

SOFTWARE SERVICE FOR OPTIMIZATION OF THE WORK PROCESSES IN LAW FIRMS

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Abstract – The paper presents the stages of creating a software service for optimizing law firms' work processes and examines its operation's effectiveness. The relevance of development is due to the need to increase the efficiency of work done in conservative spheres such as the law segment.

The authors focus on considering the essential components of the designed system. The main operation algorithms have been presented, and the effectiveness of their development has been proved. A comparison has been made, and the prospects for developing optimization services have been emphasized.

Index Terms: .NET Core, Blazor, law firm, CRM, process optimization

I. INTRODUCTION

Today, in 2022, we still have many firms and working spheres that we can mark as conservative. Their products, services, and work are done the same way as many years before and, possibly, will be done many years later. The fundament of the created service is to show that even “conservative” industries can be upgraded to a new level. Many processes and routine work can be done more quickly [1] or passed to computer systems.

Let's see what is happening in the law firm's background. Most law firms start small and, over time, grow up to become firms with many attorneys and administrative assistants [2]. Small or large, there is a critical need for a centralized platform to ensure effective communication within and between the law firm and its clients.

A specific approval and review system becomes essential if the paralegal is always swamped with work, and a minor mistake could cost the company a fortune. Workflow software for law firms enables lawyers, associates, and paralegals to stay focused on their work [3]. The workflow software automatically sends notifications [4] for approvals and timely reminders to get the job done.

Implementing the optimization service first needs a good knowledge of the industry [5] it's built for and the people operations and interactions required to do the work.

Secondly, good architecture [6] is required to develop this system. The proper selection depends on how reusable and extendable some parts of the system will be in the future. The second important part is good UI that would be easy to use, take less time to make any actions, and be precise enough for the person who has never used the system to acquire the basis of its usage.

II. OPTIMIZATION PRINCIPLES OF LAW FIRM WORKFLOWS

Looking into law firm workflows, we can highlight some essential points using of which can significantly increase the efficiency of work:

1. Helping Attorneys Automate Tasks by Themselves

An ideal software designed for law firms will let you create your workflow without coding knowledge. The lawyer can initiate a document request through the template found in the software.

The long list of processes that follow include

Acquiring internal approval from paralegal service

Logging the date and other information

Follow-up receipts and

Organizing the finalized documents

All of the above should be handled digitally with the help of workflow software. It will be fully automated to avoid any delays or loss of documents due to manual mishandling.

2. Speeding Up Approvals

Everything about a law firm revolves around approval. Be it submitting client documents, creating a subpoena with the necessary information, and the documents you will produce during a court trial must be approved by the senior attorney before it passes through.

Instead of manually handling tons of paperwork that could get easily lost or damaged, it can all be done online.

An added advantage is that if the senior legal advisor, client, or critical stakeholder is in a different location, work can still be done using the web-based software. All the documents are conveniently and **securely stored on the cloud** providing easy access for reviews and final approval.

This method will save lots of time and remove the hassle of sending emails back and forth.

3. Connecting People and Making Use of Existing Resources

A law firm consists of different resources, including

Paralegal

Associate Attorneys

Partners and

Clients

Everyone has to work in coordination to achieve the final result. Each case will have a specific number of files to be paired together, maintained, and submitted when required. The questionnaire filled in by the client should be kept safe and secure.

With the help of workflow software, you can finally keep track of multiple documents in one place. No need to create chaos among the firm's employees and attorneys, but efficiently use the existing resources.

Assigning tasks based on individual capability is more accessible, and online submission and review of documents promote collaboration and faster decision-making. Each stage is essential to winning the case, and an organized office paves the way.

4. Creating a Professional Work Atmosphere and Extract the Best Out of Each Employee

Every full-time employee you hire can work only for specific hours in a day, and putting in all the extra hours doesn't necessarily increase productivity. So, making the most of the employee's time at work is all the more critical.

A professional work environment with efficient systems helps boost employee morale and confidence. With millennials joining the workforce soon, it is imperative to have web-based productivity software that works on all devices, especially smartphones. Employees expect work software to be fully integrated with social media capabilities, such as the ability to share content internally with co-workers and clients.

A company that uses powerful workflow optimization tools and related software to streamline its business will create a positive outlook among its employees.

Besides, the tools also pave the way for better task management, reduced wait times, and approval rates. It will help you attract talented attorneys, interns, and skilled administrative assistants to join the organization.

5. A Much Smaller Team Can handle administrative Tasks

Be it a startup or a giant law firm, you need not spend thousands of dollars to have a sizeable administrative team. Instead, investing in workflow software will help you achieve the same with fewer people.

Internal work such as document maintenance, invoice clearance, and other non-billable tasks to the clients can be completed by the staff in a much shorter time.

You can consider hiring just the minimum number of admin people, as the software can help you care for the rest and make everyone more efficient.

6. Client Billings and Database Management Made Easy

Converting the bills, you send to clients into cash fastest will help ensure smooth operations.

The accounting or administrative team can add services to the bill at every step. It saves time creating an invoice once the entire lawsuit is over. Even when done, the chances of missing out on a service are much higher.

Faster invoices lead to quicker payments, and all these contribute to the efficient functioning of the law firm.

III. SYSTEM COMPONENTS

The software service for optimizing the work processes in a law firm has extended functionality that must represent and replace most all task solutions needed to do the work. The program consists of several key components:

- Order processing component;
- Customer communication component;
- Document processing component;

- Logistic service component;
- Data processing component;
- Separated data storage;
- Analytical component;
- Payment component;
- CEO component;
- Module for routine tasks of the system.

When the inner system user logs in – he can see a dashboard with all orders in the specified periods and their statuses. Also, there is a pack of department-specific or simplified dashboards to show the users only appropriate data.

The service also has an administrative component with access to most features specified people could check, and some preferences or instructions can be set.

As a part of analytical components, an accountant's toolset provides them with an access to audit and personal sale/working rates.

IV. FORMULATION OF THE PROBLEMS

Business process optimization is needed to scale a business. When a company grows, the scope of work also increases significantly. Manually issuing ten invoices is not the same as giving 1000—the same situation with other company processes: recruitment to procurement management.

Optimization helps the company:

Increase profit. When routine tasks are organized with the help of special programs, human intervention is needed only in non-standard situations. The company's profits are growing, but personnel costs are not. Employees can get paid more as they manage to handle more clients.

Save time. Some tasks, such as distributing orders between managers, do not bring money to the company but need to be done. Otherwise, all processes will stop. Automating these tasks helps employees do more things that require creativity or are profitable.

Increase the efficiency and accuracy of processes. There are processes in which accuracy is critical—for example, issuing invoices in the delivery service of an online store. It is better to let the user choose the desired post office from the list than to force the manager to take orders by phone. The manager will get tired and make a mistake, the parcel will be sent to the wrong place, and the client will not receive the order on time due to the store's fault.

Improve processes. Some business processes are either very expensive or impossible to handle manually. For example, call all the conference participants for 1000 people and remind them that the conference is tomorrow. But they can send SMS and email or make a call using a robot. Automation brings the company to a new level of personalization in working with customers.

Compare how much easier it is to issue an invoice in an online store if you enable automation (Fig. 1):

Without automation With automation

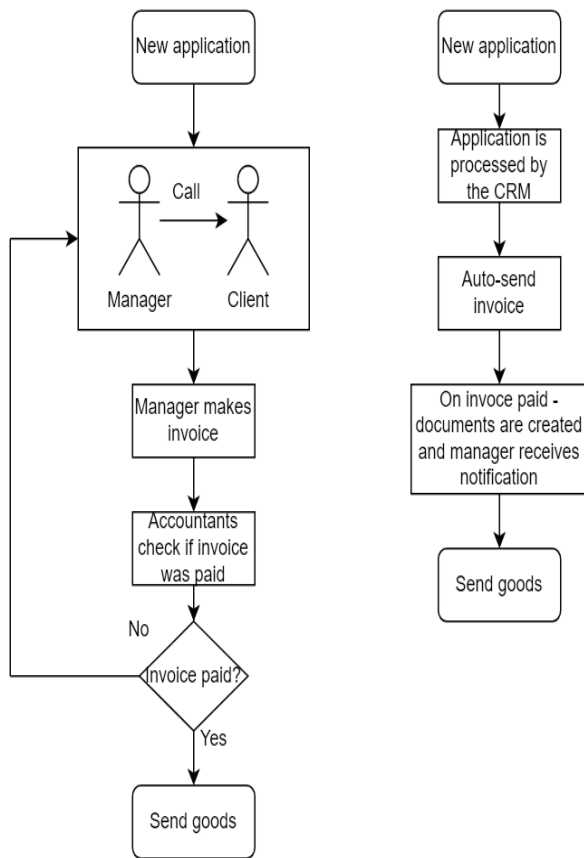


Fig. 1. Simple comparison of business process workflow with- and without automation

V. PURPOSE AND FORMULATION OF THE TASK

The software service's purpose for optimizing the work processes is to become one of our time's time/money-saving technologies. Enterprises that implement this technology should receive significant savings on capital costs and current operating costs due to saved time, the level of security, analytical possibilities, management, and paperwork reduction. Implementing a CRM service should allow organizations to reduce infrastructure investment from the room for clients to the logistics of the completed orders, significantly reducing the needed physical communication and manipulations. The overall result has to be a reduction in costs and process complexity. Also, the order procession lifecycle must be reduced.

The following points should be affected:

- order procession time,
- order number per month,
- sales number per person,
- sales value per person,
- landing webpage visitors,
- customer returns,
- customer reviews on Trustpilot

VI. FUNCTIONS AND FUNCTIONAL PRINCIPLES OF THE SOFTWARE SERVICE FOR OPTIMIZATION OF THE WORK PROCESSES IN A LAW FIRM

As it has been described above, higher – service consists of two major parts: user application (internal) and customer application (external). Each consists of different components, but mostly, external application functionality duplicates internal application functionality but might be a bit truncated. A class diagram of the external application is provided in Fig. 2:

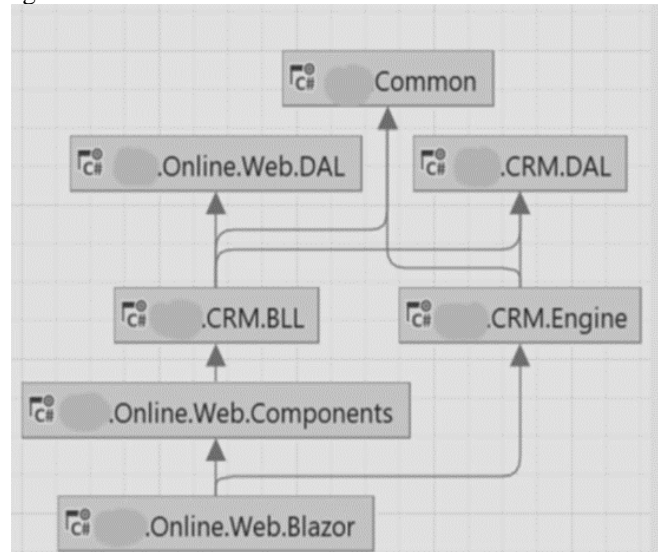


Fig. 2. Software service for optimization of the work processes in law firms' outer application structure

The service is developed according to the extensibility principles. From the beginning of exploitation, the application was getting the support of new documents. Today, the service supports all popular document types and variations. The most popular document categories are:

- will,
- trust,
- lasting power of attorney,
- etc.

Before the introduction of the service, the average time of processing one lasting power of attorney request was about 10-14 days. The document requires a considerable amount of information about the donor and attorneys. Also, a certificate provider is needed, which is often a blocker, as a certificate provider must be someone you know. So, the procession of the lasting power of attorney was full of office visits by the customer to provide and actualize the required information.

With the help of the implemented service, the average time of the lasting power of attorney procession workflow was reduced to 3-5 days, from which most of the time is spent on logistics. The document must be sent to the customer for final validation and back to the office. The government department works with lasting powers of attorney and then the signed copy goes back to the customer.

Even the logistics can get its optimization. The target firm has chosen its logistic services provider already, so the integration (See Fig. 3) of the logistics provider with the software service was done. The law department itself is divided into teams according to the type of documents they are

processing. Each unit has one or two staff members responsible for creating postages for the papers. After integration with the logistic services provider was finished – the time required to develop postages for all orders and provide them to the logistic company was reduced by half, from 3 to 4 – hours to 1-2 depending on the number of orders and the delivery type.

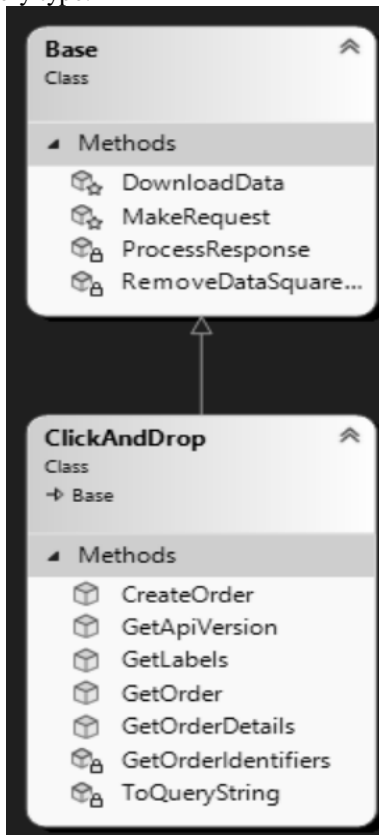


Fig. 3. Logistics service provider integration class structure

Firm's efficiency analytics: the relevant component provides a vast number of metrics, goals, etc. The data is provided as reports and dashboards. Optionally it can be filtered by date, user/team/department. All of this helps the company to work better and provides some feedback that can be used to rethink and rework the workflows to increase efficiency and customer and users' subsection from the usage of the system.

Sale is one of the essential parts of the workflow in any firm. If you can sell your products or services, then you can make money to improve the thing you are selling, increase staff salaries, etc. You are collaborating with leading accounting consultants, the software service for optimizing the work processes with a powerful sales tracking tool. It works in two modes – Basic and Detailed. Both modes show sales, taxes, and compensation personal metrics such as goals, average age, and the number of sales. Add the competition factor by highlighting the top three users by deals with a trophy sign. Still not least, the service also allows tracking sales for not assigned users; e.g., on the sales dashboard are provided users from the sales team, what is usual. Also, there is a line which is called "Other Sales." That row collects all sales that the users made, not from the sales department.

Another critical thing added by introducing the service to the firm is connection and tight cooperation with social media advertisements, metrics, and research analyses. All these together help sales and marketing departments to analyze demands and trends to show appropriate advertisements and involve more customers.

The user application has the same but more comprehensive functionality as the customer application. So, the sales info, orders, and other data should be synchronized. For security reasons, both applications use separate databases. The communication architecture for the user and custom applications can be presented this way (See Fig. 4):

- User application,
- User application Webhook for the data from Customer application,
- Customer application API for the calls from the User application,
- Customer application.

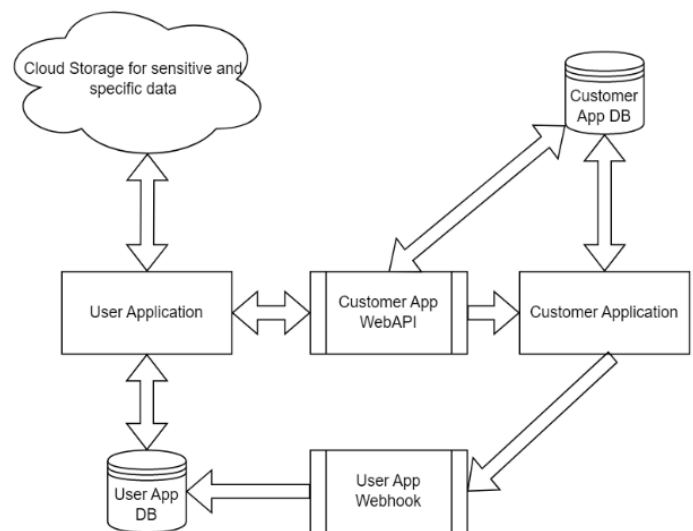


Fig. 4. Software service for optimization of the work processes data flow and synchronization

As we can see in Fig. 4, the customer application has primarily one-way communication, so the user can send data to the customer application and get data back. In contrast, the customer application data can be forcibly modified from the user application or sent there but not be requested from the user application. That is done this way for two reasons:

- security (customer application which anyone can use should not have access to the data in the user application)
- architecture (customer application is more like an add-on for the user application than a standalone service)

The customer application can perform many tasks on its own. Still, in the final stages, 95 % of the actions it supports are executed through data synchronization with the user application so that firm staff can get info about new orders, document requests, data modification, etc.

Regarding data storage, as it has been said earlier, the separation of the applications was done mostly for security reasons. Nevertheless, both Databases use Microsoft SQL Server since the whole service is developed with the use of Microsoft technologies which include:

- .NET

- Blazor
- Entity Framework

Therefore, the objective step was choosing the Microsoft SQL Server and all the leading infrastructures, such as Azure services and Windows Server, for hosting the applications.

Returning to Fig. 4, we can see the Azure SQL Database cloud storage. It is used for two primary purposes: logging and account storage. Logging is pretty apparent – all necessary logs are stored on a cloud database to be accessible and secure. Regarding accounts, for users' purpose and comfort, Microsoft Identity is used, allowing them to log in with one click from any device where their Microsoft account is saved. And Microsoft Identity uses using cloud database, which relays to the Azure Databases (there are a few types of them).

Testing: the system has 93 % coverage with unit tests, each separate component is covered with integration tests, and the user interface for both user application and customer application has its automation tests, launched each morning and after any updates/releases.

Speaking about the resulting benefits of introducing the service: the CEO management and analytics component helped analyze what customers are looking for and adjust the

advertisement campaigns to their needs. That led to significant customer visits, returns, and review points increasing.

Next, you can see the comparison of different values before integrating the service (2020) and after the complete functional introduction (2022). It looks like the following way: sales per person increased from an average of 32 to 41 sales per month or by 28 %, sales value per person increased from 10 120 \$ to 13 860 \$ or by 37 %, landing page visits increased from 38 to 88 visits by 231 %, and customer returns and reviews on Trustpilot improved by 13 % (from 53 to 60 customer returns) and 14 % (from 4.3 to 4.9 stars), respectively. All the provided values were calculated with the formula of average value:

$$A = \frac{\sum_{i=1}^n x_i}{n},$$

A – average value,

n – number of values,

i – value index,

x_i – represents values from the database used for the calculations (see Table 1, where x is represents standalone values of different parameters each month, n is max month's number(12), i is current month's number, A stands for Average - the result of calculation with the formula defined above).

VII. DATA FROM THE DATABASE USED FOR THE CALCULATIONS

Table 1

Average Parameters Values Before and After Software Service for Optimization of the Work Processes Integration in Law Firm

Parameter	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average	Increased, %
Sales Number per Person	2020	24	31	35	36	30	37	38	36	31	34	30	21	32	28
	2022	27	31	35	42	41	47	56	52	44	45	42	30	41	
Sales Value per Person, £	2020	7,6k	9,8k	11,1k	11,4k	9,5k	11,7k	12k	11,4k	9,8k	10,7k	9,5k	6,7k	10,1k	37
	2022	9,1k	10,4k	11,8k	14,2k	13,9k	15,9k	18,9k	17,6k	14,9k	15,2k	14,2k	10,1k	13,9k	
Landing Webpage Visitors	2020	25	28	33	41	41	47	49	56	35	35	40	26	38	231
	2022	47	53	64	57	69	88	126	198	139	93	72	51	88	
Customer Returns	2020	32	28	41	45	61	68	56	72	72	66	51	43	53	13
	2022	51	20	44	47	50	81	88	82	95	54	63	47	60	
Customer Reviews	2020	4,3	4,3	4,1	4,3	4,3	4,5	4,4	4,3	4,7	4,3	4,3	3,9	4,3★	14
	2022	4,7	4,9	5	5	4,8	4,9	4,9	5	5	5	4,9	4,8	4,9★	

VIII. COMPARATIVE ANALYSIS OF EXISTING CRM SYSTEMS

Nowadays, there is a wide range of software products of CRM systems that are pretty popular, among which it is worth highlighting the following: "Sales Creatio," "Bitrix24", "Microsoft Dynamic CRM," "SalesDrive," "KeepingCRM," "AmoCRM," "Megaplan Sales," "Worksection," "RetailCRM" and "IT-Enterprise." Each has its advantages and disadvantages, unique features, and functional capabilities, to

which, without a doubt, the potential user pays attention. It is also worth noting that in choosing any CRM system, it is necessary to consider precisely for what purposes and areas of activity you plan to use. To determine the best software product from the point of view of functionality, we have compared described CRM systems in Table 2.

Table 2 terms of feature set and are uncompetitive in the market compared to other analogs.

Comparison of the most popular CRM systems

Sys \ Func	Sales Creation	Bitrix24	MS Dynamic	SalesDrive	KeepingCRM	AmoCRM	Megaplan Sales	Workstation	IT-Enterprise	RetailCRM
Inner telephony	+	-	-	-	-	+	+	-	+	+
Business process automation	+	+	+	+	+	+	+	+	+	+
Orders management	+	+	+	+	+	+	+	+	+	+
Sales funnel management	-	+	-	-	-	+	+	-	+	-
SAP data sharing	-	+	-	-	-	-	+	-	+	+
Mail integration	-	-	-	-	+	+	+	-	+	+
Reports	+	+	+	+	+	+	+	+	+	+
Single-window mode	-	-	-	-	-	-	-	-	+	+
Document management	+	+	+	+	+	+	+	+	+	+
Trial version	+	+	-	-	+	+	+	+	-	+
Summary (out of 10)	6	7	4	4	6	8	9	5	9	9

Thus, according to Table 2, we can see that the following CRM systems have the most comprehensive functionality: "AmoCRM," "Megaplan Sales," "IT-Enterprise," and "RetailCRM." These four software products are the most attractive to the potential user in terms of use. In turn, the following CRM systems have average functionality: "Sales Creatio," "Bitrix24," "Keeping CRM," and "AmoCRM." These software products are also competitive in the market but are inferior in the set of functions compared to the previous "four." In the end, the following CRM systems are endowed with a limited set of functionalities: "Microsoft Dynamic CRM," "SalesDrive," and "Workstation." These three software products are the least attractive to a potential user in

Now let us compare the prices of the analogs (See Table 3):

Table 3

Comparison of the most popular CRM systems prices

System	Price	Number of users
Sales Creation	From 22\$/mon.	1
Bitrix24	From 16\$/mon.	12
MS Dynamic CRM	From 65\$/mon.	1
SalesDrive	From 25\$/mon.	10
KeepingCRM	From 17\$/mon.	3
AmoCRM	From 8\$/mon.	1
Megaplan Sales	From 9\$/mon.	12
Workstation	From 29\$/mon.	10
IT-Enterprise	From 50\$/mon.	1
RetailCRM	From 25\$/mon.	1

Thus, according to Table 3, we can determine that:

– The most expensive to use among the presented CRM systems are "Microsoft Dynamic CRM," "IT-Enterprise," "Retail CRM," and "Sales Creatio" (taking into account the number of users).

– Keeping CRM, "Sales Drive" and "Worksection" have the average cost of use among the CRM systems presented (taking into account the number of users).

– The cheapest among the presented CRM systems are "Bitrix24" and "Megaplan Sales" (taking into account the number of users).

So, according to the detailed analysis in Table 2 and Table 3, the best software product to date in terms of price/quality/features is "Megaplan Sales."

Any "universal" CRM will have restrictions, some actions can't be automated.

On the other side, the system is created as a part of the Master's thesis to which this post refers. It was designed especially for the customer firm, which means that it was more expensive, too much time from planning to release. Still, it gave significant efficiency increase and the possibility to automate all the processes in the firm.

IX. CONCLUSIONS

The software service for optimization of the work processes is one of the most time/money-saving technologies of our time. It is increasingly gaining popularity due to its apparent advantages. Enterprises that implement this technology will receive significant savings on capital costs and current operating costs due to saved time, the level of security, analytical possibilities, management, and paperwork reduction. Implementing a CRM service will allow organizations to reduce infrastructure investment from the room for clients to the logistics of the completed orders, significantly reducing the needed physical communication and manipulations. The overall result is a dramatic reduction in costs and process complexity. As a rule, the technology introduced substantially reduces the order procession lifecycle.

The result of testing the system showed a good effect: passing the test was 100 % as the plan was well-build, processes were digitalized under the control of the actual

people who were involved in them, and the long pre-release period allowed to find and fix all underwater stones and improve some functional what led to the efficiency increase. Looking at numbers will show us the following result (average):

- sales number per person increased by 28 %,
- sales value per person increased by 37 %,
- landing webpage visitors increased by 231 %,
- customer returns increased by 13 %,
- customer reviews on Trustpilot improved by 14 %

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