OPEN INDUSTRY 4.0 ALLIANCE

DIGITAL TWIN PRODUCTION OF TOMORROW **E2**

WHY THE AAS IS NOT AN OLD HAT. ARGUE AGAINST SKEPTICISM

WRITTEN BY

CHRISTIAN METHE
(TWINDUSTRIAL GMBH)

DR. CHRISTIAN LIEDTKE
(KUKA AG)

INGO SAWILLA
(TRUMPF SE + CO. KG)

ISABELLA LICHTENSTERN
(KUKA AG)

RÜDIGER FRITZ
(AKTORION GEMINI SOLUTIONS)

UGUR DOGAN
(DMG MORI GMBH)

A WORD FROM THE AUTHORS

As machine builders, robot manufacturers and software specialists in the Open Industry 4.0 Alliance, we created a shared view on the "Production of Tomorrow." Interoperable and intelligent digital twins can raise automation to new levels, enable autonomy in runtime decisions, and cut complexity in existing systems.

The **first episode** sparked strong reactions. Some saw it as the true spirit of Industry 4.0 and a guiding star for the future. Others found the vision hard to imagine in practice. This second episode takes up that challenge and speaks to the skeptics. We invite you to read on and explore with us how ambitious ideas can become real steps.

SKEPTICISM

„Digital Twin? Old news, isn't it? What is all the fuss about? I don't see the benefit, that is something only a few specialists in the engineering department need. Asset Administration Shell? Sounds like another German invention, just a file format and nothing more. We already have plenty of standards out there. And honestly, if this thing really solved problems in everyday business, wouldn't we see more than just a handful of demonstrators by now?"

AUTHORS

„I see.. well, let's make it more tangible. Think of a bike. Nothing fancy, or if you like, a high-end e-bike tuned to your riding style. Whatever the type, it always has a past, a present, and a future. The past is drawings, production, and sales. The present is tire pressure, cleanliness, kilometers ridden. The future could be lending it to a friend tomorrow or planning a service."

SKEPTICISM

„Fine, but at the end of the day it is still me deciding. If I lend it out, I can remind myself to clean it. If it needs service, I book it. Why use a digital twin or this shell-thing?“

AUTHORS

„Because a digital twin can do more than store data. It connects events with rules and triggers actions. If the property says ‚lend tomorrow‘ and the rule says ‚clean first,‘ the twin can remind you in your calendar or talk to a cleaning device. It takes work off your shoulders. In industry, that same idea scales to machines, products, and entire factories.“

SKEPTICISM

„Sounds like the twin makes the bike come alive. Feels strange to me. Wouldn’t an AI app just be able to do the same tasks?“

AUTHORS

„An AI app can guess or suggest, but it usually has no real link to the object itself. A digital twin carries the object’s own data, rules, and state, so its decisions are grounded in what actually belongs to that bike or machine.“

SKEPTICISM

„Alright, bikes are cute, but we’re talking about factories. Why should a digital twin matter for real industrial products? Couldn’t we just program our MES or ERP to handle all that without inventing new buzzwords?“

AUTHORS

„Those systems are still islands. An ERP knows business data, MES knows production steps, SCADA knows machines. The digital twin brings all of that together around the object itself. The product becomes a system with memory and rules. It can link its history, current state, and future actions without being locked into one vendor’s software.“

SKEPTICISM

„But why not just let the manufacturer keep that data? They already know how the product was designed. Do I really need a separate twin just for me?“

AUTHORS

„That is exactly the point. As the owner, I want my own twin with my usage and service info, but I do not want to share everything with the manufacturer. They can keep their design twin, I keep mine. Both twins can exchange what they need, but each side stays in control of its own information.“

SKEPTICISM

„Now you are talking about multiple twins that somehow talk to each other. Sounds messy. Won't that create even more problems than it solves?“

AUTHORS

„It only works if the twins speak the same language. That is why the Asset Administration Shell is key. It defines how objects describe themselves and their rules, so they can interact safely. Without that, we end up with endless custom code. With it, every object carries the right data and behavior, like HTML once turned the web into something everyone could use.“

SKEPTICISM

„Alright, I follow your point. The idea of products carrying their own knowledge and rules does make sense. But honestly, it still feels like a huge investment and a lot of effort for companies. Why would they go through all that?“

AUTHORS

„It is an investment, yes, but one with real payoff. With the right infrastructure, twins stop being isolated experiments and become part of everyday processes. That is where the big economic potential lies, especially for manufacturing companies that need both efficiency and flexibility to stay competitive.

And the journey does not stop here. In the next episodes we will dive into a concrete lifecycle example and explain in detail what the economic benefits of digital twins are and where/how to start. Stay with us and see how vision turns into practice.