be realized; the draft itself calls the existing first-come, first-served principle outdated. In practice, the system switched to a maturity-based allocation procedure in April 2026, but the underlying legislation was still pending in September, and binding information on whether capacity is available at a given site is not expected until 2028. The same pattern appears among AI users: 66 percent of companies consider the EU AI Act a net disadvantage, up from 56 percent the year before—opposition grows as companies engage with the rules. This is not an argument against regulation, but an argument for deadlines: a permitting process that takes longer than construction decides where facilities go, without anyone ever having made that decision.

Thesis 4: Acceptance Decides—and for Some Towns, the Data Center Is the Answer

There are two distinct situations. In metropolitan areas, the issue is crowding out: four projects in the Rhine-Main region—Groß-Gerau, Maintal, Birstein, and Babenhausen—have stalled or failed in recent months because of process or communication, not technology; in one case, an investor with up to €3 billion withdrew because a resolution to initiate a zoning plan was missing. At the same time, Frankfurt, with roughly 997 MW of installed IT capacity and a vacancy rate of four percent, is physically maxed out; wait times there for larger grid connections can exceed ten years. In a town of 30,000 to 70,000 residents, the question is reversed. It is not "Do we want a data center?" but "What will make us attractive again to younger people and families?" The issue there is out-migration and aging: 43 percent of all internal moves in Germany are made by 18- to 30-year-olds, and those who leave start their families elsewhere. According to an analysis by the RWI – Leibniz Institute for Economic Research, people under fifty decide where to live mainly on the basis of economic opportunity—making skilled, well-paid local jobs the most effective known lever against out-migration. A data center provides exactly that, along with decades of local business

tax revenue, waste heat for the municipal district heating network, and computing power for hospitals and industry in the region. It is an occasion for local development, but no substitute for it: without child care, housing, and transportation links, a town gets commuters instead of residents. Nobody runs these numbers unprompted; explaining them is the operator's job—before the zoning resolution is on the council agenda.

Thesis 5: From Support Functions to Core Processes

Fifty-seven percent of German companies with 20 or more employees use AI, up from 20 percent in 2024. Not a single one says it is fully exploiting AI's potential; 59 percent say "not at all," and that share is almost the same across all company sizes. The reason lies in where AI is deployed: in customer contact (72 percent) and marketing (54 percent)—that is, in support functions. In production the figure is 22 percent, in research and development 16 percent, in management 7 percent. Virtually no one is applying AI to core processes. That will change: use in knowledge management doubled within a year, use in IT departments more than quadrupled, and 11 percent of companies already deploy AI agents. This step is no longer research but implementation—and it is moving faster than the infrastructure beneath it is being built. The cost structure already shows where the money is going: infrastructure 51 percent, licenses 21 percent, token consumption 8 percent.

Outlook: Who Holds Which Layer

Because the new workload requires proximity, it comes in increments of five to fifty megawatts—a scale that municipal utilities, regional operators, and existing colocation providers can build. Edge data centers and inference operations converge at the site, not in the corporate structure. (Inference is the ongoing operation of fully trained models, answering every user request; training, by contrast, is the one-time phase in which a model is created.) A building is a real estate business with a useful life of twenty years; a fleet of accelerators is a technology business depreciated over three to four years. Four layers can be cleanly separated—energy, AssetCo, OpCo, and ServCo—and lawmakers have long treated them separately: Germany's Energy Efficiency Act and KRITIS Umbrella Act apply to the asset layer, NIS2 to operations, and the EU AI Act to the service. Distributed sites are not the cheaper stopgap, but the more available architecture, because redundancy is built into the network rather than the building—and because NIS2, through its supply-chain provisions, obliges customers such as hospitals to ask for exactly that. What Germany lacks is the middle layer: an operator that owns, interconnects, and fully utilizes a fleet of distributed inference nodes. Without it, the municipal layer cannot put its capital to work.

Key Figures at a Glance

Indicator	Value	Source and date
Companies using AI (20+ employees)	57%	Bitkom, 09/14/2026
Of these, fully exploiting AI's potential	0%	Bitkom, 09/14/2026
AI use in customer contact	72%	Bitkom, 09/14/2026
AI use in management	7%	Bitkom, 09/14/2026
Installed IT capacity, Germany, 2025	2,980 MW	Borderstep/Bitkom, 11/2025
Edge IT capacity, Germany, 2025	approx. 240 MW	Borderstep/Bitkom, 11/2025
Requested connection capacity, distribution and transmission grids	approx. 400 GW	Draft bill on grid connections
Road deaths, Germany, 2025	2,832	Federal Statistical Office, 07/2026
Entities registered under NIS2 (February 2026)	approx. 1,900	BSI, as of 03/2026

Table 1: Key figures of this paper
Source: see Appendix A; attribution per row in the column "Source and date"