

Scaling a Process Control Product: Solution Architecture and Service Delivery in Industrial MPC

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Abstract: Model predictive control (MPC) has a well-established theoretical foundation and a growing body of successful industrial deployments. Less frequently discussed is what happens after a control product matures: how does an organisation sustain and scale a proven MPC solution as the install base grows, tooling expectations evolve, and the demands of commercial software delivery diverge from those of control engineering practice? This presentation examines that question through the lens of a concrete industrial case — the evolution of OptiPartner, GEA's real-time optimisation (RTO) and MPC-based advanced process control solution for industrial dairy, food, and beverage processes.

OptiPartner was developed and deployed as a professionally-engineered product from the outset, accumulating a substantial install base across the dairy and food powder industries before the decision was made to undertake a significant software modernization. The system had demonstrated clear and repeatable value at scale, but the toolstack and dependencies on which it was built — well-suited to the mathematical demands of MPC development — presented growing friction as the product matured. What does it mean to engineer a control product for longevity rather than capability alone? When does an academically-oriented development environment become a ceiling rather than a foundation, and what is lost and gained in crossing that threshold?

Sustaining MPC performance across a large and heterogeneous install base raises a parallel set of questions. MPC models are not static artefacts: equipment wear, sensor drift, recipe changes, and evolving production targets all erode model fidelity over time, and without active maintenance this degradation leads predictably to controller performance deterioration and operator distrust. How should the delivery of process control be organised when the product is not a one-time deployment but an ongoing performance commitment? The Performance Care program represents one answer — a subscription-based model pairing continuous remote monitoring and proactive model maintenance with deep process expertise.