intel | BUILDOTS

THE FUTURE OF FAB CONSTRUCTION

Intel uses Buildots' AI to boost efficiency and reduce costs

Highlights

- ✓ Savings of 4.3% in rework costs per fab
- ✓ 4 weeks of delays avoided per fab
- ✓ 1,176 model updates and changes per fab

At a glance

Intel uses Buildots' AI-powered progress tracking platform to enhance construction efficiency and cost-effectiveness across its global fab projects. By integrating Buildots, Intel minimizes rework, improves project management, and streamlines workflows, reinforcing its commitment to AI-driven processes.

Introduction

Intel's fab construction projects are part of a large-scale, multi-fab initiative supporting its Foundry business model – its plan to become a leading semiconductor manufacturing solutions provider.

This initiative includes investment of up to $100bn over the next decade to build multiple fabs across the US and EMEA[1]. Each fab alone represents one of the industry's most complex construction projects, spanning a total build size of about 2.5 million sqft (232k sqm). Each involves thousands of activities and workers, and millions of elements to track[2].

Intel's fundamental challenges are managing this scale while preventing delays and prioritizing quality control. To address them, it has embraced construction digitization, from design to project controls. With Buildots' AI, Intel enhances efficiency and market responsiveness and unlocks true data-driven decision-making – demonstrating its commitment to innovation.

"We need to take what we are doing to the digital era. By using AI to track and analyze everything, we can pull out predictive insights that really boost our efficiency. This will be the future of construction."

Dan Doron, VP & GM of Foundry Construction Enterprise at Intel Corporation

Challenges

→ Manage the scale and complexity of fab construction projects with over 50,000 activities – each consisting of myriad tasks and installations – carried out by thousands of workers in a dense project environment.

→ Predict potential delays that could prevent the fab from becoming operational on time, resulting in tens of millions in lost daily revenue.

→ Eliminate rework by reducing installation deviations, which, according to industry data, generally account for up to 5% of total construction project costs[1].

→ Maintain a precise and up-to-date model that accurately represents the actual building, crucial for current projects and essential for future fab maintenance.

→ Transfer best practices to subsequent projects, optimizing workflows and processes across this extensive multi-year, multi-geo, and multi-site construction program.

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Addressing fab construction challenges with AI

Buildots uses advanced AI technology to automate onsite construction progress tracking. The platform provides construction project teams with precise performance measurements and predictive forecasts, reducing delay risks, enhancing discrepancy detection, and increasing project efficiency.

Solutions

→ **Delay forecasting**
Buildots' predictive analytics foresees and flags delays based on recent pace and trade performance, allowing proactive and efficient mitigation planning.

→ **Quality assurance**
Buildots allows Intel to detect deviations and flag issues before they escalate.

→ **Optimization**
Using data from multiple fabs to optimize workflows and processes creates benchmarks for continuous improvement.

Execution control and quality assurance

Rework significantly contributes to construction project delays. According to a study by Autodesk and FMI, it represents around 5% of US construction spending[3].

By detecting deviations automatically, Buildots enables Intel to address emerging issues before they cause further delays. Approximately 25% of the errors flagged by Buildots trigger immediate fixes, ensuring errors don't reoccur in other areas of the fab construction site.

Intel estimates that proactive deviation detection has already lowered rework costs by 4.3%, and prevented about 4 weeks of rework-related delays. Additionally, Buildots has flagged 1,176 model updates. Here, detected deviations prompted necessary revisions in the 3D model, which serves as the foundational blueprint for all construction activities. This ensures the as-built models remain accurate for current and future projects. Combining automated deviation detection and model maintenance significantly enhances project execution and quality assurance. Keeping an accurate and up-to-date model is invaluable for future maintenance, repurposing, or rebuilding efforts.


Project controls and delay prevention

Semiconductor fab construction is complex and capital-intensive, with the average cost approaching $10 billion per fab (McKinsey & Company). As such, delays can lead to substantial financial losses – both in additional work costs and time-to-market delays, as each operational fab generates millions in daily revenue.

Buildots prevents costly delays by tracking the exact progress of each activity and using this data to predict when activities will be completed. By analyzing how an activity has progressed so far, Buildots applies predictive analytics to forecast its future pace and identify potential delays early. This allows Intel to pre-emptively identify underperformance, enabling proactive mitigation and informed planning.
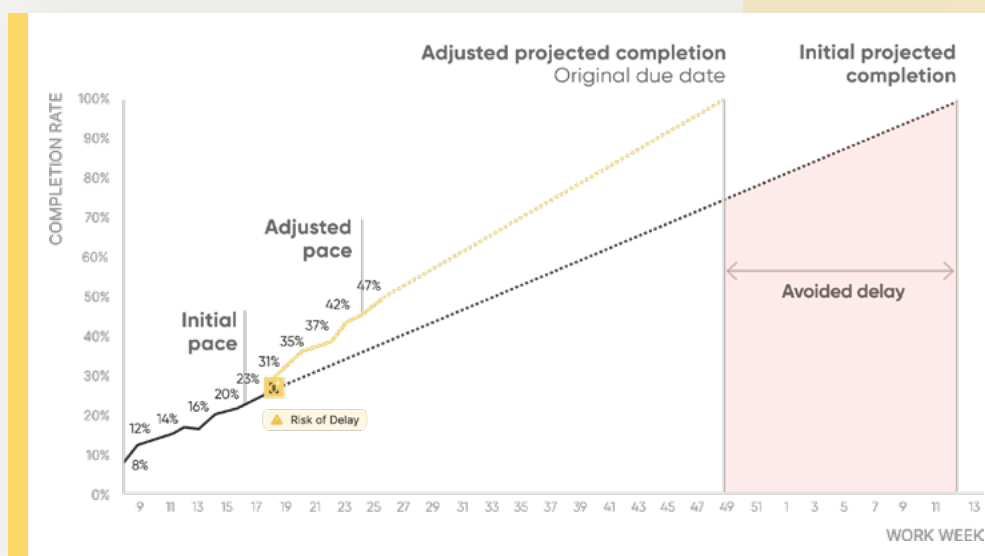
By using Buildots, construction teams can proactively intervene by identifying potential delays early, adjusting plans to keep the project on schedule

Benchmarking and optimization across projects

Since Intel's fabs are almost identical, the company sees many opportunities to share learnings between projects and drive efficiency. Buildots plays a crucial role here, optimizing workflows by comparing data from multiple fabs. Using Buildots' insights, Intel creates optimal work sequences, ensuring tasks are completed in the most efficient way possible. Unique reports generated by Buildots allow Intel to optimize workflows and processes, creating benchmarks for continuous improvement within the construction organization.
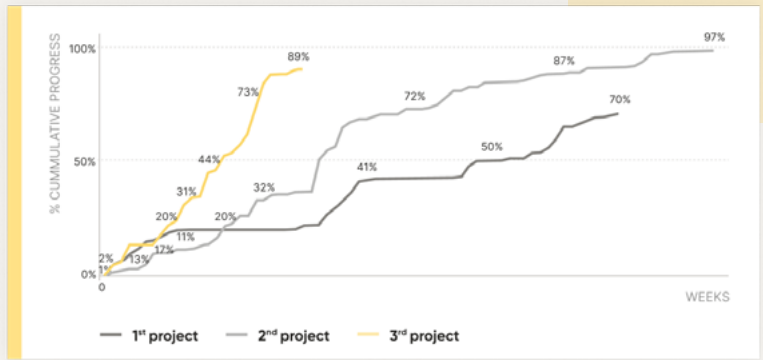
Comparison of a single activity's progress across three successive fab sites, showcasing continuous learning leading to enhanced performance from one project to the next

Results

→
Savings of **4.3%** in rework costs per fab by promptly detecting and addressing errors through automatic detection.

→
4 weeks of delays avoided per fab by identifying issues early, significantly enhancing project timelines.

→
1,176 model updates and changes per fab, ensuring construction models remain accurate and reliable, leading to more efficient project execution.

Summary

Buildots is having a transformative impact on Intel's fab projects, enhancing efficiency and cost-effectiveness. By integrating Buildots' AI platform, Intel reinforces its strategic approach to construction management. It is seeing significant gains, setting the stage for future projects. Highlights include an estimated reduction of 4.3% in rework costs and approximately 4 construction weeks per fab, increasing overall project efficiency.

Explore more case studies →

"Adding Buildots to our fab construction project has enhanced our data-driven management approach and controls. Early warnings for issues and delays have resulted in significant savings in time and cost. Over the last 12 months, the number of Intel users on the Buildots' platform has increased by a factor of five and is now solidly in the hundreds. Buildots and Intel will leverage this technology even further to achieve greater efficiencies across our upcoming projects."

Assaf Harel, DigiT Delivery Operations Sr. Manager, Foundry Construction Enterprise at Intel Corporation

About Buildots

Buildots, an award-winning leader in construction technology, leverages AI and computer vision to upgrade traditional project management methods, introducing a performance-driven approach to managing construction projects. Our platform automatically generates accurate, unbiased data and actionable metrics crucial for strategic decision-making. Enhancing visibility and control for site teams and management alike, Buildots sets new standards for efficiency and productivity, effectively minimizing delays and ensuring projects are completed on time and within budget.

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