

# 6G's Big Story

## Control, not Speed

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**The mobile industry has a reliable habit when a new generation of network technology approaches.**

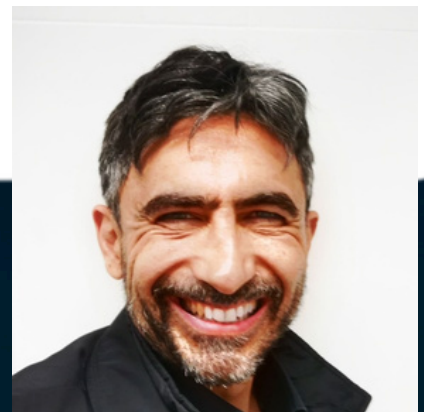
It talks about the technology and imagines what that might enable.

In the early 2010s we did that with IoT and projections of hundreds of billions of connected devices. We did it with 5G and the promises of autonomous driving, URLLC and more. At the moment, we are seeing this cycle start to play out again for 6G.

The problem in previous generations was that, when operators gave up control of crucial technology elements, **they also lost control of essential business decisions which relied on them.**

However, operators have an important opportunity right now to change the nature of the industry dynamic.

That, in essence, is the argument of a new white paper published on [arXiv](#) by David Soldani, SVP Advanced Research and Innovation at Rakuten Mobile.



Soldani's central claim is that 6G should be thought about not as another technology upgrade cycle, but a once-in-a-generation opportunity for operators to reclaim the architectural control they have been ceding to equipment vendors since 2G. Five generations of vendor-led network design have left operators, in Soldani's phrase, "proficient at procuring, integrating, and operating technology they do not own, using interfaces they did not design, and providing services on top of platforms they cannot modify." The result is an industry that has progressively outsourced its own strategic autonomy while its average revenue per user has flatlined for a decade.

The paper proposes a deliberate reordering of operator priorities around five principles:

<b>Control First</b>	Ensuring that operators have control over elements which are strategically and commercially important.
<b>Customer First</b>	Building its activity and priorities around outcomes deliverable to customers, not technology KPIs which are, in the best case, a proxy for those outcomes and in the worst case irrelevant.
<b>Business First</b>	Structuring vendor relationships and agreements in such a way as to support profitable service innovation and management.
<b>Operations First</b>	Running autonomous, software-based network and service operations capable of managing the kind of outcome-based service delivery that operators will need to structure better business relationships with customers.
<b>Technology Last</b>	

Technology Last does not mean technology is unimportant. It means that architecture and technology selection must follow from commercial and operational requirements, not precede them, and that operators must stop letting vendor research roadmaps and standards committee momentum define what the network is built to do.

While Soldani doesn't shy away from referring to the work Rakuten Mobile and the wider Rakuten Group has done, he doesn't claim that they have the solution. He would argue that they're going in the right direction towards finding one. However, please do note that this paper is Soldani's own view, not "a Rakuten thing".

### **Living and Dying by the S-Word**

The diagnosis of what has gone wrong in previous generations describes something most people in the industry know to be true but rarely state plainly (Although if you want some examples of where they do, TelcoForge's [Leaders Meetings reports](#) are a good and free resource for insights).

Each successive generation from 2G onwards delivered new technical capabilities, but also entrenched operator dependence on a smaller and smaller number of equipment vendors, effectively ceding sovereignty.

The 5G Service-Based Architecture, and the NFV paradigm before it, appeared to offer an alternative: by decomposing the core into software functions running on commodity hardware, operators seemed to be reclaiming the software layer. In practice, the management and orchestration layer became another integration battleground and the AI capabilities that vendors embedded in their 5G stacks were “deliberately opaque”, locking inference logic inside vendor systems that operators could neither audit nor modify.

The result is what Soldani calls the Control Illusion: operators believe they are running their networks when, in practice, the networks are operating according to logic the operator cannot see, cannot change, and does not own. If a network were a country, it would be like allowing laws to be chosen by corporations.

For 6G, with AI set to become the primary mechanism for network configuration, optimisation, and assurance, this is an existential problem. An operator that does not own its AI substrate cannot train its own models, cannot audit vendor AI claims, and cannot build the differentiated automation capabilities that the next generation of enterprise services will require.

The paper’s proposed remedy is the 6G Control Compact, a taxonomy that classifies every layer of the network stack by its strategic value:

Own	what is key for your business models	control plane, AI substrate, data layer, OSS/BSS, spectrum policy
Federate	where you keep control and benefit	roaming & interconnect, API platforms, shared rural infrastructure
Consume	commodities	cloud infrastructure, open-source network functions, commodity hardware

### Confidence Trick

Operators have, as Soldani puts it, been “investing in the pipes through which other companies deliver value, without capturing a commensurate share of the economic surplus their infrastructure enables.” It’s a business model which needs changing.

The paper’s answer is what it calls the Guarantee Economy: a model in which operators price based on verifiable outcomes rather than on megabytes or subscriptions.

A manufacturing enterprise does not want to pay for bandwidth; it wants to pay for confidence in a guaranteed zero-defect automated quality inspection. A media company does not want to pay for data volume; it wants the assurance of uninterrupted 8K volumetric streaming to eighty thousand concurrent users. These cases are the commercial architecture that 5G was supposed to enable and largely failed to deliver, because the orchestration and assurance capabilities required to make guarantees enforceable have not been operationally mature.

The Guarantee Economy requires three things to function:

- The ability to define service-level objectives in granular, measurable terms;
- The ability to enforce them in real time through closed-loop automation; and
- The ability to verify compliance through transparent, auditable telemetry that both operator and customer can inspect.

However, this only works if operators own the control plane and the AI substrate that monitors and enforces performance. Business First is inseparable from Control First.

## **Decisions, Decisions**

The paper closes with various calls to action.

The architectural decisions made during the 2026-2028 window, before standards are frozen, ecosystems set, and procurement decisions lock in the next decade of vendor relationship, will determine whether the 6G default is operator-controlled or vendor-dependent. Operators approaching this generation as they have approached every previous one, as a technology upgrade cycle led by vendors and ratified by procurement, will arrive at the same structural dependency, compounded by AI systems they do not control and cannot audit.

The minimum viable first step for incumbents that cannot restructure core vendor relationships immediately is, according to the paper, threefold:

- Require open API documentation and cloud-native conformance as contractual conditions for all new network function procurement;
- Deploy open-source MLOps tooling alongside existing network functions; and
- Insert data access rights as a non-negotiable clause in all vendor contract renewals.

None of these steps require replacing RAN hardware, but they begin to gather the operational capability operators will need.

Rakuten Mobile as a greenfield operator has an edge on this journey over brownfield operators. However, Soldani argues that the Control Compact represents the direction all operators must move toward, and that the battleground is less about technology and more about what the industry's procurement habits, contract structures, and institutional inertia will actually permit.

Soldani makes the technical and commercial case. Whether the industry has the appetite to act on it is a different question, and one that will be answered not in conference presentations but in vendor contract negotiations over the next two years.