

Revolutionizing service information: Deliver the right product information at the right time

Overview

Each year, companies invest millions of dollars in systems and processes to improve product support, customer service, and aftermarket operations to improve their product's performance throughout its lifecycle. Product performance improvements contribute to a better overall customer experience, as well as to increased revenues and improved operations. These investments are traditionally focused on specialized systems, such as call center operations, field service mobility, product training or eLearning systems, as well as larger enterprise applications such as CRM (Customer Relationship Management), ERP (Enterprise Resource Planning) and PLM (Product Lifecycle Management) in an attempt to automate and associate all product support-related processes.

Despite these investments, companies still struggle with critical product support and performance issues, such as low adoption rates, inappropriate equipment operation or use, lengthy repair times, slow problem-resolution cycles, and low first-time fix rates. These challenges stem from service information that is either out-of-date, poor quality, or inaccessible service information, leading to increased product support costs, asset downtime, lost revenues and profits, as well as a negative customer experience.

Even the most efficient companies are now being forced to take a closer look at the quality and delivery of their service information and its impact on overall product performance throughout its lifecycle. As you evaluate your product support and service initiatives, ask yourself:

- Do my call center and service personnel waste billable hours or spend excessive time searching for the information they need to address a specific customer issue or equipment failure?
- Are my dealer's technicians resorting to "trial and error" on service calls because my product data is too complex and unreliable?
- Do my training and service materials contain easy-to-understand content and graphics with up-to-date procedures and easy-to-identify spare parts?
- Do my operator and service manuals ensure that published procedures are in synch with real-time product data?
- Do my customers have access to information in the language and context they need, so they can achieve the optimal experience with my products?

This paper presents a best-practices approach for creating, maintaining and delivering service information, and outlines several key capabilities required for successfully defining and deploying an intelligent, interactive service-information solution. The ideal solution should leverage up-to-date product,

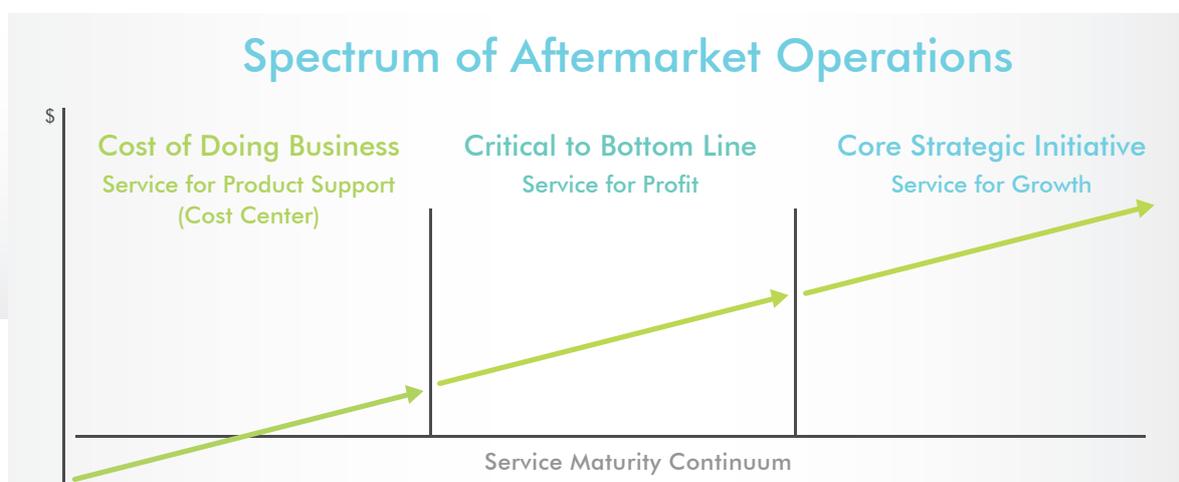
support and customer data—which is usually contained within various enterprise systems, and deliver the precise knowledge needed to maximize product performance and revenues related to the assembly, training, operation, maintenance and repair of a product throughout its lifecycle.

Empowering service information

Evolution of product support strategies

As a rule, companies approach the long-term support of their products with varying strategies. Traditionally, the support and service of a product has not been strategic, but instead has been viewed as a cost of doing business. Today, innovative companies have realized that strategic product support practices can provide an ongoing, predictable revenue opportunity, often with higher margins than new product sales. Organizations have expanded their focus from looking solely at how much revenue they can generate from new product sales, to now include how much revenue they can capture throughout the product's estimated lifespan via lucrative support contracts, spare parts, product accessories, and equipment upgrades and renewals.

There are particular products and industries where companies can truly differentiate themselves through innovative service offerings, such as products that have a long lifecycle, or products that are capital-intensive, or products where downtime or mishandling is costly or harmful. Such industries include aerospace & defense; construction, mining and agricultural equipment; manufacturing and tooling machinery; automotive



and trucking; large-scale scientific and medical equipment; and other industrial equipment where product downtime or misuse negatively impacts your customers' ability to generate revenue and potentially increases their legal liabilities.

Most companies go through an evolutionary progression of their product lifecycle support strategy, in phases as follows:

Phase I: Service for product support

At this phase, the service organization works in a reactive mode, and is focused primarily on repairing or replacing products that break down. Consequently, the primary concern of service managers here is cost minimization. This approach to supporting products works in some industries, such as low-end consumer electronics and disposable products, and is the right approach for certain non-mission-critical products. In this phase, service information is used primarily during the shipment process in the form of product instructions to simplify and accelerate the adoption process.

Phase II: Service for profit

Increasingly, companies are tapping into their customers' willingness to invest in preventive or proactive maintenance contracts and product upgrades, and thus are transforming their product support and service organizations into profit centers. Along the way, these companies have optimized

their support processes, developed CRM capabilities, and optimized resource and spare-part utilization with the help of ERP or specialty systems. These investments have enabled businesses to predictably manage service contracts, personnel, and assets to maximize both profitability and customer retention. In this phase, service information is provided to customers throughout the product lifecycle in the forms of operator guides, repair procedures, and maintenance manuals to provide predictable, successful use and service of the equipment.

Phase III: Service for growth

Ultimately, companies that embrace long-term product support and services as a core differentiator are transforming themselves into service-driven businesses, with services accounting for more than 50% of overall revenue. This transformation is due to the fact that 1.) the quality of service and support often determines the performance of the product throughout its entire lifecycle; 2.) quality service offerings open up opportunities for lasting differentiation and improved customer retention; and 3.) aftermarket sales and services typically deliver higher profit margins than new product sales. Here, service information is accessed in a product-centric context to ensure that equipment is supported continuously throughout its lifecycle to preempt downtime and failures, which ensures equipment uptime for profitable contracts and revenues.

Improvement to Quality of Information	Operational Benefits	Financial Benefits
<ul style="list-style-type: none"> • Deliver accurate, concise and relevant service, operator and spare part information • Associate original, up-to-date product data to provide consistent service information for all downstream product processes 	<ul style="list-style-type: none"> • Reduced inbound product support and service requests • Reduced field service repair time • Reduced call center resolution time • Increased customer self-service (anywhere, anytime access) • Increased percentage of first-time resolutions for service or repair • Reduced service errors caused by incorrect and outdated information 	<ul style="list-style-type: none"> • Reduced service costs • Reduced call center costs • Increased spare part revenue • Reduced no-fee service callbacks • Predictable and profitable service engagements • Relevant product upsell opportunities

Table 1: Sample benefits from improving the quality of service information.

The opportunity to empower service information

Unfortunately, in most product-support and customer-support organizations today, service information is unreliable, complex, and hard-to-find. Imagine yourself in the shoes of your customer or service representative: What are the steps you must go through each time you receive a service request? While some companies have invested significantly in ensuring that service personnel are aware of what they need to do, most organizations have done little or nothing to guarantee the accessibility, accuracy and relevance of the information that their service personnel need to be successful with their task at hand.

Locating information efficiently

Product- and customer-support resources are typically on their own to search multiple paper, electronic, and database sources to find what is needed for a specific service or support activity. Customer history has demonstrated that service technicians and call center representatives spend an average of 40% of their time just looking for information that has already been published, but is not easily found. Imagine how many additional service calls these resources could resolve if they had easy access to the relevant, accurate, and concise information they needed for the specifically assigned service activity. Imagine achieving a 41% decrease in inbound call center calls, or a 40% decrease in time-to-resolution, or a 38% increase in satisfaction levels.¹ No doubt, making it easier for service personnel to find accurate information will improve service response time.

Measuring information quality

The quality and accuracy of product support and service information plays a direct role in the success of your product support and customer service organizations. In many cases, however, service information, once found, is too often out-of-date or conflicting, leading to service errors or customer repeat visits. Accurate, relevant, up-to-date information improves the productivity of service personnel, increases first-time fix rates, and reduces the resources and cost of supporting products throughout their lifecycle. Tailoring information for the specific requirements of the unique service call will enable a faster service cycle, thus reducing the product's downtime.

Improving the quality of service information also positively affects an organization in many other ways. High-quality service guidelines, maintenance procedures, and operating

manuals can help drive purchase decisions, especially where complex products are concerned. For example, in the Aerospace & Defense industry, companies leverage their service and operating information to generate additional revenue. By having access to easy-to-use parts catalogs, customers are more likely to purchase spare parts and accessories from the OEM. Alternatively, low-quality, static manuals create unhappy customers and increase inbound calls to call centers. This lowers revenue and increases support costs.

Service information solutions

The top reasons service information hinders profit and product performance

Before exploring the characteristics of an optimal service information solution, let's look at some of the most common problems with the service information typically published today. Think of the many oversized, complex, and incomprehensible manuals that typically come with products, and how frustrating it is to search through them for just the information you need. Most users and technicians are tempted to just ignore the manual and figure out the answer for themselves through trial and error.

Below is a sample of the most common challenges experienced by the end-users of technical information:

- **Static, page-based manuals managed separately.** Service manuals are often tied to a single, page-based format (on paper or in PDF format) that requires users to browse through volumes of content managed in 'silos', while attempting to find the information they need. The industry average suggests that the amount of time wasted can be upwards of 40% of the overall service cycle time. Once the information is found by the user, typically there are references to other information, such as service bulletins and spare parts catalogs that require additional browsing and continual flipping between pages. Imagine being able to provide this information in a format that guided the user to the exact, centralized information they need, eliminating time spent browsing or searching.
- **Complex or too much text, low-quality and static illustrations, no dynamic links.** How frustrating is it to read through paragraphs of text multiple times, trying to understand what the author meant? Even more frustrating is to be provided with illustrations that are

1. Average benefits of existing customers of PTC Arbortext dynamic publishing solution (IDC independent survey of 438 customers)

illegible or do not match the text. Since a picture is worth a 1,000 words, wouldn't it make sense to provide high-quality graphics, illustrations and animations that better describe a procedure, instead of using text? Imagine the cost-savings related to service improvements, accurate spare parts identification, and reduced translation costs associated with replacing large volumes of text with easy-to-understand graphics.

- **Missing, inaccurate, or out-of-date part and procedural information.** Often, the explicit information that service professionals need simply isn't covered in the documentation or doesn't match the actual product under service. By associating service information with original product development data, service information will update automatically to match product changes and the exact configuration of the product being serviced. This approach has been difficult to achieve in most environments, since manuals for new product releases typically are only updated using traditional desktop publishing tools. By repurposing product lifecycle management (PLM) data, companies ensure that service manuals and spare parts are up-to-date with products.
- **Service manuals and support information are not in the language required.** Ask yourself: how much time do your support resources and customers waste trying to understand and complete tasks using product information that's unavailable in their native language? What would the impact be to your service cycle times, first-time fix rates, and customer satisfaction if your technicians and customers were provided with the language specific information they need—on demand—to perform the assigned service activities?

From the publisher's perspective

The challenges of using traditional methods to author and publish technical publications

Whenever the subject of poor-quality service manuals arises, many people assume that the problems are due to a deficient technical publications group. The truth is that, in most cases, the technical publications group is doing an impressive job within the constraints of the processes it must follow. While companies continue to integrate and optimize internal processes, including product development, manufacturing, training, and product support, the process of creating

technical information has remained manual and disconnected from these other processes. And, the problem cannot be solved by simply adding additional authors or publication managers as information volume and complexity increase. Successful managers must address the overall information delivery cycle and the technologies that the technical publications team has at its disposal.

Below is a sample of the most common challenges experienced by authors of technical information. These challenges are common for many product development companies across most industries.

- **Getting timely, current product information from Engineering.** In order to begin the authoring process, writers must first wait to receive product information from Engineering, and then re-create that information in the context needed by the downstream processes. Additionally, authors aren't typically updated about product changes until late in the documentation process, which causes last-minute rework, quality problems, and delays. Minor changes often go unreported or unnoticed, which contributes to inaccuracies and discrepancies in service manuals.
- **Locating outdated information that needs to be replaced or retired.** When authors do learn about a change, they have to manually identify and update all documents that are affected. And, since the most common method for updating documents is 'copy-paste', authors have to track all documents where they reused content. Unknowingly, that same content may also have been copied by another author in additional documents. Both of these disconnected processes result in downstream documents that are often missing critical updates and having obsolete information available throughout the lifecycle.
- **Manual information creation.** Technical data, such as parts lists, assembly, specifications, tolerances, or other relevant information, is critical for the successful completion of a service activity. This information, commonly contained in databases or business systems, changes frequently. Authors typically need to search these databases for information they need, and then re-enter it into the publications—a highly error-prone process. There is typically no way for the author to know when the database information changes and what changes require updates to the publications.

- **It's easier to rewrite than reuse.** Since most service manuals today are written as monolithic documents, authors cannot easily identify components for reuse. It usually takes longer to search through documents than to rewrite the text, resulting in inconsistent information and procedures.
- **Lengthy, manual approval process.** The review and approval process for technical documentation, as a rule, is disparate and outdated. Authors send draft documents to the subject-matter experts for review, and then manually reconcile all edits into the original document. Since the process is not automated, delays are common and edits are missed.
- **Redundant processes for editing and approval for each media.** Typically, service information must be published in multiple formats (print, PDF, HTML, etc.). Consequently, publication managers must conduct a separate and redundant design, review, and approval for each media, with no capability to automatically ensure consistency across formats. Again, this results in inconsistent information between media, contributing to user confusion.
- **Difficult to contain localization costs.** To achieve global product revenue goals, service information must be published in multiple languages. As product development cycles shrink and the global audience expands, companies are failing to keep up with increasing translation demands. And, if authors are manually tracking incremental changes to documentation, the risk of failure increases exponentially. While most suppliers are capitalizing on modern translation processes, they often don't understand the opportunity to automate the authoring and information delivery processes related to localization, such as the elimination of manual desktop publishing by using automated dynamic publishing.
- **Manually customize information for each audience.** Service content is most useful when it is tailored not only to the exact procedure, but also to the needs of the specific reader, based on their level of expertise, their job function, and geography. Because authors don't have the capability to create a master document tailored to the audience's specific profile, they choose instead to create generic service manuals, hoping to meet the needs of all audiences. However, generic information is usually not very useful to anyone.

Overcoming service information challenges using intelligent, automated solutions

Once you have decided that you need to improve the quality of your service information, where do you start? Keep in mind that the delivery of service information is a set of processes tied to your product development processes throughout a product's lifecycle. It's important that you identify and resolve specific process challenges that allow you to realize short-term gains and long-term benefits.

In order to make the best decisions, you need to assess your current processes and prioritize the greatest value opportunities for the new process (Table 2). It is recommended that you identify a set of high-priority objectives that will gain executive commitment and ensure that your projects fully address these priorities. Once you identify your goals and quantify the value of improvements in each of these categories (Table 3), you should 1.) define the new process, 2.) plan and execute deployment, and 3.) ensure widespread adoption of your solution through user education.

Table 2: Sample objectives

Decrease call center inbound calls
Reduce technical- and field-support resolution times
Improve customer service response time
Ensure predictable service engagement cycles
Reduce service errors and repeat visits/calls
Reduce time required to complete service
Reduce support costs throughout the product lifecycle
Lower the cost of creating, deploying, and maintaining service information
Increase the delivery cycle of new service information
Increase sales of spare parts and services
Improve customer satisfaction ratings

Table 3: Quantifiable benefits of service information improvements²

Service efficiency benefits

- Reduce time required to search for content by 20%
- Reduce time required to customize content for specific service procedure by 23%
- Reduce service errors due to inaccurate information by 30%
- Reduce time-to-resolution for customer issues by 38%
- Reduce call center volume by 41%
- Improve spare parts orders by 5%
- Reduce source language authoring costs by 43%
- Reduce manual formatting effort by 35%

Preparing and deploying service information

- Eliminate updating of redundant information by 30%
- Reduce authoring time by 26% by reusing content
- Improve time required to create animated or interactive content by 58%
- Eliminate desktop publishing costs (30% of overall publishing cost)

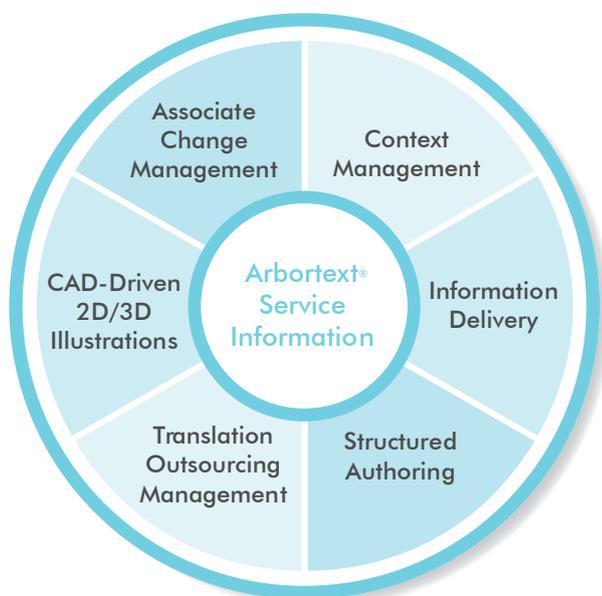
- **Structured authoring and automated assembly and publishing.** Provide structured authoring of reusable information components to automate the publishing of personalized, product- and language-specific content.
- **CAD-based 2D and 3D technical illustrations.** Repurpose CAD models to automate the creation of high-quality, intelligent 2D and 3D illustrations and animations from 3D CAD models. Maintain associativity back to the original CAD model to enable automatic updates as engineering designs change.
- **Single-source content and workflow management.** Enable single-source management of structured document components, 2D and 3D graphics, and links to related enterprise data in order to automate the editing, review, approval and change management workflows.
- **Translation outsourcing management.** Automatically identify document components that need to be translated. Create translation packages to route and manage translation processes for Language Service Providers or translation systems, and ensure integrity of links between localized components and source documents when translated components are returned.
- **Associative change management for product information.** Intelligently link technical product information, including text and graphics, to real-time product design data, and streamline change propagation for illustrations and product information for all information delivery needs, as product changes occur.
- **Interactive product information delivery.** Deliver interactive, task-based product information, on-demand, to consumers to ensure the usability, relevance, and timeliness of the content.

Finally, it is important to remember that all process changes are disruptive to some degree. No doubt, there will always be people that are resistant to change, probably because they are used to the old process, regardless of its inefficiency. Therefore, before starting any software implementation project, it is important to establish a sponsor and/or task force that can resolve differences and help drive the project forward. Your team needs to establish clear objectives for the implementation project and stay true to them.

Adoption roadmap

The Adoption Roadmap's proven service information best practices provides a guideline for you to identify, deploy and adopt the processes that provide the greatest operational benefits. This process may involve one, several, or all the improvements suggested below.

² Average benefits of existing customers of PTC Arbortext dynamic publishing solution (IDC independent survey of 438 customers)



PTC has developed a proven “adoption roadmap” that allows our customers to identify and initiate their revolution at one or several points where there is the greatest benefit to the customer value opportunity.

At PTC, we offer years of experience deploying service information solutions. We recognize that the success of any new solution hinges on your organization’s capacity and commitment to using it. That’s why our delivery methodology incorporates a pragmatic adoption approach that helps you overcome the cultural and geographical challenges that companies often face when deploying new solutions.

Summary

This paper has represented both the challenges and best practices for the delivery of service information. Throughout your product’s lifecycle, service information is leveraged to operate, service, repair and dispose of products. Only PTC provides the all-in-one service information solution associated with product data to ensure that:

- Your call center and service personnel find and understand the right information at the right time to complete their tasks successfully, the first time
- Your dealers and customers have reliable, consistent product information to improve their experience with your products

- Your training and service materials contain easy-to-understand content and graphics with up-to-date procedures and easy-to-identify spare parts
- Your operator and service manuals ensure that published procedures are in synch with real-time product data
- Your customers have access to information in the language and context they need, so they can be most successful with your products

PTC provides its Arbortext® service information solution, which automates the processes of creating and delivering product support and service information to meet your product performance goals. And with PTC Global Services as your partner, you can build on this out-of-the-box application, adding capabilities to support a broad assortment of service publications, including operator’s instructions, installation guides, service bulletins, training information, parts lists/catalogs and more.

With more than 20 years of experience helping the industry’s leading organizations, PTC can help you transform the process of delivering service information and maximize the effectiveness of your product support and service organizations, increasing your company’s revenues and profits.

Learn more about Arbortext at PTC.com/go/arbortext.

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