

Service Information Delivery: The Key Driver for Aftermarket Success

Overview

Each year, companies invest thousands of dollars in systems and processes to improve their aftermarket operations—ultimately, to better serve their customers. And while most of this investment is spent on specialized systems, such as call centers, field service, and spare parts management, some organizations are implementing larger enterprise deployments of CRM (Customer Relationship Management), ERP (Enterprise Resource Planning), and PLM (Product Lifecycle Management).

Yet with all these investments, companies still struggle with critical service performance issues, such as inaccurate diagnostics, lengthy repair times, and low first-time fix rates, that lead to increased asset downtime and lower customer satisfaction. Yet, due to the increased global competition, even the most dominant companies are now taking a closer look at the quality of their service information and their ability to deliver exactly what is needed by their service and support personnel. Just ask yourself: Does your call center personnel struggle to find the information they need to address customer questions or issues? Do technicians find it easier to learn by trial and error than by reading complex manuals? Does your service information contain illustrations that accurately explain tasks and procedures? Is this information derived from, and linked to, product designs?

This paper presents a better process for creating and delivering service information and outlines the key capabilities required for successfully implementing a dynamic service information delivery solution. This solution leverages customer, product, and service data contained within various systems throughout your company and delivers the knowledge you need to maximize the performance of your technicians and customer support professionals.

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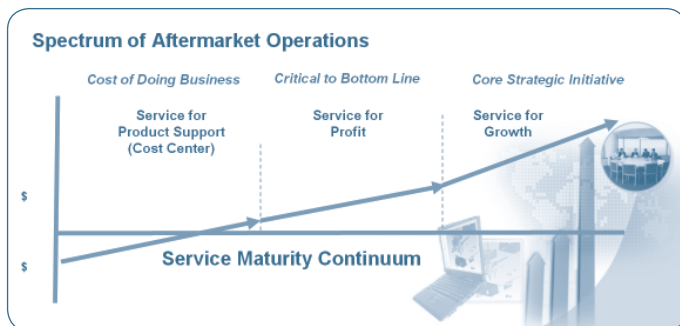
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1 Service information

1.1 Aftermarket support

1.1.1 Evolution of aftermarket support strategies

Companies approach the aftermarket support of their products with varying strategies. Traditionally, aftermarket support was an afterthought and viewed as a cost of doing business. Today, leading companies have realized that aftermarket support can provide an ongoing revenue opportunity, often with higher margins than new product sales. Organizations have changed their focus from how much revenue they can generate from new product sales to how much revenue they can capture throughout the product's useful life. Since many industrial goods have a long useful life, many manufacturers offer highly competitive prices on new product sales and capture additional margin through aftermarket support.



Evolution of aftermarket operations

Most companies go through a natural progression of their aftermarket strategy, as follows:

- Service for Product Support (Cost Center)**
 Traditionally, service and support have been treated as cost centers: a necessary expense needed to support product sales. In these environments, the service organization works in a reactive mode focused primarily on repairing products that break down. Consequently, cost elimination is the primary concern of service managers. This approach to supporting products works in some industries and is the right approach for certain non-mission-critical products. However, long-life, capital-intensive products, and products for which downtime is costly or harmful (such as manufacturing machinery and tooling machinery used in factories, industrial equipment, large-scale scientific and medical equipment, and highly technical control, test and measuring equipment), require a different approach to maintenance and service. Product downtime has a direct impact on your customers' ability to generate revenue; consequently, customers expect, and are willing to, invest in preventative maintenance programs.
- Service for Profit**
 An increasing number of companies have tapped into their customers' willingness to invest in preventive or proactive maintenance, and have transformed their Service and Aftermarket

Support organizations into profit centers. These companies have optimized their support processes, developed customer relationship management (CRM) capabilities, and optimized resource and spare part utilization with the help of enterprise resource planning (ERP) or specialty systems. These investments have enabled businesses to actively manage service contracts, personnel, and assets to maximize both profitability and customer retention.

- Service for Growth**

Companies that embraced aftermarket services as a core differentiator have transformed themselves into service-driven businesses, with services accounting for more than 50% of revenue. This market transformation is due to the fact that 1) the quality of service and support often determines the success of the product; 2) services offer opportunities for lasting differentiation and improved customer retention; and 3) aftermarket sales and services typically offer higher profit margins than new product sales.

Companies that embrace services as a core strategic initiative typically redesign their products to enable long-term serviceability, implement collaborative IT systems that link service, customer and product usage information, and offer unique service solutions that guarantee the performance of their products. Performance-based contracts are a support model that places specific goals and metrics to evaluate success. Customers buy or license the right-to-use the product with an ongoing maintenance and support contract that guarantees its up-time and performance. The product provider takes responsibility for maintaining the product throughout its lifetime to ensure that specified performance levels are met. The benefit to customers is that the products they rely on to run their business are maintained for optimal performance and availability, thus reducing or eliminating downtime and business disruptions. The benefit to the product provider is a revenue stream for the life of the product and a long-term customer relationship that can lead to additional product sales, upgrades and the replacement of aging products.

1.1.2 Keys to successfully evolving an aftermarket support strategy

The aftermarket support environment can be extremely complex, involving a large network of service providers with numerous IT systems to support it. Yet, just about every service environment can be broken down into four basic, but critical capabilities (described below) that must be optimized to transform the organization into a strategic, profit-generating unit:

- Understanding the customer.** Companies must continually improve their knowledge of their customers' buying, usage, and required service habits in order to better support them and to predict future product and service needs. Many companies have implemented customer relationship management (CRM) systems to track and leverage knowledge about their customers, including purchasing history, open service requests, service histories, and warranty and contract information. Although these systems have proven to be valuable in understanding the customer, they address only one of the critical aspects necessary to evolve an aftermarket support strategy.

- Understanding the resources available for maintaining the product.** Optimizing the resources necessary to service the customer’s product is essential for maximizing customer satisfaction and service profitability. To do so, most companies have implemented a variety of specialty solutions, such as field service, spare parts and call center management systems or an enterprise resource planning (ERP) system, to manage all of their human, facility and spare part resources. These systems help companies track service resource utilization, as well as schedule and dispatch technicians, manage spare part inventories and logistics, and invoice the customer. Similar to CRM, these systems have proven to be valuable, but still require additional capabilities to evolve an aftermarket support strategy.
- Understanding the product.** Most companies know what products their customers have purchased, but have little to no understanding about how those products are being used or maintained. Understanding how the customer is using your products is critical for optimizing product maintenance, availability, and performance. This knowledge also ensures service contract compliance and helps you identify upgrade and replacement opportunities. Companies have begun to look at product lifecycle management (PLM) systems to manage this information, so that product utilization and service information can be analyzed and automatically fed back to engineering for continued product reliability and performance improvement.

Traditionally, companies have invested heavily in the above-mentioned critical areas and have implemented specialized or enterprise solutions. Yet with all these investments, they still struggle with critical service performance issues, such as inaccurate diagnostics, lengthy repair times, and low first-time fix rates that lead to increased asset downtime and lower customer satisfaction. The solution: There’s a forth critical capability for evolving an aftermarket strategy, explained below, that addresses these remaining performance issues:

- Understanding how to maintain the product.** Think about the steps a service technician or call center representative must go through each time he/she receives a service request. Companies have invested significantly in ensuring service personnel are aware of what they need to do, but have done little or nothing to

help them understand how to do it. These resources are typically on their own to search multiple paper, electronic, and database sources to find what is needed for a specific service activity. In many cases the information they find is out-of-date or conflicting, leading to service errors. Studies have shown that service technicians and call center representatives spend upwards of 40% of their time just looking for information. Imagine how many additional service calls these resources could handle if they had easy access to complete, accurate, and concise information they needed for the specifically assigned service activity. A service information delivery system can help your aftermarket support organization understand how to maintain the product by delivering accurate, easy-to-understand, tailored information to your technicians and call center representatives. The information can be tailored both to their individual needs and to the product they are servicing; the information would automatically update when product designs, configurations, or service procedures change.

1.1.3 Impact of information quality

The quality of service and support information plays a critical role for the success of aftermarket organizations. Accurate, relevant, up-to-date information improves the productivity of service personnel, increases first-time fix rates, and lowers the time and cost of performing the service. Simplifying the ability to access critical service information will improve service response time. Tailoring information for the specific needs of the technician doing the work will enable him/her to complete the work faster, reducing the product’s downtime. Providing the latest available service information will ensure that the product is properly maintained or repaired, thus improving first-time fix rates.

Improving the quality of service information will also positively affect your organization in many other ways. High-quality service manuals 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 offering easy-to-use parts catalogs, customers are more likely to purchase spare parts from the OEM. Alternatively, poor manuals create unhappy customers and increase inbound calls to call centers. This lowers revenue and increases support costs.

Improvement to Quality of Information	Operational Benefits	Financial Benefits
<ul style="list-style-type: none"> Accurate, concise documentation, delivering most relevant service and part information 	<ul style="list-style-type: none"> Reduce field service repair time Reduce call center resolution time Drive customer self-service (anywhere, anytime access) 	<ul style="list-style-type: none"> Reduce service costs Reduce call center costs Increase spare part revenue
<ul style="list-style-type: none"> Up-to-date and consistent information for all service procedures 	<ul style="list-style-type: none"> Increase percentage of first-time resolutions for service or repair Reduce service errors caused by due to incorrect information 	<ul style="list-style-type: none"> Reduce no-fee service callbacks
<ul style="list-style-type: none"> Single source for all service information 	<ul style="list-style-type: none"> Reduce time spent searching for and collecting relevant service information 	<ul style="list-style-type: none"> Reduce service times Reduce cost of supplying service information

Above: Sample benefits derived from improving the quality of service information.

1.2 Service information delivery

1.2.1 Top five reasons service information is not as good as it could be:

A user's perspective

Before exploring the information that service information delivery systems need to provide, 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 technicians are tempted to just leave the manual and figure out the answer through trial and error. Typical problems include:

- **Delivering page-based manuals when customers want interactive information.** 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 in order to find the information they need. Once the information is found, typically, there are references to other information 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 information they need, eliminating time spent browsing or searching.
- **Lengthy, complex manuals: too much information making it difficult to find what you need.** Since the cost of creating and maintaining multiple instances of service information is high, companies pack all the information that anyone might possibly need in a single manual. This practice makes it difficult to find information. A simple example would be a user manual that contains information for all three radio options in an automobile. The automobile can only have one of the three options, so approximately 67% of the information will be non-relevant to every user of the manual.
- **Difficult to follow: too much text, too few or illegible illustrations, no link between illustrations and text.** 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 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 to support the text? Imagine the cost savings associated with replacing large volumes of text with easy-to-understand graphics.
- **Missing, inaccurate or out-of-date part and procedural information.** Often, the information that service professionals need simply isn't in the manual. And even if there is information, it often doesn't match the actual product under service. Ideally, service information should update automatically to match both the product changes and the exact configuration of the product you have. Unfortunately, this is difficult to do in the current environment, since manuals, as a rule, are updated just once a year using traditional desktop publishing tools.

- **Service manual and procedures not specific to the item purchased or the task at hand.** How much time do you think technicians spend trying to identify the information within a manual that applies to the specific product they are working on? Studies show it can be upwards of 40% of the overall service cycle time. How often does your service organization perform no-fee service callbacks because the product was not properly repaired the first time? What would the impact be on your service times, first-time fix rates, and customer satisfaction if your technicians were provided with just the concise information they need to perform the assigned service activities?

1.2.2 Typical challenges with generation and delivery of service information: an author's perspective

Whenever the subject of bad service manuals arises, many people assume that the problems are due to an underachieving technical publications group. The truth is that, in most cases, the technical publications group is doing an impressive job within the constraints of the process it must follow. While companies continue to integrate and optimize product development, manufacturing, and aftermarket support processes, the process of creating technical information has remained manual and disconnected from the other processes. And, unfortunately, the problem cannot be solved by simply adding additional authors or publication managers, or by asking existing staff to work longer hours. Forward-thinking managers must address the overall process and the tools 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 companies in multiple industries.

- **Getting timely product information from Engineering.** Authors are often unaware of changes to products. Typically, authors don't learn about 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.** When authors do find out about a change, they typically must manually identify all documents that are affected. And since the most common method for information reuse is 'copy/paste', authors have to track all documents where the content is reused. No wonder many documents, that require updating, are often missed.
- **Manual information entry and manual update.** Technical data, such as parts lists, 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 the 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 of the publications.

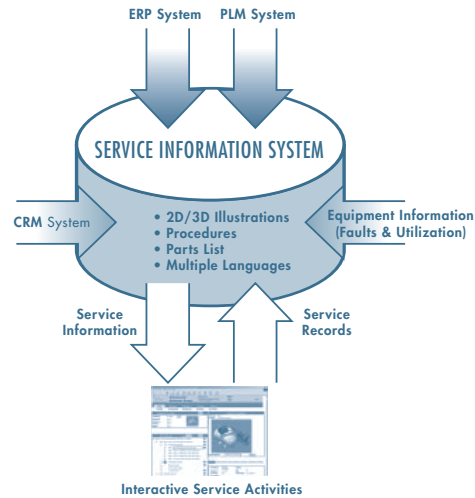
- **Information is often easier to rewrite than reuse.** Since most service manuals today are written as monolithic documents, authors cannot easily identify components for reuse. It usually takes longer to search through documents than to rewrite the text. No wonder different service manuals have different service procedures for the same part.
- **Lengthy, manual approval process.** The review and approval process for technical documentation, as a rule, is painful. Authors must send draft documents for review by subject matter experts and then must manually reconcile all edits into the original document. Since the process is not managed, delays are common and edits are missed.
- **Separate editing/approval process for each media.** Typically, service information must be published in multiple formats and languages. Consequently, publication managers have to conduct a separate design, review, and approval for each media, with no capability to automatically ensure consistency across formats.
- **Difficult to measure the impact of content changes on localization cost.** Sometimes, minor content changes can have a significant impact on localization costs. Authors have no visibility into the fact that a minor, low-value edit may result in hundreds of dollars in translation fees.
- **Manually customizing information for each audience.** Service content is most useful when it is tailored to the specific reader (e.g., specific procedure, level of expertise, job function, etc.). Because authors don't have the capability to create a master document that is automatically tailored based on audience profile, they choose to create generic service manuals hoping to meet the needs of all audiences. However, generic information is not very useful to anyone.

1.2.3 How service information should be delivered

To eliminate the above problems, a service information delivery solution must provide the following key capabilities:

Single Source Service Content

- **Standard service procedures for the same parts or sub-assemblies.** Manufacturers often reuse parts and designs in multiple products. A single source of service content ensures that the same part or sub-assembly is serviced with one standard procedure in all products.
- **Procedure updates trigger automatic update of relevant service information.** Companies cannot improve service quality unless they ensure that technicians are provided with the most relevant and up-to-date information. When you update service procedures, the service information delivery solution must automatically update and publish all affected manuals in all languages and media formats for every affected product.
- **Availability of simple, easy-to-understand technical illustrations and/or animations.** A picture is worth a thousands words. By providing simple, easy-to-understand illustrations and animations for every step or procedure, you reduce the need for



Service information systems should deliver interactive service activity instructions by leveraging maintenance content along with product utilization information and information from PLM, CRM, and ERP systems.

lengthy text explanations, and you make it easier for support personnel to find what they need.

- **Dynamic linking of illustrations and animations to all related text and tabular data.** Technical illustrations and animations are most useful when they provide a dynamic link to all related information. By clicking on a specific area of the illustration, technicians should be able to find related text describing service procedures or related tables with specifications.
- **Adherence to industry regulations or best practices for presentation of different service information types.** Different industries require special formatting and styling to represent commonly used information types. Your service information should be able to automatically support common information types like Procedures, Diagnostics, Hazard statements, and Fault isolation trees.

Single-Source Service Information Delivery

- **Maintenance information integrated into a single maintenance application.** A single-source service/maintenance application ensures the integrity and consistency of service information.
- **Information delivered in the form of specific tasks for the equipment under service.** No skilled technician wants to receive volumes of basic information that he/she doesn't need. Instead, service information should be tailored for each technician's level of expertise and delivered in the form of specific tasks for the equipment under service. Also, there should be links to additional, related information.
- **Technicians can easily browse or search for specific topics or procedures and other related information.** Often, technicians refer to service information systems for specific topics (e.g., replacing the oil pump of a 2006 Toyota Camry). The service information delivery solution should enable technicians to search or browse for specific topics or procedures and find all information related to the task they have recalled.

2 What it takes to optimize the service information delivery process

Section 1 outlined common problems with service information, and identified how this information should be delivered. The following section outlines the steps required to realize the vision for an automated service information delivery system.

2.1 Authoring

Reuse product data.

Your engineers spend hundreds of hours developing high-quality digital designs of your products. Wouldn't it be great if you could use your product design files in your service manuals? Since a picture speaks a thousand words, you can improve the quality of your publication, while reducing the need for lengthy text descriptions, by reusing your 3D design graphics. At the same time, you can lower authoring, translation, and publishing costs by improving the reuse of existing information and automating many of the labor-intensive parts of the publishing process. By giving your technical publications team the right tools to make them self-sufficient, you eliminate the drain on engineering resources that who typically must spend hours working with illustrators and authors to create diagrams and illustrations needed for service instructions.

If you create illustrations and animations from, and linked to, your CAD data, you can ensure that illustrations, tables and parts lists—and all service documents using them—will automatically update when the product designs or configurations change. When you link service information to product designs and configurations, you can automate the change management and approval process to ensure that service information remains up-to-date with the product. Technical data, such as parts lists, specifications, and tolerances, is critical for the successful completion of a service or maintenance task. Since this information changes frequently, it is impractical for the authors to manually enter and update each publication every time the data changes. Instead, you can enable authors to dynamically link parameters to information stored in databases and other business systems. In doing so, you ensure that all your technical publications change automatically every time you update your technical data.

Author structured, reusable components.

The key to automatic delivery of service information is 'componentization'. By splitting your service manuals into reusable components that are big enough to be worth managing separately, yet small enough to reuse in multiple instances, you can create a single source of information, so that making just one change can update multiple documents at once. A single source also leads to the reduction or elimination of redundancy, which enables you to achieve a number of gains: you reduce translation costs to only those information components that have changed; you ensure the integrity and accuracy of your information; and, most importantly, you standardize your service procedures.

Componentization is also critical for personalization. Creating information in smaller components allows you to set up a system to assemble and reuse those components dynamically to suit the needs of various audiences. To make componentization work, the components must be interchangeable, and they must fit correctly into the publications that contain them. For example, you may choose to create two different types of components such as 'warnings' and 'topics', where warnings fit into topics and topics fit into service manuals.

Create reusable templates.

Another key to automatic delivery of service information is having an absolutely consistent structure and data format. While the formatting of an individual service manual suggests a structure that's obvious to anyone looking at it, authors freely alter structure and formatting to suit their circumstances and tastes. The result: documents of the same type have similar but not identical formatting, and similar but not identical structures. These inconsistencies, however small, make automation impossible.

Additionally, there are industry standards and best practices for the presentation and delivery of different service information types (e.g., Procedures, Diagnostics, Hazard statements, Fault Isolation Trees). Data models not only describe how data should be represented, and they also enforce the structure and integrity of documents. By implementing a standard data model for your service information, you ensure that all your service manuals contain the required data, and are formatted to comply both with industry best practices and with your internal service guidelines. Additionally, standard data models and templates can automatically generate common publication information, such as tables of contents, lists of figures, and indexes, which simplifies the authoring task and improves the consistency of service documents.

2.2 Automated publishing and delivery

So far, we discussed the best way to structure information for automatic delivery to target readers. It is critical to select a solution that can fully leverage the benefits of automation and link to your various business systems. During the authoring phase, you linked documents to databases and business systems, as well as product designs and configurations. The service information delivery system that you select must be able to automatically pull information from these sources at the time of publishing. Since you need to deliver information both electronically (for technicians who require electronic access to information) and in print (for situations where a computer is unavailable or impractical to use), the system needs to transform the data to each appropriate media. If you support your products internationally, localized content may vary in length and format, which means that your system must automatically adjust and format content for publishing in each local language.

If you deliver content electronically, you can deliver information in a granular form, so that your technician reads only the specific service procedures for the product he/she is working on. Electronic delivery enables readers to search and interact with the text, illustrations, and animations. Readers can zoom, pan, and rotate technical illustrations, and view entire animated procedures. However, since it is unlikely that all your service locations have high-speed Internet access, you need the added capability to provide service information on portable media, such as CDs and DVDs. And, since your service procedures change frequently, you must be able to distribute changes and updates over the Internet to avoid the need to burn, distribute, and install new sets of CDs for every minor procedure change.

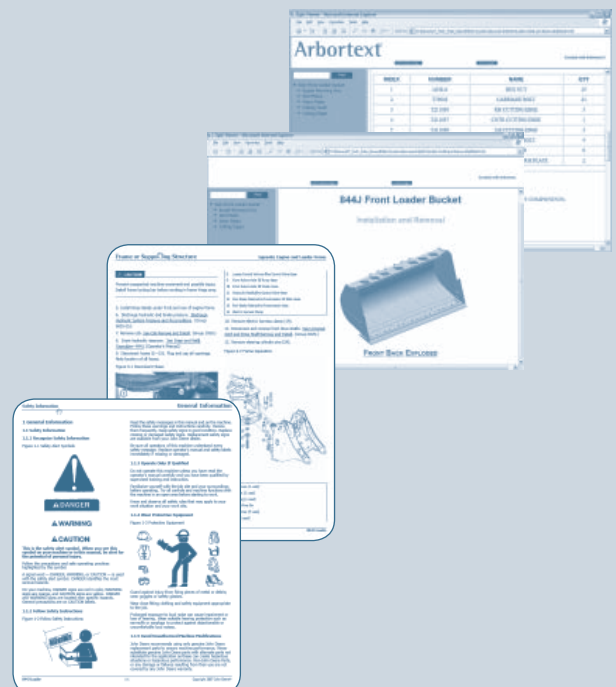
2.3 Benefits of using a Content Management System

Content Management Systems (CMS) manage the publishing process and protect your content. Even if you have a small team of authors and publication managers who diligently follow a set of predetermined rules for storing and updating service content, a CMS can add significant benefits. A CMS ensures that only authorized employees have access to content (to read or modify service topics). It manages the different versions of service procedures (version control). It manages relationships between different procedures and topics (which components are superiors, subordinates or peers, and which components are related in some other way). It determines which versions of components belong to which versions of assemblies (configurations/effectivity) and which combinations are permitted (options & variants). And lastly, it manages the review, approval, and change processes.

Since the primary purpose of service information is to assist after-market support employees in properly maintaining and servicing products, you need to ensure that your CMS is capable of managing the relationship between product information (designs, configurations, etc.) and the associated service documentation. The CMS needs to bridge the gap between technical experts (engineers, service delivery experts) and the authors of service information. The CMS should automatically notify publication managers if there are product or service procedure changes that require documentation updates, and it should have the capability to automatically pass technical information needed to update the associated service content. The proper CMS can help you match service procedures to product configurations, automatically configure procedures and entire service manuals, decide what changes to propagate and what not, and decide when to republish.

PTC Solution for Service Information Delivery: An Out-of-the-box Solution for Creating and Delivering Service Information

As with automating any process, an automated publishing solution requires design and implementation. PTC has developed an application of its dynamic publishing software that minimizes or eliminates this initial step, allowing you to get started with a fraction of the typical cost and time. The PTC solution for service information delivery—an application of the PTC Product Development System—combines mechanical, electronic, and software designs, illustrations and images, text, and tabular data into rich, interactive service documentation that automatically updates when a component is changed. The solution dynamically assembles the information components and automatically formats to print, Web, digital media such as CD-ROM or DVD, and other electronic formats such as online help. Its specialized content management capabilities enable you to manage the process of creating, delivering, and updating service information. The solution supports standard service information types (Procedures, Diagnostics, Hazard Statements, Fault Isolation Trees) and automatically generates common service manual parts (e.g., tables of contents, lists of figures, indexes). The PTC solution for service information delivery includes an interactive electronic delivery application that enables technicians to search or browse for specific topics and interact with the embedded text, illustrations, or animations.



3 Deploying an automated service information delivery solution

Once you have decided that you need to improve the quality of your service information, the next question is: where do you start? Can you deploy the solution incrementally, or is it better to deploy the entire system starting from the very beginning? What is the benefit of deploying only a part of the solution? The answers to these questions will vary based on your specific situation and objectives.

In order to make the best decisions, you need to assess your current process and prioritize requirements for the new process. (See Table 2 for a sample list of goals) It is recommended that you choose a set of high-priority objectives and ensure that Pphase 1 of your project fully addresses these priorities. Once you identify your goals, quantify the value of improvements in each of these categories. (Table 3 provides a sample list of improvements you can expect from deploying an automated service manual publishing and delivery solution.) Next, you should plan the new process, then plan and execute deployment, and finally, ensure widespread adoption of your solution.

Adoption Roadmap

If you choose to deploy the service information delivery solution incrementally, you should begin either by improving the quality of technical illustrations and animated content in your service materials, and/or by automating the production and delivery of one specific type of service information (e.g. service manuals), or both, if feasible.

1) Enable Product Data Reuse

The first step of the adoption roadmap – automating the process of creating and updating technical illustrations – is the least disruptive to your current process, and provides tremendous value. By making your technical illustrators self-sufficient and enabling them to reuse product data to create technical illustrations, you reduce the drain on your engineering organization and on other technical resources. You also ensure that all graphics embedded in your service information can be updated at the click of a button.

2) Automate Publishing and Delivery

A more disruptive, yet critical process change is to automate the process of creating and publishing technical information. If you are unable to improve the quality of service information, all other improvements to the process of managing and delivering information will yield limited benefits. By introducing a structured, rigorous authoring process, you enable automatic publishing and delivery of your service information.

Table 2: Sample Objectives

- Improve field service response time
- Improve customer service response time
- Reduce number of calls/visits required to complete a service
- Reduce call volume to call center
- Reduce time required to complete service
- Reduce service errors
- Reduce support costs
- Lower the cost of creating, deploying, and maintaining service information
- Increase sales of spare parts and services
- Improve customer satisfaction

Table 3: Sample List of Benefits *

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 call center volume by 10%
- Improve spare parts orders by 5%

Preparing and Deploying Service Information Benefits

- Reduce manual formatting effort by 35%
- Eliminate updating of redundant information (30%)
- Improve author productivity by 25% by reusing content
- Improve time it takes to create animated or interactive content by 58%
- Eliminate desktop publishing costs (30% of overall publishing cost)

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

3) Integrate Processes

Once you have improved the process of creating and delivering service information, your next logical step would be to automate your configuration, delivery, and change management processes by implementing a content and configuration management solution. At this stage, you formalize the processes you instituted and electronically enforce standard business rules, such as version control, access control, review/approval and change management workflows, configuration, option and variants management, etc.

4) Expand the Solution

After you've successfully implemented your information delivery solution for one specific information type (e.g., service manuals) –and just as important, ensured its adoption, you can start thinking about automating the delivery of other important service information (e.g., spare-parts catalogs, user guides, etc.). During each step of the way, be sure to properly train your organization on the new solution and the new processes. Even the best software solution will deliver limited benefits if your employees are not using it correctly.

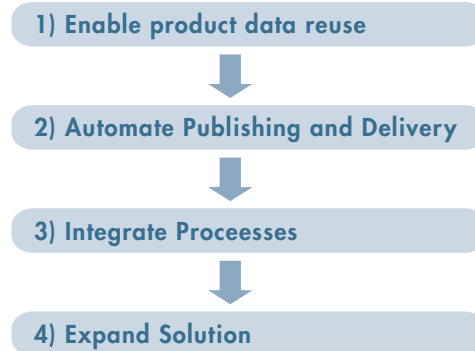
Finally, it is important to remember that all process changes are disruptive to some degree. No doubt, there will always be people that are resistant to change, usually because they are used to the old process, regardless of its inefficiency. Therefore, before starting any software implementation project, it is important to establish an executive sponsor who is willing to resolve differences and help drive the project. Your team needs to establish clear objectives for the implementation project and stay true to them. Just the same, in almost every software deployment project, you'll discover new efficiencies, and add additional requirements to the initial project during implementation. By continually reviewing your objectives you'll be reminded of the primary goals of the solution, which will enable you to weigh the pros and cons of adding new requirements to the plan.

At PTC, we offer years of experience deploying service information delivery 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.

4 Summary

Four basic capabilities will ensure the success of your aftermarket support strategy: understanding the customer, understanding the resources available to maintain the product, understanding the product, and understanding how to maintain the product. Of all four capabilities, 'understanding how to maintain the product' is most often overlooked. Yet without this capability, you will continuously struggle with critical service performance issues, such as inaccurate diagnostics, lengthy repair times, and low first-time fix rates that ultimately lead to increased asset downtime and low customer satisfaction.

Adoption Roadmap



By deploying an automated service information delivery solution, you can ensure that your technicians and other service resources get the right information—and only the information they need—to perform their job efficiently. An automated service information delivery solution allows you to improve the process of creating, publishing, and delivering information. What's more, you can structure information in standard reusable components, create reusable templates for common service information types, reuse product data to create associative illustrations and animations, and automatically link service information to the actual products delivered to your customers. As a result, you can then automatically tailor and deliver information based on the product under service, your service environment, and your technician's skill level. Since the success of any new solution hinges on your organization's capacity and commitment to using it, it is important to ensure a pragmatic adoption approach that will help you overcome any cultural and geographical challenges that companies often face when deploying new solutions.

The PTC solution for service information delivery automates the process of creating and delivering service information. 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 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 aftermarket support organization. Learn more about PTC at www.ptc.com.

To learn how Arbortext Service Manual Application software can help your company create and deliver high-quality product information, please visit our website at: www.single-sourcing.com/products/arbortext/

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