WHEN THE BOTTLENECK IS THE FRONT DOOR

How a 40-Year-Old System, a Flood of Orders, and Zero Automation Nearly Buried a Specialty Lens Manufacturer

A Process Automation & Operational Case Study

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1. Introduction: The Order That Broke the Queue

Imagine you run a specialty contact lens laboratory. Your product is not a commodity—it is a custom-manufactured orthokeratology lens, ground to clinical specifications unique to each patient. Every parameter matters. A fraction of a diopter off, and the lens does not work. Your reputation, your relationships with eye care professionals, and your patients' outcomes all depend on getting it right.

Now imagine your biggest growth channel—international distributors placing stock orders—is exploding. What was one small order file per month six months ago is now eight to ten files a month, each containing 300 to 2,500 custom lenses. The demand is thrilling. The problem is that every single one of those lenses has to be manually typed into a system that was built 40 years ago.

This is the story of GP Specialists, a specialty orthokeratology lens manufacturer that found itself in a situation every growing business eventually faces: the process that got them here could not take them where they needed to go. Their front door—order intake—had become the bottleneck that was choking everything behind it.

It is also a story about how the right process intervention, targeted at the right constraint, can transform an operation in weeks rather than years—without replacing the systems that already work.

2. The Company: GP Specialists and iSee Ortho-K

GP Specialists (GPS) is a specialty manufacturer of orthokeratology contact lenses, marketed under the iSee brand. Orthokeratology—Ortho-K for short—is a non-surgical vision correction method that uses specially designed rigid gas permeable lenses worn overnight to temporarily reshape the cornea. Each lens is manufactured to precise clinical specifications for an individual patient.

GPS had built a strong and growing international distribution network, with particularly strong uptake in Asian markets. Distributors would submit bulk stock orders as Excel files—spreadsheets containing hundreds to thousands of individual lens prescriptions, each with ten or more parameters that had to be exactly right.

The engine behind GPS's operation was WDS-II, a 40 year old legacy wholesale distribution system that had been customized to fit the company's needs over the past decades at the time of this engagement. WDS-II was the system of record for everything—order entry, manufacturing workflows, quality control, traceability, and shipping. It worked. It was stable. And it was not going anywhere.

The challenge was not WDS-II itself. The challenge was what happened before orders ever reached it.

3. The Problem: Death by Data Entry

The operational breakdown at GPS was not caused by a software failure, a quality system gap, or a strategic miscalculation. It was caused by something far more mundane and far more common: a manual process that could not scale.

3.1 The Manual Entry Bottleneck

When a distributor submitted an order file, Customer Service (CS) staff had to manually enter every lens parameter into WDS-II. Each distributor file contained 300 to 2,500 lenses, and each lens required ten or more fields to be typed correctly. A single distributor order took 8 to 20 hours per person to enter—and typically required two people working simultaneously, consuming 16 to 40 person-hours per order.

With eight to ten distributor files arriving per month, the math was brutal. Distributor order entry alone consumed roughly 130 to 400 person-hours per month—the equivalent of one to two and a half full-time employees doing nothing but typing numbers into a 40-year-old system.

3.2 A 15% Error Rate on Clinically Sensitive Products

Speed was only half the problem. Accuracy was the other half—and in orthokeratology, accuracy is not optional. Pre-automation, approximately 15% of

entered lens line items contained errors on distributor orders. These were not cosmetic mistakes. They were out-of-range parameters, wrong product codes, and miskeyed values on lenses that would be ground to those exact specifications and placed on a patient's eye.

Of those erroneous lenses, roughly 84% were caught before cutting began—at a cost of 3 to 5 minutes of lab time plus 3 to 5 minutes of CS time per correction. The remaining 16% were caught only after cutting had started, requiring a full scrap and restart at $23.67 per lens. For every 1,000 lenses entered, GPS was absorbing $1,000 to $1,300 in direct waste and correction costs—before accounting for the time, disruption, and downstream delays each error caused.

3.3 The Cascade Effect

Here is where the story gets painful. As distributor volume grew, CS capacity was consumed by manual entry. The entry backlog became the primary constraint for overall turnaround time—not just for distributor orders, but for *every* order. Normal day-to-day customer orders—the eye care professionals who called in individual prescriptions—could wait up to two weeks just to be entered into the system. Their lenses were not even in the manufacturing queue yet.

Everyday customer orders went from a reasonable turnaround to one to two weeks for delivery. More than 50% of normal customer orders had to be treated as expedited—not because they were urgent, but because the backlog had made the standard process unacceptably slow. Rush handling was no longer the exception. It was the norm.

3.4 The Human Cost

The numbers tell one story. The phones told another. GPS was fielding 100 to 200 "where is my order?" calls per week. Eighty percent of those calls were from everyday customers—the bread-and-butter accounts whose orders were stuck behind distributor data entry. Average handle time was about two minutes per call, which does not sound like much until you multiply it by 150 calls a week and realize that's five hours of staff time spent apologizing for delays the staff had no power to fix.

Customer Service overtime averaged 25 hours per week. Staff morale was suffering. The team was not incompetent—they were trapped. They spent their days buried in manual entry while phones rang, inboxes filled, and the order pile grew.

They could see the problem. They could not type fast enough to solve it.

4. The Constraints: Why This Wasn't a Simple Fix

Before we describe the solution, it is important to understand why this problem was harder than it looked. GPS operated under two constraints that ruled out the most obvious approaches:

Legacy System Constraint: WDS-II was the system of record and was not being replaced. The goal was not modernization for modernization's sake. The goal was a safe, controlled intake layer that improved speed and correctness while preserving every downstream workflow, every audit trail, and every quality control checkpoint that WDS-II already provided. You do not rip out the foundation of a house because the front door is too narrow.

Regulated Environment Constraint: GPS operated under an ISO 13485 quality management system—the international standard for medical device manufacturing. Any change to the intake process required controlled validation (IQ/OQ/PQ), documentation, version control, SOP updates, and sign-offs. This was not an environment where you could deploy a quick fix on a Friday afternoon and hope for the best.

These constraints eliminated the typical "just replace the system" advice that GPS had heard before. They needed a solution that worked *with* their existing infrastructure, not instead of it.

5. The Solution: Automation Without Replacement

The solution GPS implemented was an automated distributor intake module layered onto an existing non-native web UI and process layer that already surrounded WDS-II. The key principle was surgical precision: automate the specific constraint—distributor file intake—without touching anything that already worked.

5.1 End-to-End Workflow

The automated workflow operated in clearly defined stages, each designed to maintain control and traceability:

The distributor's Excel file was standardized and converted to CSV. The CSV was uploaded through the existing WDS-II web layer. Rows were staged into a temporary table—no orders were created yet. Validation and normalization rules were applied across ten or more fields per lens, checking for out-of-range parameters, invalid product codes, and format inconsistencies.

A preflight review screen then displayed the processed output. Errors were flagged with clear messages and highlighted cells. The user could update values, approve and commit, or scrap the batch and re-run. Only after explicit user approval did the system create patient-based orders end-to-end in WDS-II, following clinical logic: one patient equals one order, with one or two lenses depending on whether one eye or both were prescribed.

Orders then entered the standard WDS-II workflow—Pending status for lab review, lot capture, tray scanning, and release. Nothing downstream changed. The lab received orders the same way they always had. The difference was that those orders arrived faster, cleaner, and without the errors that had been disrupting production.

5.2 Template Builder for Distributor Formats

One of the most elegant aspects of the solution was its adaptability. Different distributors submitted files in different formats—different column layouts, different naming conventions, different scaling rules. A parameter value of "25" might mean 0.25 diopters in one distributor's format and 25 in another's.

Rather than hardcoding each format, the solution included a template builder within the UI. Templates handled column-to-field mapping, implied decimal and scaling rules, distributor-specific required fields, product-code validation table selection, default values, OD/OS pairing rules, and support for rare non-default options like lens color. At launch, the system supported four distributor formats. Within a year, it expanded to six—without rewriting a single line of core code. New templates could be created in minutes.

Template governance was controlled by a single owner—the Director of Operations and Systems—ensuring that changes were deliberate and documented. In steady

state, templates were not changed.

5.3 Exception Handling and Approval

When validation flagged an issue, the UI displayed a clear message and highlighted the affected row and cell. Exceptions were rare—less than 1% of uploads—and typically resolved in under one minute. The scrap-and-re-run option existed but was rarely used post go-live, typically only when the wrong customer account context was selected. The system was designed for the real world: fast, transparent, and forgiving of the occasional human mistake.

6. Implementation: Five Weeks Instead of Fourteen

The project was approved by the General Manager on the basis of an untenable backlog. Additional CS hiring had already occurred and was insufficient—GPS had already tried throwing people at the problem, and it had not worked. Automation was the only remaining option.

The original estimate was 14 weeks and approximately $100,000. The actual delivery was 5 weeks at approximately $60,000—ahead of schedule and under budget. This was not because corners were cut. It was because the team leveraged an existing, proven internal pattern for building safe automation layers around WDS-II.

GPS executed structured IQ/OQ/PQ testing under ISO 13485 controls, including three weeks of hard validation with approximately 1,200 test iterations. Two of those three weeks included parallel testing using real order data—running the automated system alongside manual entry and comparing results.

Go-live success criteria were operational, not theoretical: reduce the CS entry backlog and maintain lab workflow stability with no production-disrupting interruptions tied to intake. Both criteria were met.

Scalability was validated with a stress test: 50,000 lenses processed end-to-end in under 20 minutes—a throughput rate exceeding 2,500 lenses per minute. The system could handle anything the business could throw at it.

7. The Results: Before and After

The impact was immediate, measurable, and sustained:

Metric	Before	After
Everyday orders: received → shipped	~1–2 weeks	**~3 days**
Everyday order entry backlog	Up to 2 weeks	**Same-day (24hr ceiling)**
Distributor orders: received → shipped	~3–6 weeks	**~1–4 weeks**
Distributor intake error rate	~15%	**0%**
Distributor file volume supported	~1/month (small)	**8–10/month; ~600 lenses avg**
Stress test capacity	N/A	**50,000 lenses < 20 min**
Orders available to lab	Days/weeks	**Within the hour**
“Where is my order?” calls	~100–200/week	**~0–5/week**
CS overtime	~25 hours/week	**Eliminated**
Rush fee waivers due to delay	>50% of orders	**≤5%**
Headcount avoidance	Hiring insufficient	**~2 CS roles/year avoided**

Table 1: Key performance metrics — before and after intake automation.

The most dramatic number is the simplest one: distributor intake errors went from 15% to zero. Not reduced. Not improved. Eliminated. Every lens that came through the automated system was validated against the correct parameter ranges and product codes before it ever reached the manufacturing floor.

But the number that mattered most to GPS’s everyday customers was turnaround time. With the distributor entry bottleneck removed, everyday orders went from one to two weeks down to approximately three days. The phones stopped ringing with complaint calls—“where is my order?” inquiries dropped from 100–200 per week to zero to five. Customer Service overtime was eliminated entirely.

8. The Financial Impact

The financial case for automation was conservative and compelling:

Cost of Quality: At a 15% error rate, every 1,000 lenses entered manually generated approximately 150 erroneous lenses. Of those, 126 were caught before cutting (at $3.60–$6.00 per correction) and 24 were caught after cutting started (at $23.67 per lens in scrap and restart costs). Total direct waste ranged from $1,022 to $1,324 per 1,000 lenses. Post-automation, that number dropped to zero.

Headcount Avoidance: Eliminating manual distributor entry allowed GPS to avoid backfilling approximately two Customer Service order-entry positions annually—while simultaneously supporting increased distributor volume. GPS had already tried hiring its way out of the problem and found that additional headcount was insufficient. The constraint was not the number of people. It was the process itself.

Delivery Performance: The project was delivered in 5 weeks versus the 14-week estimate, at approximately $60,000 versus the $100,000 budget. That is a 64% reduction in timeline and a 40% reduction in cost. The ROI, even using conservative direct-cost numbers, was measured in months—not years.

The Human Impact: The most visible improvement was stress reduction. Customer Service staff were no longer spending their days buried in data entry while phones rang and the order pile grew. With the backlog under control, the team could keep up with calls, follow-ups, and the kind of proactive customer service that builds relationships rather than repairs them. Morale improved. Overtime disappeared. The team could breathe.

9. The Lesson: Process First, Always

The GPS story illustrates a principle we see over and over again in growing businesses: the bottleneck is almost never where you think it is, and the solution is almost never as complicated as you fear.

GPS did not have a technology problem. WDS-II worked. It had worked for 40 years. GPS did not have a people problem. Their Customer Service team was competent, dedicated, and working overtime to keep up. GPS had a *process* problem—a single manual step in the workflow that could not scale with demand, and that was silently degrading every other process it touched.

The fix was not a system replacement. It was not a digital transformation initiative. It was not a six-figure consulting engagement stretched over quarters. It was a targeted, surgical automation of one specific bottleneck—delivered in five weeks, validated under ISO 13485 controls, and producing measurable results from day one.

Every growing business has a version of this story somewhere in its operation. There is a manual step, a workaround, a spreadsheet, a "that's how we've always done it" process that was fine when volume was low but is now quietly consuming capacity, generating errors, and frustrating both staff and customers. The question is not whether it exists. The question is whether you find it before your customers do.

10. Our Take: The DECG Perspective

At The Digital Efficiency Consulting Group, we worked directly with GP Specialists on this engagement, and it remains one of our favorite examples of what “process first, tools second” looks like in practice.

When we first walked through GPS’s operation, the instinct—theirs and ours—was to look at the entire system. WDS-II was 40 years old. There were broader integration possibilities. EDI-style approaches were discussed. A larger modernization effort was on the table. All of those conversations had merit.

But the operation was bleeding *now*. Everyday customers were waiting two weeks for lenses. The CS team was drowning. The error rate was 15%. The phones would not stop ringing. GPS did not need a strategic roadmap. They needed the bleeding to stop.

So we focused on one thing: the intake bottleneck. We identified it, we measured it, we designed a solution that worked within every existing constraint—the legacy system, the ISO quality framework, the regulatory requirements—and we delivered it in five weeks. The result was not incremental improvement. It was operational transformation: errors to zero, turnaround time cut by 70–80%, overtime eliminated, and a system that could scale to 50,000 lenses without breaking a sweat.

That is the DECG approach. We do not sell technology for technology’s sake. We do not recommend replacing systems that work. We find the specific process constraint that is costing you the most—in time, in money, in quality, in customer goodwill—and we fix it. Surgically. Measurably. With a guarantee.

If your operation has a front door problem—a bottleneck in intake, in order processing, in data entry, in any manual step that cannot keep pace with your growth—we would like to talk. Our Efficiency Diagnostic is designed to find exactly these kinds of constraints and quantify what they are costing you. Because the longer a bottleneck sits unaddressed, the more it costs—not just in dollars, but in customer trust, staff morale, and competitive position.

GP Specialists learned that lesson and acted on it. The question is: will you?

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Process First. Tools Second. Results Always.