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# Executive Summary

This document presents a proposal from Docupal Demo, LLC to upgrade Acme Inc.'s Gatsby website. The primary goal is to enhance website performance, improve search engine optimization (SEO), and utilize the latest features available in the Gatsby framework. This upgrade aims to deliver tangible business benefits, including increased user engagement, higher conversion rates, and reduced long-term maintenance costs.

## Key Benefits

The proposed Gatsby upgrade offers several key advantages for ACME-1:

- **Performance Enhancement:** Faster loading times and improved site speed contribute to a better user experience.
- **Improved SEO:** Updated SEO practices and features lead to higher search engine rankings and increased organic traffic.
- **New Feature Integration:** Access to the latest Gatsby features allows for richer, more interactive website content.
- **Reduced Maintenance:** A modern codebase simplifies maintenance and reduces the risk of compatibility issues.

## Stakeholders

This project involves key stakeholders from Acme Inc., including the Marketing Team, Engineering Team, and Executive Leadership. Their collaboration will ensure the upgrade aligns with Acme Inc.'s business objectives and technical requirements. The proposal outlines the technical details, timeline, and costs associated with the upgrade, providing a clear understanding of the project scope and expected outcomes.

# Current System Assessment

ACME-1's current website is built using Gatsby version 2.x. The architecture follows a standard Gatsby setup, leveraging React components for the user interface and GraphQL for data management. The site is currently deployed on Netlify. This setup



has served ACME-1 well, but it now presents certain limitations that an upgrade can address.

## Performance Analysis

Based on data from Google Analytics and internal server logs, the website experiences slow page load times, particularly on pages with significant content. This negatively impacts user experience and potentially affects search engine rankings. Image handling is also identified as an area of inefficiency, contributing to the overall performance bottleneck. The following chart illustrates the trend of website performance over the past 12 months:

The chart shows a general increase in page load times over the past year, indicating a growing need for optimization.

## Key Limitations

The current Gatsby version 2.x lacks some of the performance enhancements and features available in later versions. The inefficient image handling practices contribute to the performance issues. Addressing these limitations through an upgrade will improve website speed, user experience, and maintainability.

# Upgrade Objectives and Scope

The primary objective of this Gatsby upgrade is to enhance ACME-1's website performance and leverage the latest capabilities of the Gatsby ecosystem. This initiative focuses on modernizing the core framework and key dependencies to ensure a faster, more efficient, and more maintainable website.

## Core Objectives

- **Performance Improvement:** Reduce website build times and improve page load speeds for a better user experience.
- **Technology Modernization:** Update Gatsby core, React, and Webpack to their latest stable versions.
- **Enhanced Image Optimization:** Implement the newest features of gatsby-image for improved image delivery and performance.
- **Modern Web Standards:** Ensure compatibility with current and emerging web standards for accessibility and future-proofing.



- **Plugin Updates:** Upgrade key plugins, including gatsby-transformer-remark, to benefit from the latest features and security patches.

## Scope

This upgrade encompasses the following:

- Updating Gatsby core libraries and associated dependencies.
- Refactoring components to align with the updated framework.
- Optimizing image handling processes.
- Testing and resolving compatibility issues arising from the upgrade.

## Out of Scope

The following items are explicitly excluded from the scope of this initial upgrade:

- Migration of legacy content from existing CMS.
- Extensive redesign of the website's user interface.
- Integration with new third-party services beyond essential plugin updates.

# Proposed Technical Architecture

This section details the proposed technical architecture for the Gatsby website upgrade. The upgrade focuses on enhancing performance, scalability, and maintainability while ensuring compatibility with existing systems.

## Key Architectural Changes

We will introduce Gatsby Incremental Builds to significantly reduce build times. This feature allows Gatsby to only rebuild pages that have changed, rather than the entire site. This results in faster deployment and content updates.

We will also optimize the image processing pipeline. This includes using modern image formats like WebP, implementing lazy loading, and providing responsive images. These changes will improve page load speeds and user experience.



## Scalability and Maintainability Improvements

Improved caching mechanisms will be implemented to reduce server load and improve response times. This includes leveraging Gatsby's built-in caching and exploring CDN options.

A more modular component structure will be adopted. This will make the codebase easier to understand, test, and maintain. It will also facilitate future feature additions and modifications. Efficient data fetching strategies will be implemented to minimize data retrieval times. This involves optimizing GraphQL queries and using data source plugins effectively.

## Integration Considerations

The upgrade will require updates to the integration with ACME-1's existing CRM and marketing automation platform. We will ensure seamless data flow and functionality between the upgraded Gatsby website and these systems. Specific tasks include:

- Updating API endpoints to align with the new Gatsby architecture.
- Testing and verifying data synchronization between systems.
- Implementing necessary code adjustments to maintain compatibility.

These integrations are crucial for maintaining current business workflows and ensuring data consistency across platforms.

## Feature Enhancements and Benefits

This Gatsby upgrade delivers key enhancements designed to improve your website's performance, user experience, and reach. These improvements directly support ACME-1's business goals by attracting more visitors and ensuring accessibility for all users.

### Enhanced Image Optimization

We will implement advanced image optimization techniques. These techniques will reduce image file sizes without sacrificing quality. Smaller image sizes translate to faster page loading times. Faster loading improves user engagement and positively





impacts your search engine optimization (SEO) ranking. We project a 50% reduction in current page load times.

## Improved Search Functionality

The upgrade includes a refined search feature. This feature will provide more accurate and relevant search results. Users will be able to quickly find the information they need. The improved search functionality will also streamline navigation and boost user satisfaction.

## Better Accessibility Support

We will enhance accessibility support to meet or exceed current accessibility standards. These enhancements include improved screen reader compatibility, keyboard navigation, and color contrast. By making the website more accessible, ACME-1 can reach a broader audience and demonstrate its commitment to inclusivity. This also reduces the risk of non-compliance penalties. We anticipate improved accessibility scores across key metrics.

## Measurable Improvements

The upgrade is projected to deliver the following measurable improvements:

- A 50% reduction in page load times.
- A 20% increase in organic traffic.
- Improved accessibility scores.

These improvements will contribute to a better user experience, increased website traffic, and a stronger online presence for ACME-1.

## Risk Analysis and Mitigation

Upgrading the Gatsby framework carries inherent risks. We have identified key areas of concern and outlined mitigation strategies to ensure a smooth and successful transition for ACME-1.



## Potential Technical Risks

The upgrade process may encounter technical challenges. Compatibility issues between the new Gatsby version and ACME-1's existing plugins are a primary concern. Older plugins might not function correctly or at all after the upgrade, potentially impacting website functionality. Data migration could also present unforeseen challenges, especially if the data structure needs modification to align with the updated Gatsby framework. We also acknowledge the risk of potential downtime during the deployment phase.

## Mitigation Strategies

To address compatibility concerns, we will conduct a thorough audit of all existing plugins before initiating the upgrade. This audit will identify any plugins that are known to be incompatible or require updates. We will prioritize updating or replacing these plugins with compatible alternatives. To mitigate data migration risks, we will develop a detailed migration plan and perform extensive testing on a staging environment before applying changes to the live website. We will implement a rollback plan, allowing us to revert to the previous Gatsby version quickly if critical issues arise during or after the upgrade. We will schedule the deployment during off-peak hours to minimize the impact of potential downtime. A dedicated support team will be available during and after the upgrade to address any issues promptly. In addition, an extended testing period will be implemented.

## Dependency Management

Conflicts with older versions of dependencies could destabilize the upgraded Gatsby site. We will carefully manage dependencies by using version control and conducting thorough testing to identify and resolve any conflicts before deployment. Regular monitoring and maintenance will be performed to ensure the long-term stability of the upgraded site.

# Upgrade Roadmap and Timeline

The Gatsby upgrade will proceed in four key phases to ensure a smooth and efficient transition. These phases are: Assessment & Planning, Development & Testing, Deployment, and Post-Deployment Monitoring.





## Project Phases

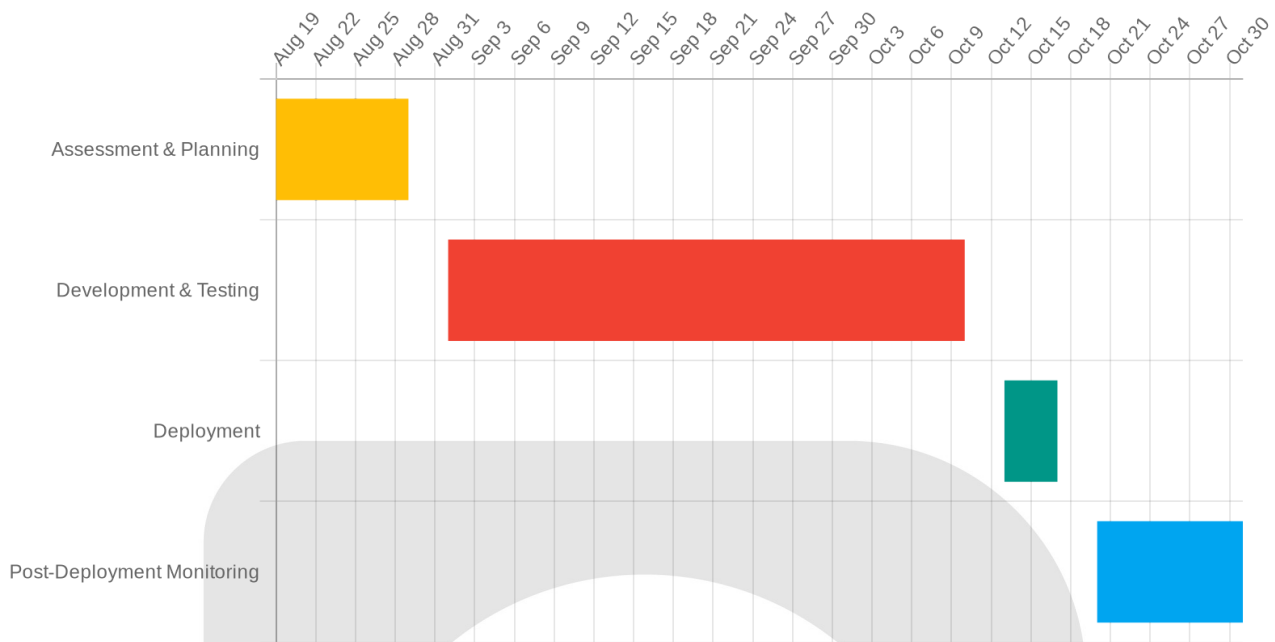
1. **Assessment & Planning (2 weeks):** This initial phase involves a thorough review of your current Gatsby setup, including dependencies, plugins, and configurations. We will identify potential upgrade challenges and create a detailed project plan. This plan will outline specific tasks, resource allocation, and a firm timeline.
2. **Development & Testing (6 weeks):** In this phase, we will perform the actual Gatsby upgrade. We will migrate your existing content and functionality to the latest Gatsby version. Rigorous testing will be conducted throughout the development process. This includes unit tests, integration tests, and user acceptance testing (UAT) to guarantee stability and functionality.
3. **Deployment (1 week):** Upon successful completion of testing, the upgraded Gatsby website will be deployed to your production environment. We will use a phased rollout approach to minimize any potential downtime and ensure a seamless transition for your users. This phase is dependent on the successful completion of the Development & Testing phase.
4. **Post-Deployment Monitoring (2 weeks):** After deployment, we will closely monitor the upgraded website's performance, stability, and security. This monitoring period allows us to identify and address any unforeseen issues promptly. We will provide ongoing support and maintenance to ensure the long-term success of the upgraded Gatsby website.

## Project Timeline

The estimated duration for each phase is as follows:

- **Assessment & Planning:** 2025-08-19 to 2025-08-29
- **Development & Testing:** 2025-09-01 to 2025-10-10
- **Deployment:** 2025-10-13 to 2025-10-17
- **Post-Deployment Monitoring:** 2025-10-20 to 2025-10-31





## Budget and Resource Allocation

The estimated total cost for the Gatsby upgrade project is \$25,000. This budget covers all aspects of the upgrade, from initial planning and development to testing and deployment.

### Resource Allocation

Our team will allocate resources strategically to ensure efficient project execution. The core team will consist of:

- **Front-End Developers (2):** Focused on updating the user interface, ensuring responsiveness, and implementing new features.
- **Back-End Developer (1):** Responsible for updating the Gatsby configuration, data integrations, and optimizing performance.
- **Project Manager (1):** Overseeing the project timeline, coordinating team efforts, and ensuring clear communication with ACME-1.

### Cost Breakdown

The project budget is allocated across the following key areas:

Cost Category	Estimated Cost (USD)
Development	\$15,000
Testing	\$5,000
Project Management	\$3,000
Deployment	\$2,000
<b>Total</b>	<b>\$25,000</b>

## Ongoing Support

Following the completion of the upgrade, we estimate ongoing support costs to be \$2,000 per month. This includes routine maintenance, security updates, and technical support to address any issues that may arise.

# Conclusion and Recommendations

## Project Outcomes

The Gatsby upgrade promises substantial gains in website performance. We anticipate faster loading times and improved SEO. A modern codebase will enhance maintainability. These improvements should translate into higher user engagement. Ultimately, this supports ACME-1's broader business objectives.

## Alignment with Strategic Objectives

This upgrade directly supports ACME-1's long-term vision. A modern, high-performance website will improve ACME-1's digital presence. It will also contribute to a better customer experience. These factors will drive business growth.

## Recommendations

### Proposal Approval

We recommend ACME-1 approve this proposal. This allows Docupal Demo, LLC to begin the Gatsby upgrade.



## Resource Allocation

Allocate the necessary resources for the project. This includes budget and personnel.

## Active Participation

Actively participate in the planning and review processes. Your insights are valuable. They ensure the upgrade meets ACME-1's specific needs.

