Data's Role in Digital Transformation for Modern Service Supply Chains

Ensuring data cleanliness within your Service Supply Chain takes a proactive approach and the right tools to give you a full view of your data and your parts movement.

In Service Parts Management, data is king.

The cleaner the data, the more accurate the forecast. The more accurate the forecast, the closer you get to the best possible target stock levels.

See ahead. bp Stay ahead.

BAXTER PLANNING™

In order to make the best and most cost-effective decisions for your organization and its customers, you need clean and complete data. But what does data cleanliness look like? Who's responsible for keeping data clean? And how does data play a role in a successful Service Supply Chain digital transformation?

In this whitepaper, Baxter Planning's experts dig into data's crucial role in achieving digital transformation, along with the importance of data cleanliness and data ownership.

Discover the significance of data within a well-functioning Service Supply Chain and the business cost of inaccurate or incomplete data.

The data is in, and you're going to want to read what it says.

WHAT ARE DATA CLEANLINESS AND DATA OWNERSHIP?

Data cleanliness encompasses two key factors: data accuracy and data completeness. Inaccurate or incomplete data could result from typing in the wrong number on an order, entering the wrong information (like an incorrect postal code), or not entering any data in a certain field. Whether incorrect data or no data at all has been entered, both situations can cause erroneous planning or, at a minimum, make it hard to achieve the best possible plan. This impacts calculations that are used to generate forecasts and determine target stock levels, as well as service parts getting from one location to another. But there is a difference between incorrect and incomplete data. While both have a negative effect, missing data is easier to spot and doesn't cause quite the same skew as inaccurate data.

Who owns data cleanliness? This can get complicated if you have multiple people working with different types of data. One answer to who is in charge of data and ensuring it is clean could just come down to who identifies bad or dirty data and who takes ownership of cleaning it up. It's not always that simple, though, because there can be restrictions on who can actually make updates to data.

To give an example, if a planner identifies an inaccuracy in install base data, they may not have the authority to go into the relevant system and make a change. Instead, they should contact the service sales group or appropriate party and report the data inaccuracy. Although the planner can't make the change themselves, it is still their responsibility to float the issue to the proper authorities to get it corrected and, to the best of their abilities, see it through to completion. They should relay a sense of urgency and the potential stock out implications as 'motivators' for the appropriate group or individual to make the necessary data updates and/or data collection changes.

Data Is Essential to a Well-Functioning Service Supply Chain

THE EVOLUTION OF DATA

The way we capture, store, and use data in parts planning has drastically evolved over the years. What used to take hours, if not days, to hand-write thousands of data points onto sheets of paper—or manually enter them into spreadsheets—has been replaced by automation and digital systems. Technology has improved, and alongside these innovations have come artificial intelligence and actionable insights based on the granular data that is readily available today.

The means of storing data collected have also immensely improved over the years. From floppy disks, to flash drives to the cloud, these innovations have allowed for an endless accumulation of available data.

Many of us remember the days of Y2K, when older systems ran into their own data problems. Before the year 2000, many legacy systems only stored the last two characters of a year to cut down on storage costs. This led to instances of data inaccuracy that had to then be dealt with when years began to overlap at the turn of the century.
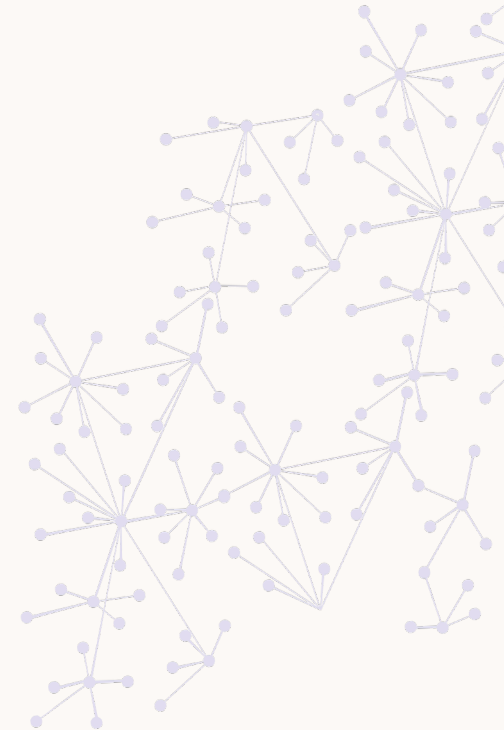
REAL-WORLD INSTANCES THAT HAVE IMPROVED DATA CLEANLINESS THROUGH TODAY'S TECHNOLOGICAL ADVANCEMENTS:

- Systems now support the concept of required fields so you can't skip over certain key data points that are necessary.

- Validating fields is instantaneous in comparison to not having the capacity to check data in real-time. Example: a country code can be used to validate the actual format of the postal code so there are no more "99999 postal codes."

- Drop-down boxes are now used so technicians can select from a list of predetermined failure codes, meaning more fields that say NFG (Not Fully Guaranteed).

- Scanning data via barcodes can instantly flow information into systems.
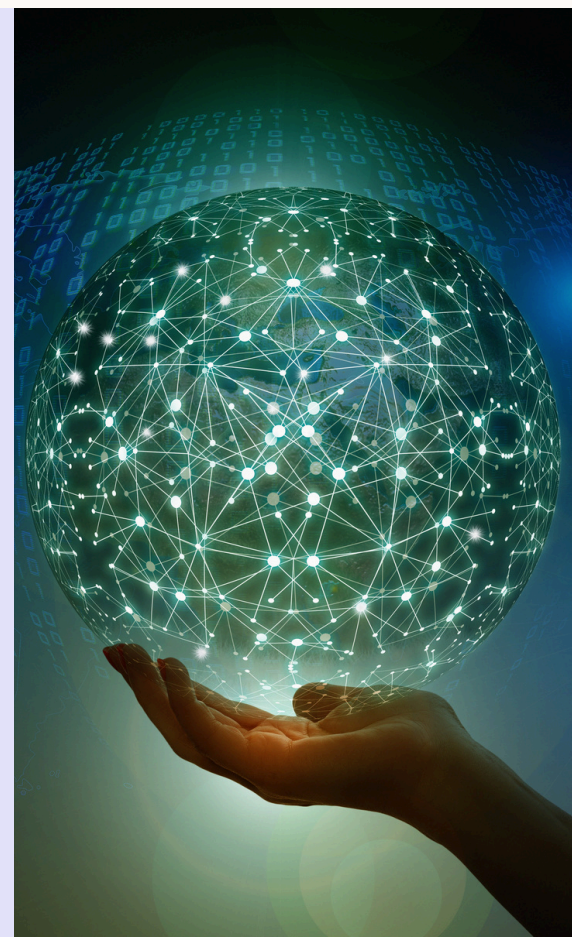
USING DATA IN PARTS PLANNING

Data is used in many capacities within Service Supply Chains, and without it, digital transformation cannot happen. In the context of planning, there are three main ways data companies leverage data for parts movement.

Data is used for forecasting, calculating target stock levels, generating orders and transactions, analysis, and informed decision-making.

Instead of these crucial components being siloed, they are interrelated and dependent on each other to function properly. Let's break down how data is used throughout these processes.

Think of it as a circle: forecast, calculate, order, forecast, calculate, order, rinse and repeat. Available data, such as demand history or IB and SLA data is used to calculate a demand forecast. The demand forecast, combined with other SLA data, and figures like part, product, and customer criticality data, amongst other data types are used to calculate target stock levels. The target stock levels, plus other data such as (but not necessarily limited to) on-hand and on-order data are used to determine necessary orders (replenishment, redeployment, repair, purchase).

Some of those orders, such as replenishment, in combination with other demand is then used in the demand forecast calculation— and the loop continues. This interdependent process means that any bad data is going to go round and round through the system and potentially beget more bad data.
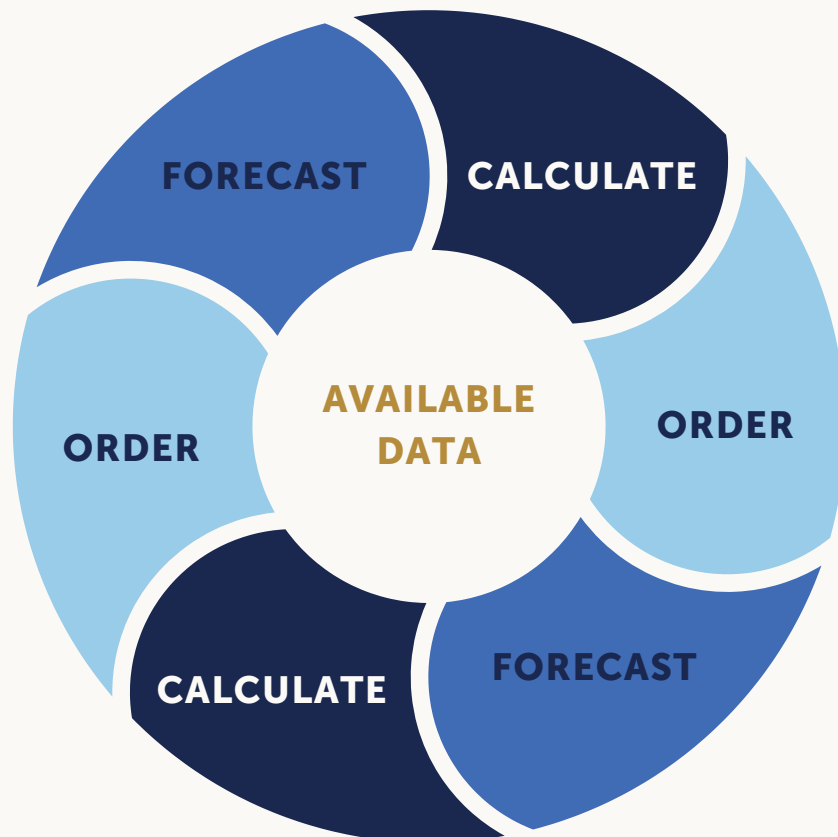
For any calculation, there's a minimum amount of data that is needed. This could include part numbers, some history for that part number, and the location(s) of parts. Alongside this, there is also a wide range of other information/data that could be used (if available and deemed accurate) to make the calculation better, like SLA information, part cost, and customer information.

For example, knowing whether a customer is on a same-day response contract or a next-day response contract helps prioritize your most crucial customer needs and can lead to the ultimate goals of reduced stockouts and fewer escalations.

With the amount of data points available, there's one critical factor that must remain a priority; the accuracy of the data. Applying broken or "dirty" data to your calculations will impact the overall success of your parts movement. Having data that is 25% accurate is not substantial enough to include in your calculations and should be cleansed before being applied.

- Data within the forecast is used in the calculation of the target stock levels.

- The target stock levels are necessary to generate fulfillment orders or transactions.

- Anything that is incorrect permeates the whole system or process, and it's all driven by data.

Garbage In, Garage Out:
Problems Caused by Bad Data

THE ROLE OF DATA CLEANSING

Before we get into the problems bad data can lead to, let's talk about why it might need to be cleaned up in the first place. There are two key indications that you've got a dirty data problem on your hands. The first is if your data is inaccurate or incorrect, and the second is that it is incomplete.

Think about a data element such as a postal code. The postal code could be entered wrong, or it could not be entered at all. This is a perfect example of incorrect vs. incomplete data. Each instance can cause planning to go awry, but some data that could be missing wouldn't necessarily derail your parts plan, but instead would serve to allow for a better, forward-looking forecast if it was collected and applied.

Consider it like a spectrum, which you can visualize on a line graph. Lower and on the left is the minimum amount of data needed to do a calculation, or to do whatever it is you are trying to accomplish with your data. In this example, we're looking at data to forecast, calculate, and recommend orders. Up and to the right on that graph is data nirvana; you have all the data you need and want, and it's 100% accurate.

Don't think that this is where your data needs to be; it's next to impossible to achieve a perfect state of data, and our experts have yet to see a company accomplish this.

The process of cleansing data is typically thought of as rooting out bad data and making it good (i.e. correcting the errors). Missing data elements, like the postal code example, are also considered bad data.

But, there is another aspect of missing data that's even sneakier; the data that we aren't even trying to capture. Like a code that differentiates types of orders (think replenishment vs. sales) or the systemic capture of install base SLA data.

Data Accuracy

State of Nirvana
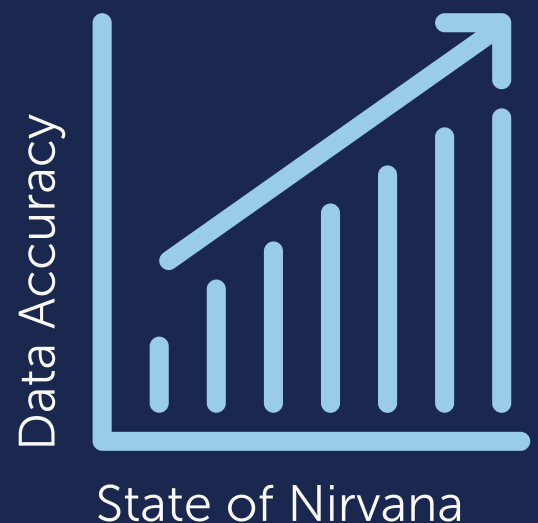
Different types of demand data beyond 'customer demand':

- Same-day demand

- Next-day demand

- Replenishment demand

- Sales (direct-to-customer) demand

- Sales (on open-market) demand
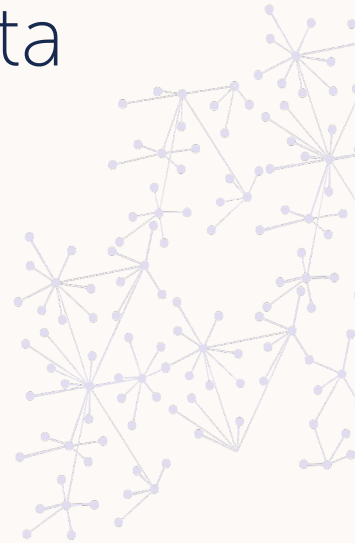
Aggregating all types of demand history as a single stream of history can allow robust statistical forecasting algorithms to be applied to generate the best possible single demand forecast that is then used in the next processing steps. However, if each of those unique types of demand are distinguishable through some data element, the history of each could be analyzed individually.

This takes the best forecasting method applied to each demand stream and creates multiple better forecasts that can then be aggregated into a total demand forecast for the part number. Additionally, independently reviewing forecast deviations on each demand stream allows for the detection and notification of demand stream level deviations that might otherwise be averaged out in the aggregate.

IN THE CASE OF INSTALL BASE SLA DATA, CONSIDER THE FOLLOWING BENEFITS:

- Knowing there is a particular install base of certain quantities of your products in a given region allows for the data to be used in forecasting.

- Knowing where those products are within the region (postal code) allows better forecasting at more specific stocking locations.

- Knowing if the SLAs are next-day or same-day response allows forecasting more accurately to the correct stocking locations.

- Knowing that same-day SLAs are 2-hour response, 4-hour response, or for critical customers can allow for better calculation of target stock levels within each specific stocking location.

The Business Cost of Bad Data

The phrase, "Garbage in, garbage out" dates back to the 1950s and is still universally true today. Incorrect or poor-quality input will always produce faulty output, always. The business cost of bad data is a bad forecast, a bad plan, and bad execution, which ultimately leads to higher costs to support customers and their SLAs, and an inability to meet time-sensitive service contracts. This boils down to a number of different adverse effects, including:

- Overstocking inventory

- Expedited transportation costs

- Courier charges

- Technician return trips

Bad data can also lead to customer dissatisfaction, which can manifest in costs such as:

- Real penalties for service not provided in accordance with the SLA

- Reduced or lost revenue on future service contracts

- Increased escalations your team has to manage

- Damage to your organization's reputation

At the end of the day, it all leads back to cost. Whether it's physical costs going up or the cost of a dissatisfied customer, the negative impact remains.
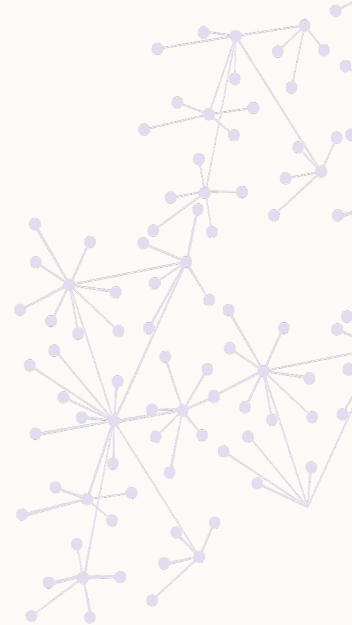
REAL-WORLD IMPLICATIONS AND COSTS OF INACCURATE DATA:

- "Every year, poor data quality costs organizations an average $12.9 million." (*Gartner*)

- "The Data Warehousing Institute estimates that bad, inaccurate, dirty or missing data costs companies more than $600 billion a year. In 2021, supply chain disruptions made regular headlines, amounting to a $228 million loss in the United States alone." (*Trax*)

- "Nearly 60% of organizations don't measure the annual financial cost of poor quality data." (*Gartner*)
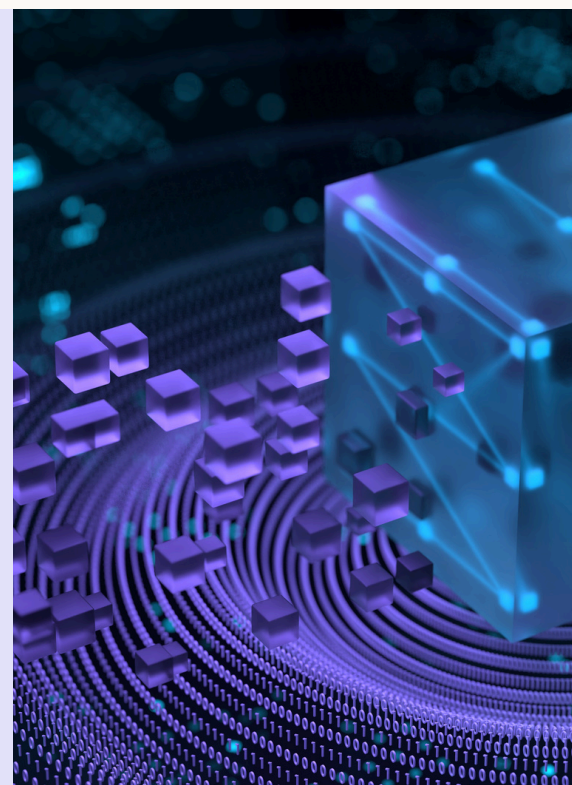
Protecting Your Access to Data

It's crucial not to put yourself and your business in a position where you don't have access to your own data. Oftentimes, when Baxter Planning conducts data integrations, our team will get data from multiple systems; customer systems, enterprise resource planning (ERP), customer relationship management (CRM), and third-party logistics (3PL). On multiple occasions, our team has seen data duplicated at the 3PL level. This could be data like on-hand balance, for example. It's important to have your data run through an in-house system before it goes through any of these third-party systems. That way, you always have direct access to your data at the level of its origination.

There is significant value in knowing where your data is coming from, how it was collected, and if it was done so reliably. In cases like this where there is a choice of points of access to a customer's data, our experts always recommend getting it firsthand from the customer instead of through a third-party system. You should always be the master of your own data domain. Slowdowns can be caused by not having data readily available, causing you to have to go through a third-party to access it.

Other ways you can protect your data are by ensuring you don't give access to unauthorized users and increasing security. Don't put yourself in a position where you don't have access to the data you need. Data interfaces can be configured in many different ways. Build your database so that all data runs through your own system first.

How Organizations Can Keep Their Data Clean

ACTIONABLE WAYS OUR EXPERTS IDENTIFIED FOR SERVICE ORGANIZATIONS TO KEEP THEIR DATA CLEAN.

Baxter Planning also enables organizations to keep their data clean through our own Miss Root Cause analysis process. This process identifies a specific type of process failure, then traces it back to a root cause and Pareto's out that root cause. In this case, process failures can be identified as data related or not. With a Pareto analysis of data-caused process failures, you have a prioritized roadmap of what data elements need to be addressed first.

1 Build processes that stop invalid or inaccurate data from entering the system.

2 Build processes to identify and improve invalid or inaccurate data.

3 Build support systems that do not allow critical blank fields or have validation.

4 Build and implement a strong data strategy and/or data governance policy.

Preparing Your Data for Digital Transformation

As your organization prepares for digital transformation, it's elemental to make sure systems are working properly and that your data is correct and complete. To ensure the reliability of your new systems' output, it is essential to have confidence in the quality of the input data.

TIPS TO FOLLOW WHEN PREPARING YOUR DATA FOR DIGITAL TRANSFORMATION:

KEEP YOUR DATA CENTRALIZED

Data can be found in a wide range of systems. Ensure key datasets are stored in a centralized, accessible manner rather than on disorganized and disparate spreadsheets.

ADOPT CLEAR PROCESSES AND DATA MAINTENANCE OWNERSHIP

Uncertainty around where data is stored, which teams have access to certain datasets, and who is allowed to modify data causes project slowdowns and can result in bad decision-making. Instill tighter business processes around data ownership and maintenance.

EMBRACE AUTOMATION AND TECHNOLOGY

Teams who start projects without a clear vision of how a system's output data will be utilized will struggle to implement the processes and changes necessary for automation to occur.

Most data problems result from business processes that weren't designed to provide the level of data that companies need today.

However, there are ways to increase project efficiency and make your data go further as you embark on digital transformation.

- It's beneficial to have the ability to segment materials, products, and sites within your data. Try to ensure that you are implementing clear and intelligent data groupings.

- Go through and clean up data that is old and irrelevant so it does not cause confusion and make processes run slower.

- Rely on a system that can capture mandatory data attributes such as "data of manufacture" for parts. Most IT systems are designed to only capture certain business processes. This causes problems when you later decide that you need to capture data that wasn't getting captured from the start.

A data-centric approach should be the focus, emphasizing not just the quantity, but also the quality of the data. For instance, adhering to the principle "garbage in, garbage out" implies that an increase in data without proper quality control will only lead to more garbage. As the AI/ML sector shifts towards a data-centric model, it is becoming increasingly clear that quality takes precedence over scale.

Obsess over data quality early and often, store it with longevity in mind, and make it easy to access. Systems for ingesting data may change, but this is a crucial area to have locked down for the coming years.

SCALING DATA FOR SERVICE SUPPLY CHAINS

To scale data successfully, start by leveraging an agile process that begins with defined goals. Start off small and make sure your goals provide value. Take incremental steps and go back and iterate on your established goals. Use tools designed to help keep your data clean and organized and appoint positions, like Chief Data Officers, to oversee data management initiatives.

Depending on your goals, it may be beneficial to establish processes around certain types of data that can complicate your efforts. One example is Industrial IoT (IIoT). Without a process to manage IIoT data, it may be too much to manage.

It is also important to be realistic and note that clean data is a journey and you have to start somewhere. Even if you have bad data, business decision still have to be made.

Scaling your data with your team and finding the right partner to help can allow you to achieve cleaner data in the future while still making decisions that must get made in the present.

Enable Clean Data With Baxter Planning

Smart and predictive Service Supply Chains need solutions that can analyze and report on data, as well as identify gaps within it.

Baxter Planning enables a data-driven approach to Service Parts Management, which relies on and supports data accuracy and completeness.

There are key pieces of data that enable a fully optimized Service Parts Plan, including, but not limited to:

- Part and product master information

- Installed base data

- Service bills of material

- Part chaining and supersession

Using a solution that combines data points such as the ones above helps you attain a holistic view of your service operations and allows you to get much closer to target stock levels. This leads to less excess inventory, which means less wasted cost for you.

Baxter Planning's Predictive Service Supply Chain platform, BaxterPredict, takes your data and applies it to our Total Cost Optimization approach for Service Parts Planning. This enables a better, forward-focused forecast that helps you identify gaps in your process, and in your data in order to correct them faster.

BaxterPredict allows you to minimize excess costs associated with inventory and transportation while getting you much closer to target stock while improving productivity and efficiency within your Service Supply Chain. It takes this forecast a step further by providing transaction data quality checks that focus on ensuring your data is complete and accurate. It also gives you execution visibility and control so you can track transactions in real-time for timely corrective action when needed.

Within this system, data and automation are key. And together, they provide a means to monitor and take quick action on your biggest data roadblocks.

BAXTER PLANNING™
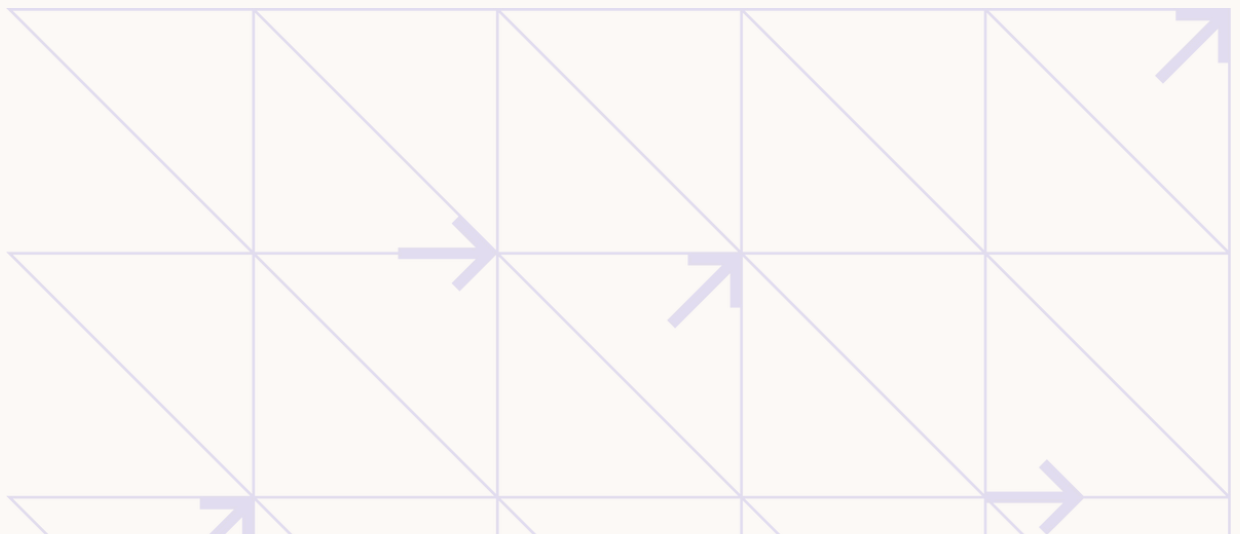
Data is fundamental to a successful digital transformation

It ensures complex operations are running smoothly and efficiently. When it comes to your own data, put your trust in a system with a proven track record of success and the automation and insights to help you make proactive choices that greatly benefit your business and customers.

Learn more about how you can keep your data clean and your inventory optimized, reach out to our team.

WHY BAXTER PLANNING?

Practitioner Expertise
Decades solving real-world Service Supply Chain problems

Purpose-Built Technology
End-to-end platform embedded with specialized AI and Data Core

Industry-Leading Outcomes
Combination of technology and partnership yield accelerated results

ABOUT BAXTER PLANNING

Baxter Planning is a global leader in Service Supply Chain software, delivering a Service Experience Advantage to the world's most innovative enterprises for over 30 years. The end-to-end BaxterPredict platform empowers organizations to optimize service parts planning, execution, and resolution, driving superior customer experiences, fostering long-term loyalty, and fueling business growth.

By combining purpose-built technology, award-winning AI, decades of practitioner expertise, and a commitment to true partnership, Baxter Planning consistently delivers industry-leading outcomes for its clients.

The company is headquartered in Austin, Texas, United States, with offices around the globe.

For more information, visit www.baxterplanning.com.