

# BEST PRACTICES: DOCUMENT GENERATION TOOLS

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PeerPaper Report



BASED ON REAL USER REVIEWS OF WINDWARD

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# ABSTRACT

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It can be challenging to produce documents from varied data sources. The process typically involves creating numerous versions of similarly-templated documents, each with unique information. The creation of lengthy reports is one example of document creation that can be especially burdensome. Document generation tools reduce technical barriers common to working with complex data sources while removing many of the error-prone and time-consuming aspects of the work. Each organization will need to adapt the tool to its unique specifications. At the same time, document generation users benefit from systems that leverage familiar environments and best practices. In this paper, real document generation tool users from IT Central Station recommend proven practices based on their experiences with the Windward document generation tool.

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# INTRODUCTION

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Producing documents can be a challenge in corporate operations, especially when a document must incorporate data from multiple sources. Without the right tools, it's time-consuming and error-prone. Document generation software offers a solution. It automates the majority of the steps required to produce a written document that incorporates external data like transaction histories, account information and so forth. Document generation is usually put to use in cases where the same basic text is repeated many times, but some customized content inside the document will vary in each version. Examples include legal documents, offer letters, insurance policies, mortgage documents, human resources correspondence and so forth.

Document generation tools use repeatable templates tagged to incorporate data from outside data stores. It's an established but evolving category. Real life experience reveals that users of document generation tools benefit from learning about best practices. Each organization will need to adapt the tool to its unique specifications. This paper highlights best practices for document generation software. Insights come from members of IT Central Station who describe their experiences with the Windward document generation tool.

## Document Generation: An Overview

A document generation solution typically contains two elements. One creates document templates with tags for the insertion of custom data. Much like a mail merge, the template interweaves pre-written language with unique variables. Thus, when the final document reads "Your account, number 21513, earned a return of 4% last quarter, with the Morningstar 2025 Fund showing the highest growth," the template actually displays "Your account, number <AccountNumber>, earned a return of <QuarterlyReturn> last <TimePeriod> with the <HighestFundEarner> showing the highest growth." The template connects to the database through integration software, which is the second element of the document generation solution. Figure 1 offers a simple reference architecture for a document

generation solution and workflow.

The business appeal of document generation solutions becomes apparent when one analyzes the costs of information workers performing repetitive tasks. Without document generation, the process of creating a document will be largely manual. Even if the process is "fill in the blanks" on a pre-existing document template, it will be far slower than an automated approach. It will also be quite a bit more expensive.

The full cost of information worker time is much more than just an hourly salary. After factoring in overhead, benefits and taxes, a worker earning \$28 per hour actually costs \$59.49 per hour.<sup>1</sup> Thus, if it takes half an hour to fill in a document template by hand, that's a \$30 expense. In contrast, with a document generation tool, the same employee might be able to create hundreds of documents in an hour—costing pennies per document.

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<sup>1</sup> <https://www.e3seriescenter.com/modern-electrical-engineering-blog/how-to-calculate-your-employees-cost-with-overhead-costs>

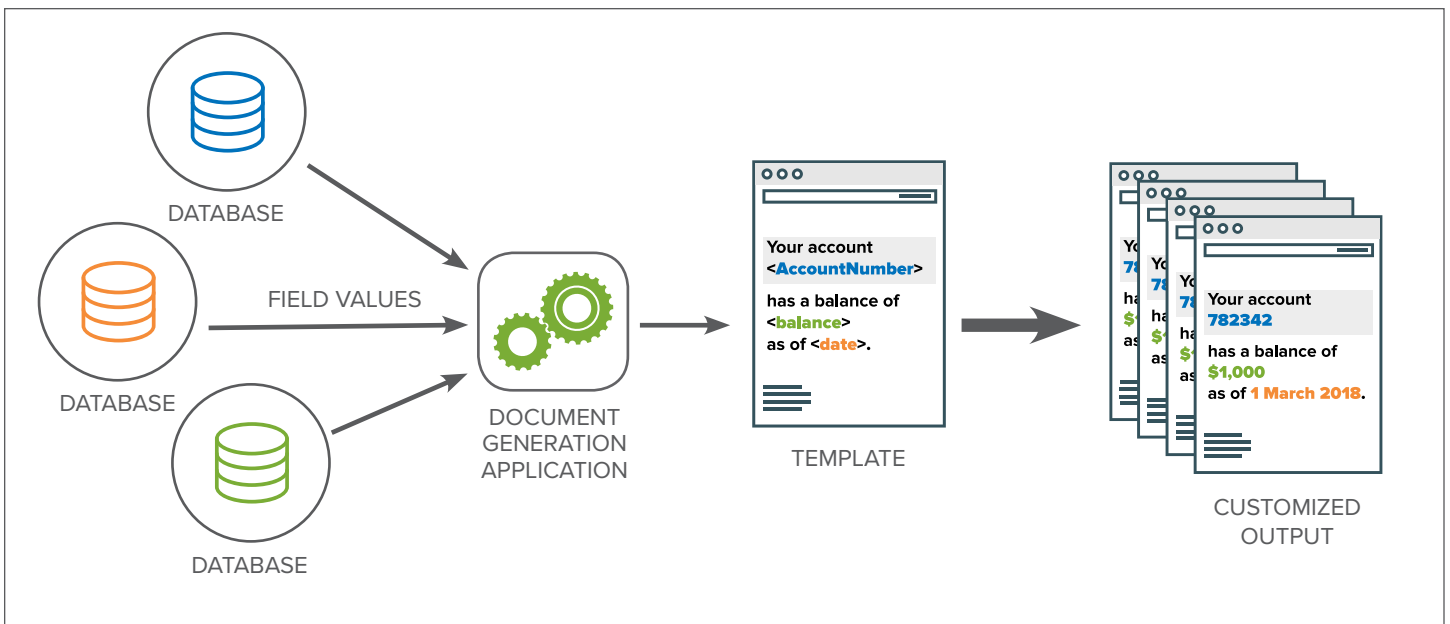


Figure 1 - Document generation reference architecture.

## Document Generation Best Practices

Each organization that adopts document generation will have to find its ideal way of using the technology. The experience of others can be instructive, however. Users of the Windward document generation solution on IT Central Station offer a number of best practices and recommendations. These include adapting the solution to the scale and scope of the workload, leveraging the Microsoft Office suite, giving users control over design, and more.

### ADAPT TO SCALE AND SCOPE OF REPORTING VOLUME AND VARIETY

The choice of a document generation solution—as well as its configuration—should factor in the volume and variety of document creation being contemplated. An organization that generates a handful of 500-page reports a month is going to have different requirements from a company that produces a thousand two-page reports every day. The scope of data included in the document should also influence the way a solution is adapted for use. Other important factors include security around connecting to sensitive data sources and the ability to scale across multiple processor cores and multiple servers in high-volume applications.

A [COO/VP Operations & Software Exec](#) at a tech services company with over 50 employees noted, “Really confirm what your volume is going to be, and pick the solution that best meets your volume needs. If you’re close to the higher volume level, that’s what you should pick because that will reduce any kind of interruptions.” A [Product Management & Owner](#) at a financial services firm added, “We are multi-tenant based, so we need to be able to sustain high volume without sacrificing page rate. We are still in the process of optimizing this aspect, but our current benchmark tests should be enough for the short- and mid-term.”

An [Information Technology Manager](#) at a healthcare company with over 50 employees described a large-report perspective, describing how his organization generates 200-page reports for hospital accreditation. He said, “We send surveyors into hospitals who then survey according to certain standards, and they write up a very large report. It’s those reports that go out to the member organizations, so our use case is very large reports, but not necessarily a large volume of them.”

The number of users is also a useful data point to keep in mind when selecting and setting up a document generation solution. The [Information Technology Manager](#) at the healthcare company explained, “We ran multiple reports concurrently, to the volume that we’re likely to see, and had no issues. Again, our workload is

quite unique in that it's not volume-based. We only have 800 potential users."

## KEEP OUTPUT PERFORMANCE IN MIND

No one likes waiting by the printer or staring at a progress bar on the screen. Output performance can be a big issue, especially in a high-volume document generation environment. An [IT Manager Applications](#) explained, "Our output performance requirements, when making our decision regarding a solution, were more than met by the product offerings."

A company [CTO and EVP](#) simply put it, "Output performance is very important." A [Web Specialist](#) shared an insight into how users approach this issue. He said, "We connect to a SQL database using JSON and output using Word, Excel, and PDF. Our output performance requirements, when making our solution decision, were integration with MS Office suite and the ability to create documents and reports. We did build a custom solution and it was very limited and restrictive. We needed something with more options that integrated better with MS applications."

## TAKE ADVANTAGE OF THE MICROSOFT OFFICE SUITE

Given the prevalence of the Microsoft Office suite, it makes sense that compatibility with Office would be a best practice for document generation solutions. Users like being able to leverage the extremely mature layout and design features of the Microsoft Office applications and then adding the data connection capabilities to the already powerful tool. The result is a powerful combination that functions in a friendly and familiar environment.

Indeed, many users of Windward cited ease of use and integration with Office products as a key consideration in selecting and configuring the tool. For instance, a [SVP, Product Development and Quality Assurance](#) at a tech company valued "the fact that it uses Microsoft Word and Microsoft Excel as base templates, so when you generate, it's easy for clients to upgrade, and maintain, and generate out either a PDF or an actual Excel spreadsheet."

An [Information Analyst](#) at a healthcare company

with over 50 employees praised Windward because "designing report templates is straightforward with the standard Microsoft Word package." A [Junior Data Systems Analyst](#) at a recruiting/HR firm noted, "The template designer is by far the best feature within Windward Autotag. You build the reports in the Microsoft Applications that you already know, and simply add tags which draw the data in where you need it. The learning curve is very low due to this and also serves as a great way to introduce our junior members to SQL queries."

## GIVE USERS CONTROL OVER DESIGN AND LAYOUT

Document generation tool users are most productive when they can control the design and layout processes. As the [Product Management & Owner](#) at the financial services firm put it, "The ability for users to have design and layout control is also critically important. Without this ability, procuring report designs would represent a huge bottleneck. Report design tools also enable upsell opportunities for customized reports, with quick turnaround times." A [.NET Developer - Data Analyst](#) added, "It saves our time in designing reports. It creates better layouts and performance. We already have more than 20 templates."

**“The template designer is by far the best feature within Windward Autotag. You build the reports in the Microsoft Applications that you already know, and simply add tags which draw the data in where you need it.”**

Control over design emerges as a selection factor for document generation tools. The company [CTO and EVP](#) explained, "It is very important for users to have design and layout control. We create a lot of custom reports for our customers, so flexible and ease of use are critical." A [Business Technology Analyst](#) concurred, saying, "The ability for users to have design and layout control is also very important for us. This is why we chose Windward. Graphics, design/layout control, and flexibility are key reasons we chose this product."

End users should be independent in their use of the document generation tool. This makes them productive.

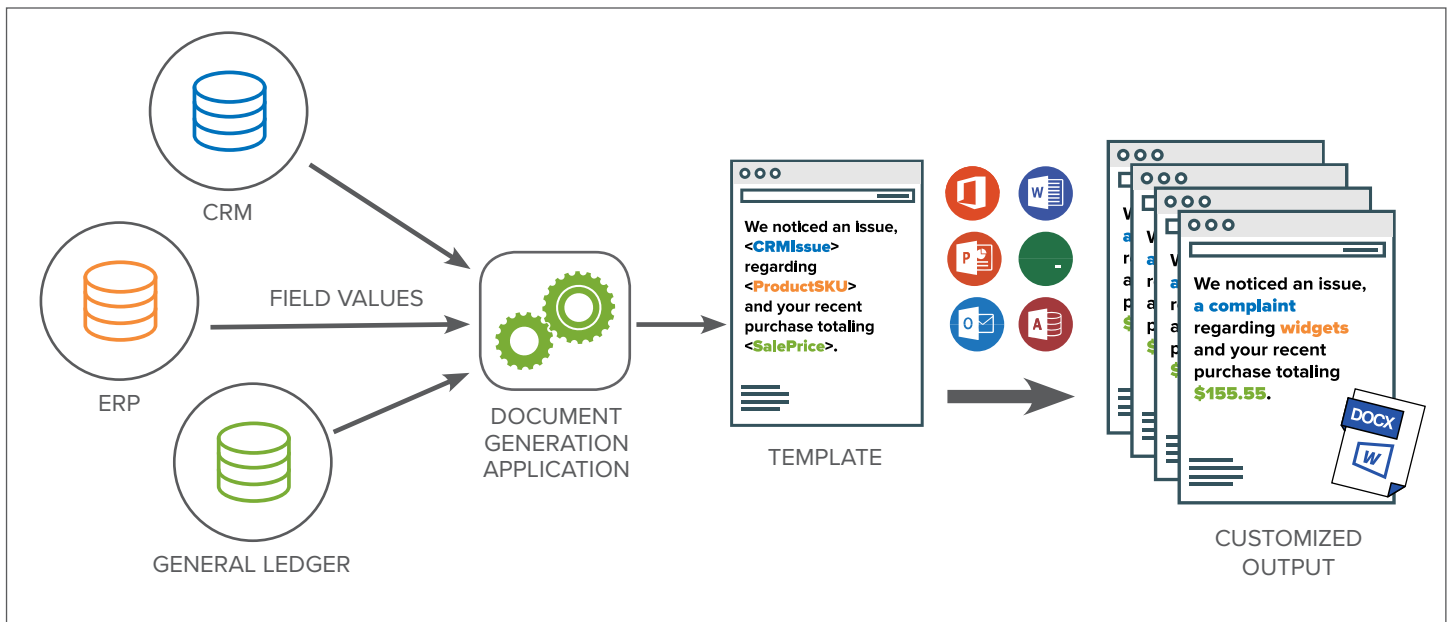


Figure 2 - A best practice is to work with a document generation solution that integrates with multiple core systems like CRM and ERP as well as with the Microsoft Office Suite.

It also results in less strain on IT resources. As the [IT Manager Applications](#) at an organization with over 1,000 employees explained, “The ability for users to have design and layout control is very important because it allows them control over the design and layout of their reports, without the help of IT.”

## SEEK FLEXIBILITY IN TEMPLATE DESIGN

Document requirements evolve over time. There’s no stopping the process. Thus, document generation users like solutions that offer flexibility in template design. The [Business Technology Analyst](#) said that her tool’s “graphics, design/layout control, and flexibility are key reasons we chose this product. It provides very good-looking, flexible, and nice reports.” The [CTO and EVP](#) added, “It is very important for users to have design and layout control. We create a lot of custom reports for our customers, so flexible and ease of use are critical.”

The need for flexibility may inform the build vs. buy decision as well. A [Head of Development](#) at a tech company noted, “We used an in-house solution which was tailored very much to what we required. However, it wasn’t flexible enough to provide us with what we needed without lots of code changes. Therefore, we looked for alternatives.”

## BE ABLE TO EASILY CONNECT TO MULTIPLE DATA SOURCES INCLUDING CUSTOM OBJECTS

Document generation relies on data integration. The more data sources that can be connected with the template, and the more easily the integration can be accomplished, the better the document generation process will go. A [Senior Software Developer](#) at a tech company with over 50 employees spoke to this best practice, saying he valued Windward’s “ability to harness all the power of standard Office software (Word & Excel) to produce rich reports while at the same time easily connecting to my data sources. Very visual way of finding and linking data. Simple integration with .net and Java.” The [Head of Development](#) at a tech company added, “It’s a good solution, which allows you to build reports quickly over multiple data sources.”

The [IT Manager Applications](#) at an organization with over 1,000 employees praised Windward’s “document generation based on a structured format originating from different source applications, such as CRM, WMS, MES, and ERP systems.” He also noted that its “integration with MS Office is an advantage, creating a better user experience.” A [Sr. Consultant](#) at a tech services company with over 50 employees offered, “This tool is great for tagging documents from different data sources such as XML, SQL, and other databases.

The tagging wizard is easy to use and helps with selecting the tags and implementing logic such as conditions, filtering and sorting.”

## LEVERAGE DATA AND LOGIC CAPABILITIES

A best practice recommended by Windward users is to take advantage of data management, logic and tagging capabilities that go beyond basic data insertion. Windward lets users conditionally change and manipulate data as it is being merged into the documents. For example, it’s possible to add up a set of values. A more complex example might involve showing different content based on conditional logic, e.g., investment fund recommendations based on risk values.

To this end, the [Sr. Consultant](#) at a tech services company, who uses Windward AutoTag designer to build reports formatted in Word, is able to create reports that vary according to personal information in the database. He said, “This tool is great for tagging documents from different data sources such as XML, SQL, and other databases. The tagging wizard is easy to use and helps with selecting the tags and implementing logic such as conditions, filtering and sorting.”

## TRAIN YOUR USERS

Document generation tools take training. The [IT Manager Applications](#) declared, “The success of the product hinges on training the key users in using all functions of the product.” In some cases, self-study may be adequate, but even experienced IT professionals admit that document generation takes some time to master. A business [Co-Owner](#) said, “If you like to play with software and learn it for yourself, you would be just fine doing as I did, and going through the Wiki pages. But if you have immediate project needs, I could see that consulting and training would be extremely useful for it. It took me, probably, three or four months to get my reports where I really wanted them, and learn all the nuances of the software. But I like to play with software and I wanted to learn it that way. That was a choice I made.”

Windward offers free training, which several users on IT Central Station appreciated. The [SVP, Product Development and Quality Assurance](#) at the tech company noted, “For somebody to make reports or modify reports, there’s a plug-in called AutoTag, that

goes into Microsoft Word and Excel. It’s somewhat on the technical side, so somebody that doesn’t understand database structures might not be able to use it very well. It helps to have a little training, but they offer a lot of free training sessions, which helps.”

## DO POCs AND TRY BEFORE YOU BUY

The variable requirements and customized nature of document generation makes a “try before you buy” approach a recommended practice. The [Information Technology Manager](#) at the healthcare company put the issue into perspective by saying, “Word of advice is: Try before you buy, give it a good run, see if it actually does meet all your needs. If something is not right, let them know, see if it’s something that they know about, or if it’s something that’s on their future roadmap to address.” He then added, “But we ended up going with Windward really for the level of support we got from them during our proof of concept, and also the printing as well. They were really helpful with the proof of concept.”

**“It completely offloaded a needed component of our platform, providing tools that we would have had to develop internally. We didn’t need to reinvent the wheel for a part our business that is ancillary.”**

## BUILD VS. BUY? REAL USERS WEIGH IN

Solutions for document generation range from simple to highly sophisticated. Some organizations, looking at their requirements, may opt to build their own. Windward does provide code so document generation functionality can be seamlessly integrated into existing applications. In general, however, users of proven technologies share their appreciation for having decided to buy rather than build. For example, the [Product Management & Owner](#) at the small financial services firm said, “It completely offloaded a needed component of our platform, providing tools that we would have had to develop internally. We didn’t need to reinvent the wheel for a part our business that is ancillary.” A [COO](#) at a tech services company offered



a similar perspective, saying, “We previously used our own solution based on iText but wanted something easier for non-developers to use.”

The [Co-Owner](#) of a business considered building a custom solution, but, as he said, “The cost of producing reports of this complexity, and building it myself from scratch, would have taken me three to possibly even 10 times the amount of time it took me to create these templates. And instead of creating them myself, I would have had to employ developer resources to create them. The cost would have been quantum-fold more than what we’ve invested in the Windward solution.”

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# CONCLUSION

Document generation is a powerful capability if it’s implemented according to best practices. Information worker time is expensive. Automating the creation of repetitive documents can lead to substantial operational savings. Document generation solutions make this happen, but each organization needs to identify what it will take to attain best results with the technology.

According to document generation users on IT Central Station, best practices for selecting and implementing a document generation tool include template flexibility, end user control over design and layout, integration with multiple data sources and compatibility with the popular Microsoft Office suite. Sophisticated tagging helps create documents that take advantage of potential data customization. Training is recommended, as is a “try before you buy” approach. With these practices in place, it’s possible to achieve information worker productivity and cost-effective production of documents.

# ABOUT IT CENTRAL STATION

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The Internet has completely changed the way we make buying decisions. We now use ratings and review sites to see what other real users think before we buy electronics, book a hotel, visit a doctor or choose a restaurant. But in the world of enterprise technology, most of the information online and in your inbox comes from vendors but what you really want is objective information from other users. IT Central Station provides technology professionals with a community platform to share information about enterprise solutions.

IT Central Station is committed to offering user-contributed information that is valuable, objective and relevant. We validate all reviewers with a triple authentication process, and protect your privacy by providing an environment where you can post anonymously and freely express your views. As a result, the community becomes a valuable resource, ensuring you get access to the right information and connect to the right people, whenever you need it.

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## ABOUT WINDWARD

For over 10 years Windward has been making software that allows business users and developers to create data-powered documents of all types including: forms, proposals, statements, reports, presentations and more. Windward's novel approach allows users to "tag" elements within standard Microsoft® Office documents to be dynamically replaced with data from common data sources when output. Windward's solutions have become the leading choice for developers adding reporting and document generation capabilities to their applications in over 70 countries around the world.

Windward's solutions include scalable high-performance output engines written for .NET, Java, and RESTful applications coupled with design environments that include Microsoft Word, Excel, and Powerpoint, and a fully browser-based document design environment.

Windward's customers regularly report savings well over 50% in template design and production costs. And, their business users enjoy being empowered to design and edit templates without having to involve development resources. Windward's "drop-in" code libraries allow developers to add best-in-class reporting and document generation capabilities to their applications in less time, by orders of magnitude, compared with other platforms or in-house development.

Proudly located in Boulder, Colorado, Windward is dedicated to making reporting and document generation more effective and accessible to business users and developers everywhere.