How Utilities Can Prepare Their Systems for AI-Driven Operations

1. Why Utilities organizations Still Struggle

Most utilities carry 15–25 years of technical debt. Their CIS and meter-to-cash processes often include:

- Custom logic is buried deep in legacy code.
- Manual steps across billing and operations. Hard coded things, code no one knows, designer and developer left organization.
- Data spread across AMI, GIS, OMS, CIS, and other third-party systems.
- Processes that behave differently across regions or teams.

This creates a landscape where every process works in its own way. And that is the real blocker. Many utilities think their challenge is “AI adoption.” But the real challenge is this:

AI cannot operate on inconsistent data or unstable processes.

2. What Clean Core Really Means

There is a common misunderstanding most of the organization have that Clean Core means “no customization.” That’s not realistic for utilities today. Clean Core is not about removing logic. **It’s about putting logic in the right place.**

A practical Clean Core approach looks like this:

2.1. Keep S/4HANA standard

Use it as a stable, upgrade-safe system of record.

*2.2. Move **innovation outside the core***

Use platforms like SAP BTP for workflows, automation, and extensions.

2.3. Use events instead of modifications

A meter read posted in S/4HANA should trigger an event that starts workflows or AI checks — without touching billing logic.

Clean Core doesn’t slow innovation.

It creates a safe environment where innovation can be scaled.

3. Why Clean Core Is Essential for AI

AI works best when:

- Data is consistent
- Processes are predictable
- System behavior is stable

Clean Core helps enforce all three. Without it, AI stays stuck in pilot mode. With it, AI becomes part of daily operations.

Utilities that adopt Clean Core unlock outcomes like:

- Predictive billing
- Smarter collections
- DER/EV readiness without breaking billing
- Real-time anomaly detection
- AI-driven meter-to-cash processes

This shifts from reactive operations to predictive and autonomous ones.

4. A Simple Architecture for AI-Ready Utilities

I suggest my best proposal for a future-ready utility architecture should have three layers:

4.1. Transactional ***Core (S/4HANA)***

- System of records.
- Standardized.
- Minimal custom code.

4.2. Innovation ***Layer (BTP or similar)***

- Integration
- Workflow automation
- Event-driven processing
- AI foundation
- Microservices

This is where utilities build new capabilities without touching the core.

4.3. AI-Driven Operations

- Predictive insights
- Automated processes
- AI agents supporting meter-to-cash
- Real-time decisioning

This is not just a technology stack — it's a new operating model.

5. A **Practical** Maturity Path

Utilities don't need to jump to AI overnight. A realistic path looks I strongly feel should be like:

5.1. Level 1: Customized Core (Reactive)

Heavy custom code and manual processes.

5.2. Level 2: Clean Core + Side-by-Side Innovation (Responsive)

Standard core with innovation outside the system.

5.3. Level 3: Event-Driven + AI (Autonomous)

Real-time processes with AI-driven decisioning.

The goal is steady progress, not perfection.

6. **How** Utilities **Can Get Started**

Here is simple first steps which I feel work best for most of utilities companies across the globe:

1. Review your landscape and identify custom code that can be retired or moved.
2. Adopt standard processes where possible.
3. Build new capabilities outside the core.
4. Improve data quality — AI depends on it.

7. Conclusion

Clean Core is no longer optional. It is the foundation utilities need before AI can deliver real value.

The future utility will not just deliver power, water, or gas. It will manage data, events, and intelligent processes in real time.

Utilities that recognize this shift early will not only modernize — **they will redefine how the industry operates.**