Enterprise-Class Demand Planning at Agilent Technologies
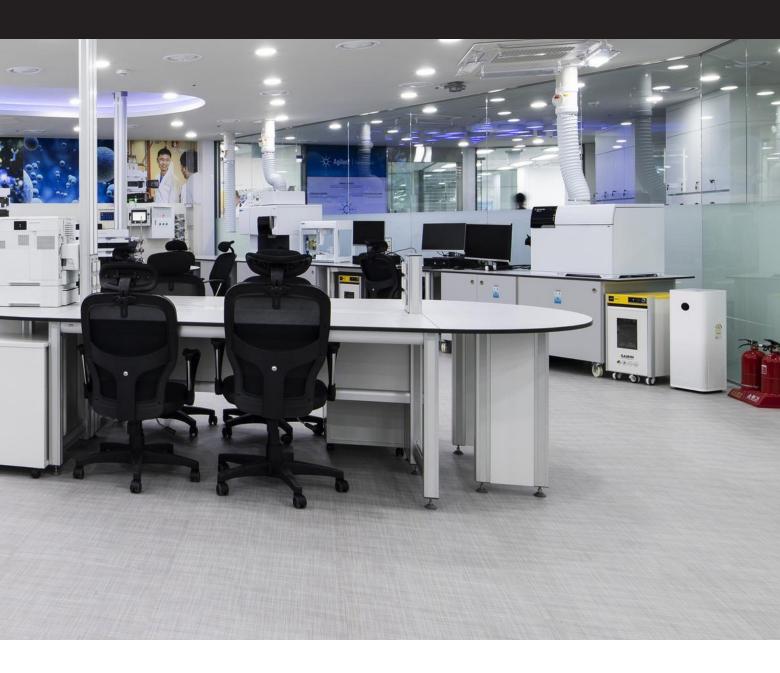
Implementing GIB Forecast Enabled Agilent's Pathology Department to Replace Processes Based on Email and Spreadsheets with an Automated, Future-Ready Solution

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Agilent Technologies produces analytical instruments, software, and consumables for use in life sciences and other laboratories. The company has grown dramatically in recent years, both in new and existing geographies. In addition to organic growth, Agilent has acquired a number of companies to add capabilities to its analytical portfolio.

Such growth has caused Agilent's pathology division in particular to experience a rapid expansion of sales, but also revealed that the division had outgrown its demand planning practices, which were largely manual and based on desktop productivity software, instead of a true enterprise solution.

Driven by a need to better support its expanding demand pipeline, the division determined to

implement a solution with greater ability to scale and more flexible statistical modeling. By increasing the efficiency and sophistication of its demand planning and therefore forecasting, Agilent targeted optimizing inventories, supply readiness, and capacity planning.

Discovering the Requirements for a Smarter Supply Chain

The division's spreadsheet-based methodology included many manual steps that added little value but consumed significant resources, eating into operational efficiency.

Analysts would run queries against SAP ERP Central Component (ECC) and downloaded data into Microsoft Access databases, which they then reformatted and transferred to spreadsheets for analysis with formulas and macros. As the queries grew larger, data downloads became prohibitively slow, and crashes of the Access databases became more frequent. The analysis itself was limited to relatively simple operations such as calculating numeric averages. More sophisticated algorithmic methods, as well as factors such as seasonality and trending, were beyond what could practically be implemented in a spreadsheet.

Ross Fasco, SAP Supply Chain Architect at Agilent, summarizes, "The business case was really that we couldn't sustain the current Access and spreadsheet-based process; with the growth that was occurring, the manual process just wasn't going to work."

Agilent Technologies

Company details: Manufactures and provides instruments, software, services, and consumables to analytical scientists and clinical researchers worldwide.

Headquarters: Santa Clara, California (global)

Employees: ~ 16,300

Annual Revenue: $5.16 billion (2019)

Distinguishing between one-time events versus long-term trends was identified as a key forecasting capability that needed improvement. For example, the COVID-19 pandemic almost instantaneously reshaped the global marketplace in unprecedented ways and with unclear long-term effects. Like many companies around the world, Agilent experienced a dramatic fall-off in sales around the end of the first quarter of 2020, as economies responded.

This event was largely an example — albeit an exceptional one — of a demand anomaly, rather than a long-term shift. The division had to ensure that its forecast models did not mistakenly weight those dramatic events as a seasonal change or a permanent inflection point. Fasco suggests that their legacy forecasting model would have fallen short: "We would have identified these outliers, but it would have been via a very slow, manual process. It would have seen the drops in March and April, and it could have said, 'I'm going to plan for you not selling as much in March and April 2021,' but that's not accurate. It could have been a drop because of the pandemic."

By enhancing the statistical methods to generate forecasts, the company planned to tune its production and distribution pipelines to be as proactive and efficient as possible. Improved visibility and control over the statistical calculations that go into demand planning lie at the heart of these requirements.

Data science provides mathematical approaches and adjustments that can help avoid such missteps, but spreadsheets were simply not created for that depth of analysis. Fasco points out that an important function of the demand planner is to apply one's intimate knowledge of products and markets to refine the accuracy and utility of forecasts. To do so, he says, "there are quite a few things they can do to really get the forecast to be fine-tuned."

Analysts may manipulate what historic data is used, make adjustments to respond to current market conditions, or control a wide-range of other factors. While doing so necessarily adds a layer of complexity to the calculations, standardized and efficient ways to manipulate the statistical models remain an important capability in the analyst's toolbox. The Agilent team determined that the ability to make full use of such statistical methods was critical to the success of their forecasting solution.

Bringing Together the Business and Technology Cases

Globally, the company operates a single SAP ECC instance across some 25 manufacturing sites and 15 distribution centers, as well as widely distributed stocking locations and service depots. The SAP supply-chain footprint at Agilent also includes SAP Ariba procurement software, SAP Manufacturing Execution, SAP Advanced Planner and Optimizer, and other solutions, across operations such as procurement, demand planning, and production planning.

To execute and maintain the best demand planning possible to support the company's acquisitions-based growth strategy and its impact on its pathology division,

Agilent needed what Fasco describes as "a professional tool to drive fact and analytics-based updates of forecast."

For further supply-chain intelligence and control, Agilent had already integrated several GIB modules with its SAP environment. GIB Operations Cockpit plays an especially important role in material requirements planning (MRP) to ensure smooth day-to-day operations. "We use GIB Operations Cockpit for MRP exceptions and operational procurement. It functions essentially as a cockpit for the MRP controller to view supply/demand across multiple logistics centers and manufacturing plants. The company uses GIB Inventory Optimization in one site currently, to review the day's supply and inventory levels. The GIB alert monitor ties all the GIB components together, providing the Controller with better situational awareness and revealing potential delays and shortfalls in one comprehensive grid."

Agilent's existing GIB investment helped the pathology division make a strong technology and business case for adopting GIB Forecast for demand planning. The Agilent team recognized that ease of integration offered a compelling benefit, without requiring dedicated hardware or adoption of unfamiliar application programming interfaces (API). In addition, GIB Forecast loads directly into SAP ECC without introducing a separate interface, so that from the business users' point of view, GIB is simply part of the familiar SAP environment that they already work with every day.

Streamlining and Deepening the Demand-Planning Process

After about a six-month implementation, Agilent's pathology division brought GIB Forecasting into production. An early outcome was that the division's business users no longer had to manually prepare and cross-correlate data from massive spreadsheets, a resource-intensive process that scales poorly. Relieved of those repetitive tasks, team members can place more focus on higher-value work. Before human staff gets involved, automated processes have loaded the data, then run forecast models and outlier analysis against it. Fasco says, "they just show up, and then they can start actually doing value-added tasks of getting the data right."

With the data preparation and preliminary analysis done for them, team members can focus on refining the models to get the best outputs possible. Business analysts may adjust forecasting procedures or manipulate parameters to guide the model's behavior. Thus, staff members within the pathology division are able to redirect their focus from data preparation to data modeling, offering more value to the company overall.

The division's forecasting implementation also enables a self-service modality for business super-users. These users can make configuration changes directly to the production system to modify forecasting procedures, without involving IT. In addition to empowering the business units, this approach accelerates the pace of change, so that demand planning conducted by the division can rapidly adapt to circumstances, guided by the people who know that data best.

Greater process control by business users is a significant benefit to Agilent's pathology division as a result of its recent GIB implementation, which creates end-to-end visibility and continuity over the forecast lifecycle. Anyone with authorization can examine a forecast to see what model and data were used to generate it, as well as add data about relevant events such as a trade show or sales promotion. Thus, for example, Fasco states, "there's full transparency now between what the demand planner is doing with the data and what the actual planner — a production planner for example — is going to do to execute that plan."

Agilent refers to this quality of integration as "natural conversion," from planning to execution. At a practical level, the approach has been especially valuable for maintaining and adjusting the division's forecasts during the course of a month. The GIB alert monitoring module enables business users to create custom alerts that inform them when actual results are trending outside set ranges relative to the forecast. Agilent uses those alerts to guide dynamic adjustments to forecasts that fine-tune production for cost-efficiency.

Conclusion

Greater forecast sophistication and process transparency within the pathology division has enabled collaboration and consensus among business units, as they look ahead together. Modernized demand planning has improved processes and empowered users. Analysts can easily enhance forecasts with real-world considerations, while users in various roles can incorporate inputs from across business units. As a result, forecasting draws from a more comprehensive view of the business, ultimately creating a more nuanced and accurate view of the future, for better efficiency. ■