

ONLINE-MARKETING

BULL

Technical SEO & Website Speed Optimization (2026 Edition)

Fix Crawling, Indexing, and Core Web Vitals to Rank Higher on Google

Step-by-Step Technical SEO Audit and Website Performance Optimization Guide

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2. Copyright Page

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Websites used in examples (such as **example.com**) are used strictly for demonstration purposes.

Search engine algorithms and best practices change frequently. Readers should always verify current recommendations when implementing SEO strategies.

3. Disclaimer

The information in this book is based on industry knowledge and practical experience in digital marketing and technical SEO.

However:

- Search engine algorithms change regularly
- Website performance depends on many variables
- Results may vary depending on implementation

The author is not responsible for any losses, damages, or website performance issues resulting from the use of this information.

Readers should apply the techniques carefully and test changes before implementing them on live websites or take back-up of website first.

4. About the Author

Kashif Rehman is a digital marketing professional with over six years of experience in search engine optimization, Google Ads, and website performance optimization.

He specializes in:

- Technical SEO audits
- website speed optimization
- Core Web Vitals improvements
- AI-driven SEO strategies

Kashif has helped businesses improve search visibility by identifying technical issues that prevent websites from performing well in search engines.

Through practical SEO audits and performance optimization, he focuses on building websites that are:

- search engine friendly
- technically optimized
- fast and user-focused

This book was written to provide a **clear, step-by-step guide** for solving real technical SEO problems.

5. Who This Book Is For

This book is designed for readers who want to understand and implement technical SEO improvements.

It is especially useful for:

- SEO professionals
- digital marketers
- website owners
- developers
- marketing agencies
- WordPress users

Even if you are new to technical SEO, the step-by-step examples will help you understand how search engines crawl, index, and rank websites.

6. How to Use This Book

This book is organized into several sections, each focusing on a key area of technical SEO.

Part 1 introduces the foundations of technical SEO and explains how search engines crawl and index websites.

Part 2 focuses on technical SEO audits and solving indexing issues.

Part 3 explains website speed optimization and performance improvements.

Part 4 covers Core Web Vitals and how to fix performance metrics that impact rankings.

Part 5 explores advanced technical SEO strategies such as structured data and internal linking architecture.

Part 6 focuses on AI-driven SEO and the future of search optimization.

Each chapter includes:

- real examples
- problem diagnosis
- step-by-step solutions

You can read the book from beginning to end or jump directly to chapters related to specific problems.

Table of Contents

Introduction

- Why Technical SEO Matters Today
 - The Evolution of Search Engine Optimization
 - How Technical SEO Impacts Rankings
 - What You Will Learn in This Book
-

PART I — [Technical SEO Foundations](#)

Chapter Title

Chapter 1 [What is Technical SEO?](#)

Chapter 2 [How Google Crawls Websites](#)

PART II — Technical SEO Audit & Indexing Optimization

Chapter Title

Chapter 3 [Complete Technical SEO Audit Process](#)

Chapter 4 [Fixing Indexing Problems](#)

Chapter 5 [Robots.txt Optimization](#)

Chapter 6 [XML Sitemap Optimization](#)

PART III — Website Speed Optimization

Chapter Title

Chapter 7 [Understanding Core Web Vitals](#)

Chapter 8 [Fixing Largest Contentful Paint \(LCP\)](#)

Chapter Title

Chapter 9 [Image Optimization for Website Speed](#)

Chapter 10 [Reducing Server Response Time \(TTFB\)](#)

Chapter 11 [JavaScript Optimization for Website Speed](#)

Chapter 12 [CSS Optimization](#)

Chapter 13 [CDN Optimization](#)

PART IV — Core Web Vitals Optimization

Chapter Title

Chapter 14 [Fixing Cumulative Layout Shift \(CLS\)](#)

Chapter 15 [Fixing Interaction to Next Paint \(INP\)](#)

PART V — Advanced Technical SEO

Chapter Title

Chapter 16 [Structured Data for Technical SEO](#)

Chapter 17 [Advanced Internal Linking Architecture](#)

Chapter 18 [Fixing Duplicate Content](#)

PART VI — AI Technical SEO & Automation

Chapter Title

Chapter 19 [AI SEO and Google AI Overviews](#)

Chapter 20 [AI Powered Technical SEO Audits](#)

- AI-Powered Technical SEO Audits
- AI Prompts for Technical SEO Analysis
- Automated AI SEO Audit Workflows
- AI + Screaming Frog Integration
- AI + Google Search Console Analysis
- AI Technical SEO Dashboards

Chapter 21 [Technical SEO Case Study \(example.com\)](#)

Chapter 22 [Complete Technical SEO Checklist](#)



Introduction

Search engine optimization has changed dramatically over the past decade. In the early days of SEO, ranking on Google was mostly about keywords and backlinks. However, modern search engines evaluate websites using far more sophisticated systems.

Google now evaluates websites based on:

- technical infrastructure
- page speed
- mobile performance
- user experience
- crawlability
- structured data

Even if your website has excellent content, it may never rank well if Google cannot properly crawl, render, and understand your pages.

This is where **Technical SEO** becomes essential.

Technical SEO ensures that search engines can:

1. Discover your pages
2. Crawl your website efficiently
3. Render the content correctly
4. Index the pages in Google's database
5. Deliver fast experiences to users

At the same time, **website speed has become one of the most important ranking factors.**

Google introduced **Core Web Vitals** to measure real user performance, including:

- page loading speed
- visual stability
- interaction responsiveness

Websites that fail these metrics often experience:

- lower rankings
- higher bounce rates
- reduced conversions

This book provides a **complete step-by-step system** for fixing technical SEO problems and improving website performance.

By the end of this book, you will learn how to:

- perform a complete technical SEO audit
- identify crawling and indexing issues
- optimize robots.txt and XML sitemaps
- fix page speed problems
- optimize Core Web Vitals
- reduce server response times
- implement structured data
- improve website architecture
- use AI tools for technical SEO

Each chapter includes **practical examples, screenshots, and implementation steps** so you can immediately apply the techniques to your own website.



PART 1

Technical SEO Foundations

Chapter 1

What is Technical SEO?

Technical SEO refers to the process of optimizing the **technical infrastructure of a website** so search engines can crawl, render, and index it efficiently.

Unlike traditional SEO strategies that focus on content and backlinks, technical SEO focuses on the underlying systems that support a website.

These include:

- server configuration
- website architecture

- page speed
- mobile optimization
- crawl management
- structured data

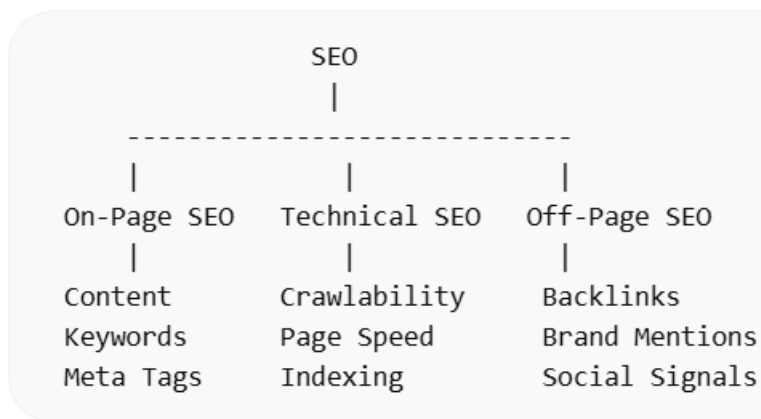
Technical SEO ensures that search engines can **fully access and understand your website**.

Without proper technical optimization, even high-quality content may struggle to rank.

The Three Pillars of SEO

This diagram explains the **three pillars of SEO**.

Diagram Structure



Search engine optimization is typically divided into three major categories.

1. On-Page SEO

On-page SEO focuses on optimizing the content and structure of individual pages.

Examples include:

- keyword optimization
- title tags
- meta descriptions
- headings
- internal links
- content quality

On-page SEO helps search engines understand what a page is about.

2. Off-Page SEO

Off-page SEO focuses on external signals that influence rankings.

Examples include:

- backlinks
- brand mentions
- social signals
- online reputation

Backlinks remain one of the strongest ranking factors because they act as votes of confidence for a website.

3. Technical SEO

Technical SEO focuses on the backend systems that allow search engines to access and process your website.

Key elements include:

- crawling
- indexing
- page speed
- mobile friendliness
- structured data
- website architecture

Technical SEO ensures that search engines can **efficiently process your website's content**.

Why Technical SEO Is More Important Than Ever

Google's algorithms have evolved significantly.

Modern search engines use advanced systems such as:

- machine learning
- AI-driven ranking models
- real user performance metrics

These systems evaluate not only the relevance of content but also the **quality of the user experience**.

Several key updates have emphasized the importance of technical SEO.

Page Experience Update

Google introduced the Page Experience update to evaluate how users interact with a website.

The update includes metrics such as:

- page loading performance
- mobile usability
- visual stability

These factors directly impact rankings.

Core Web Vitals

Core Web Vitals measure real user experience using three key metrics:

Metric **What it Measures**

LCP Loading performance

INP Interaction responsiveness

CLS Visual stability

Websites that perform poorly on these metrics may struggle to rank competitively.

Common Technical SEO Problems

Many websites suffer from technical issues that prevent them from reaching their full ranking potential.

Common problems include:

- slow page load times
- poor mobile performance
- crawl errors
- duplicate content
- broken internal links
- improper redirects
- missing structured data

These problems can significantly reduce a website's visibility in search engines.

Real Example of Technical SEO Impact

Consider two websites with similar content quality.

Website A:

- fast loading pages
- optimized site structure
- clean internal linking
- structured data implementation

Website B:

- slow loading pages
- broken internal links
- poor crawl structure
- missing schema

Even if both websites publish similar content, **Website A will almost always rank higher.**

This demonstrates the importance of technical SEO in modern search engine optimization.

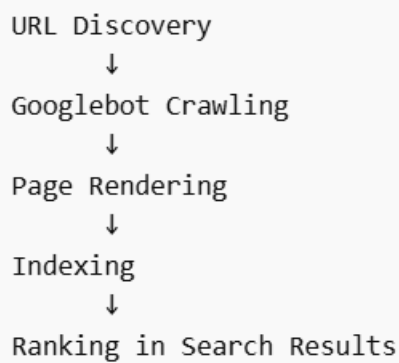


Chapter 2

How Google Crawls Websites

Search Engine Crawl Flow

Diagram Structure



This visual explains **how search engines process websites.**

Before optimizing a website for search engines, it is important to understand how Google actually discovers and processes web pages.

Google uses automated software known as **Googlebot** to crawl the internet.

Googlebot continuously scans websites to discover new pages and update existing ones.

The process follows several stages.

Step 1: URL Discovery

Before Google can crawl a page, it must first discover the URL.

Google discovers URLs through several sources:

- internal links
- backlinks from other websites

- XML sitemaps
- previously indexed pages

Proper internal linking plays a critical role in helping search engines discover content.

Pages that are not linked internally may become **orphan pages**, meaning Google cannot easily find them.

Step 2: Crawling

Once Google discovers a URL, Googlebot attempts to crawl the page.

Crawling involves downloading the page's HTML code and resources.

During this process, Googlebot also analyzes:

- CSS files
- JavaScript files
- images
- structured data

If certain resources are blocked by robots.txt, Google may not fully understand the page.

Step 3: Rendering

After crawling the HTML, Google renders the page.

Rendering means processing JavaScript and building the final visual version of the page.

Modern websites often rely heavily on JavaScript frameworks, which can sometimes cause rendering delays.

If rendering fails, Google may not see important content.

Step 4: Indexing

Once the page is rendered successfully, Google evaluates the content and determines whether it should be added to the search index.

During indexing, Google analyzes:

- content quality
- relevance
- duplicate content
- page structure
- canonical tags

If Google determines that the page provides value, it is added to the index.

Step 5: Ranking

Finally, indexed pages compete for positions in search results.

Google's ranking systems evaluate hundreds of factors, including:

- relevance to the search query
- backlinks
- user experience
- page speed
- technical performance

Pages that perform well across these factors have the best chance of ranking highly.

Crawl Budget Explained

Diagram Structure



Shows how crawl budget can be **wasted on unnecessary URLs**.

Large websites must also manage something called **crawl budget**.

Crawl budget refers to the number of pages Googlebot will crawl on a website within a given time period.

If a website wastes crawl budget on low-value pages, important pages may not be crawled frequently.

Common causes of crawl budget waste include:

- duplicate URLs
- parameter URLs
- pagination errors
- infinite filters

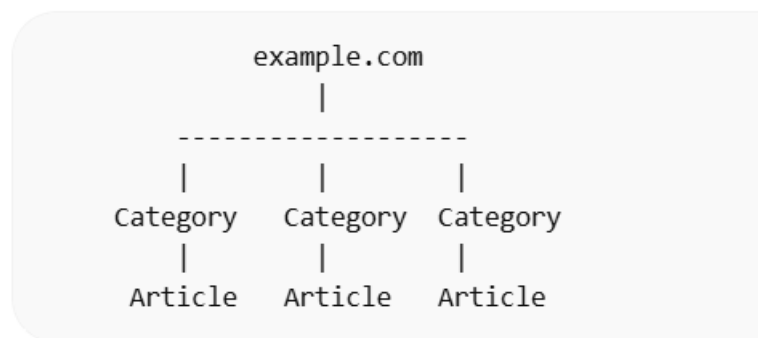
Proper technical SEO ensures that crawl budget is used efficiently.

PART II — Technical SEO Audit & Indexing Optimization

Chapter 3

Complete Technical SEO Audit Process

Diagram Structure



Shows how websites should be structured for SEO.

A **technical SEO audit** is the process of evaluating a website's technical infrastructure to identify issues that prevent search engines from crawling, indexing, and ranking pages properly.

A well-executed audit can uncover problems such as:

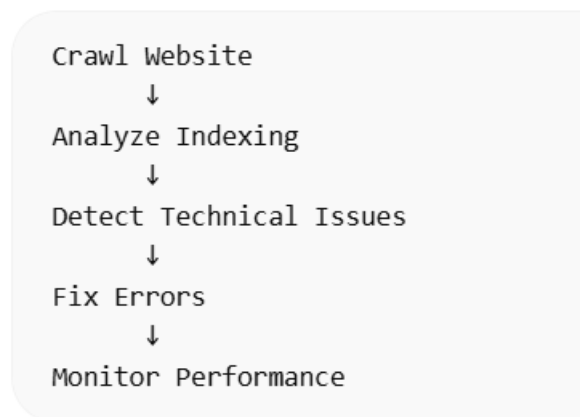
- crawl errors
- slow page speed
- duplicate content
- broken internal links
- incorrect redirects
- indexing problems

Many businesses invest heavily in content and backlinks but fail to address technical issues that prevent their website from reaching its full potential.

A technical SEO audit helps ensure that search engines can access and understand your website efficiently.

Technical SEO Audit Workflow

Diagram Structure



Shows the **full technical SEO workflow**.

Step 1: Crawl the Entire Website

The first step in any technical SEO audit is to **crawl the website using an SEO crawler**.

Popular tools used by SEO professionals include:

- Screaming Frog
- Sitebulb
- Ahrefs Site Audit
- SEMrush Site Audit

These tools simulate how search engine bots crawl a website and provide detailed reports on technical issues.

Typical crawl data includes:

- page URLs
- status codes
- page titles
- meta descriptions
- canonical tags
- internal links

Example of a website crawl report:

URL	Status	Page Title	Meta Description	Internal Links
https://www.example.com/about	200	About Us - Example Co...	Learn more about Example Company and what we do.	11
https://www.example.com/services	200	Our Services - Exampl...	View the services offered by Example Company.	9
https://www.example.com/contact	200	Contact Us - Exapony Co...	Find out how to contact Example Company.	8
https://www.example.com/blog	300	10 Essential SEO Tips - Example.com (Play our tips		9
https://www.example.com/blog/seo-tips	404	Play Offer d. Nest	Can internal website content be optimized for ranking and...	4
https://www.example.com/blog/seo-tips	302	Your content is not indexed	Healthcare will need the best SEO strategy...	3
https://www.example.com/https	301	Her content is not indexed	After months, the right SEO strategy is finally in place.	9
https://www.example.com/https	301	SEO Content is not indexed	SEO seems to be a complex contact; but it can be broken down...	7
https://www.example.com/blog/seo-tips	400	Play Offer Tags	Can internal website content be optimized for ranking and...	6
https://www.example.com/blog/seo-tips	28	Your Experience - Play our tips	Healthcare will need the best SEO strategy...	9
https://www.example.com/boot	400	400 be to the ut to at...	Can internal website content be optimized for ranking and...	8
https://www.example.com/blog/seo-tips	200	New the response exan...	Can internal website content be optimized for ranking and...	8

Page List	Page Title	Meta Base (Count)	Internal Links
https://www.example.com/about	About Us - Example Company	https://www.example.com/about	11
https://www.example.com/services	Our Services - Example Co	https://www.example.com/services	9
https://www.example.com/contact	Contact Us - Example Co.	https://www.example.com/services	8
https://www.example.com/blog	10 Essential SEO Tips - Example.com	https://www.example.com/blog	6

Example of a website crawl report:

When reviewing crawl results, pay close attention to:

- pages returning 404 errors
- redirect chains
- duplicate titles
- missing meta descriptions
- orphan pages

These problems can negatively affect both crawling and rankings.

Internal External Security Response Codes Redirects Duplicates Canonicals Audits More XSL-

FILTER HITLE Export Export 88 of 3,523

All Pages Returning 404 Errors Redirect Chains Duplicate Titles Missing Meta Descriptions Orphan Pages

URL	Pages Returning 404 Errors	Redirect Chains	Duplicate Titles	Missing Meta Descriptions	Orphan Pa
https://www.example.com/old-page/	301 > 404	301 > 404			1
https://www.example.com/missing	301 > 404	301 > 404			1
https://www.example.com/page-fr	301 > 404		2	https://www.example.com	1
https://www.example.com/tag/seo/					1
https://www.example.com/outdated-	301 > 404	301 > 404		https://www.example.com	1
https://www.example.com/old-blog-p	301 > 404	301 > 404		https://www.example.com	1
https://www.example.com/blog	301 > 404			https://www.example.com	1
https://www.example.com/option-ne/				https://www.example.com	1
https://www.example.com/old-blog-pc	301 > 404			https://www.example.com	1

Internal External Security Response Codes URL Page Titles Redirects Duplicates Canonicals Audits #2#

Pages List 88

URL	Redirect Chains	Duplicate Titles	Missing Meta Descriptions	Orphan Pa
https://www.example.com/blog post-1	301 > 404	2		1
https://www.example.com/blog post-2	301 > 404	2		1
https://www.example.com/test-page	301 > 404	1		1

Step 2: Check Website Indexing

After crawling the website, the next step is to analyze which pages are actually indexed by search engines.

This information can be found inside **Google Search Console**.

Navigate to:

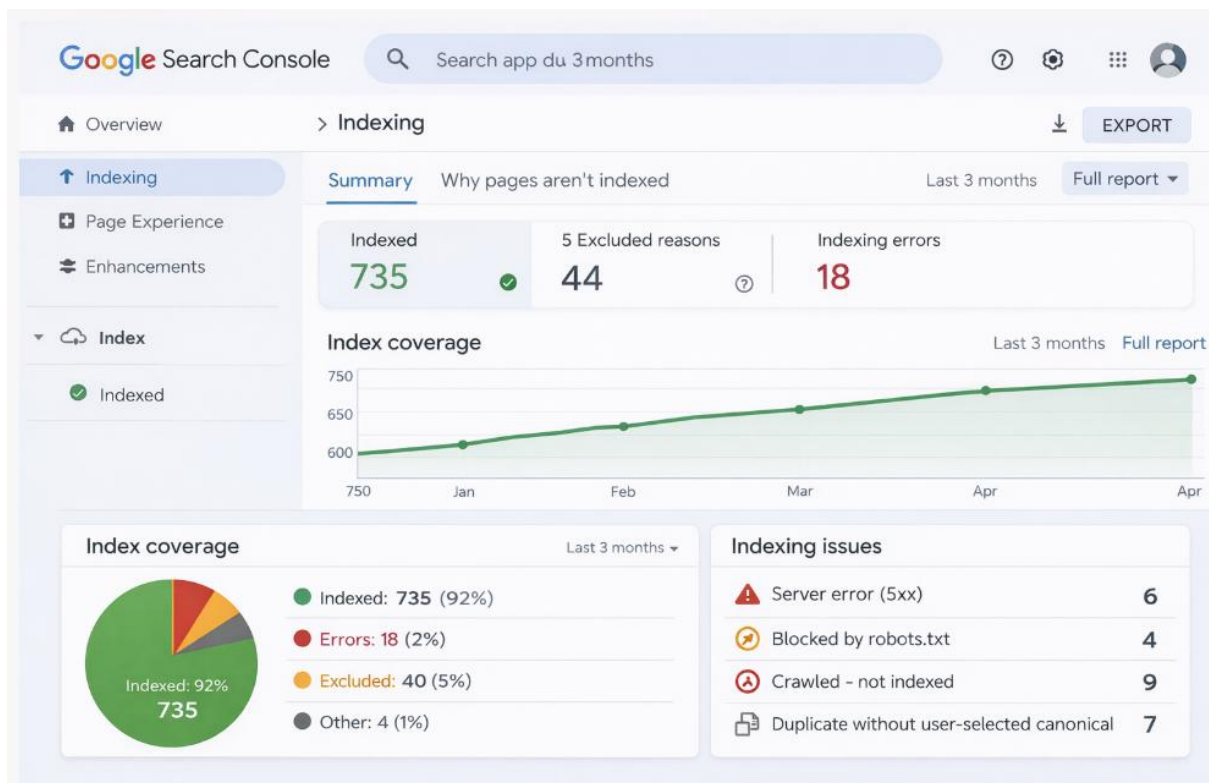
Search Console → Indexing → Pages

Here you will see two main sections:

- indexed pages
- non-indexed pages
- indexed pages

Example of indexing report:





• **Non-indexed pages**

Page indexing - Why pages aren't indexed

Reason	Source	Validation	Trend	Pages
Alternative page with proper canonical tag	Website	Not Started	—	22
Excluded by 'noindex' tag	Website	Not Started	—	20
Page with redirect	Website	Not Started	—	16
Not found (404)	Website	Not Started	—	2
Crawled - currently not indexed	Google systems	Not Started	—	21
Discovered - currently not indexed	Google systems	Started	—	8
Blocked by robots.txt	Website	Passed	—	0

Common indexing issues include:

- discovered – currently not indexed
- crawled – currently not indexed
- duplicate without user-selected canonical
- soft 404 errors

Each of these issues requires specific troubleshooting steps.

Step 3: Analyze Website Architecture

Website architecture refers to how pages are organized and connected through internal links.

A well-structured website helps both users and search engines navigate content easily.

Best practices for site structure include:

- shallow page depth
- clear category hierarchy
- logical internal linking

A good rule of thumb is that **important pages should be reachable within three clicks from the homepage.**

Example website structure:

Homepage

↓

Category Pages

↓

Subcategory Pages

↓

Individual Articles or Product Pages

Poor site architecture often results in **orphan pages**, which are pages with no internal links pointing to them.

Search engines may struggle to discover these pages.

Step 4: Analyze Internal Linking

Internal links play a critical role in technical SEO.

They help:

- distribute link equity
- guide search engine crawlers
- improve page discovery

During a technical audit, check for:

- broken internal links
- orphan pages
- excessive link depth
- irrelevant anchor text

SEO crawlers like Screaming Frog provide internal linking reports that help identify these issues.

The screenshot shows the Screamingfrog software interface for a crawl report on www.example.com. The 'Audits' tab is active, displaying 'Internal Linking Reports'. The report shows 122 of 3,523 pages. The main table lists various URLs with their respective issues: Broken Internal Links, Orphan Pages, Excessive Link Depth, and Irrelevant Anchor Text. A secondary table at the bottom provides a more detailed view of the first two rows.

URL	Broken Internal Links	Orphan Pages	Excessive Link Depth	Irrelevant Anchor Text
https://www.example.com/contact	14			11
https://www.example.com/important-guide	12		1	https://www.example.com
https://www.example.com/services	8			7
https://www.example.com/product-2	9		1	https://www.example.com
https://www.example.com/old-post/	9	1		https://www.example.com
https://www.example.com/deep-page	10		1	https://www.example.com
https://www.example.com/example-page	10	1		https://www.example.com/info
https://www.example.com/forgotten-page	1		1	https://www.blog/seo-basics
https://www.example.com/old-landing	8		8	https://www.tips
https://www.example.com/example-deep-page	7		7	https://www.page-not-related

URL	Broken Internal Links	Orphan Pages	Excessive Link Depth	Irrelevant Anchor Text
https://www.example.com/contact	14			1
https://www.example.com/important-guide	12	1		

Step 5: Evaluate Page Speed

Page speed is one of the most important components of technical SEO.

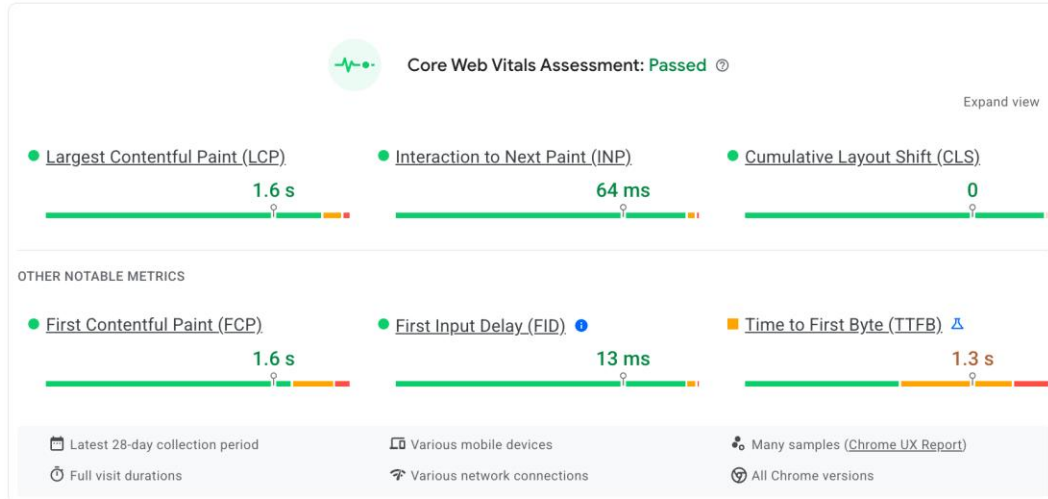
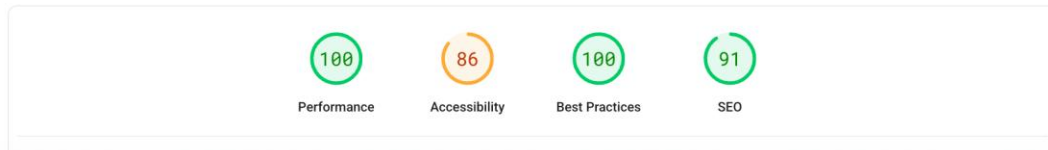
Slow websites negatively impact both:

- search rankings
- user experience

Use tools such as:

- Google PageSpeed Insights
- Lighthouse
- GTmetrix

Example speed analysis:

[Analyze](#)[Mobile](#) [Desktop](#)[Discover what your real users are experiencing](#)[This URL](#) [Origin](#)[Diagnose performance issues](#)

Important metrics to analyze include:

- Largest Contentful Paint (LCP)
- Interaction to Next Paint (INP)
- Cumulative Layout Shift (CLS)

These metrics will be explained in detail later in this book.



Summary scores for Performance (100), Progressive Web App (92), Accessibility (88), Best Practices (100), and SEO (100). Score scale: 0-49 (red), 50-89 (orange), 90-100 (green).

Performance

Metrics

First Contentful Paint	0.9 s	First Meaningful Paint	1.2 s
Speed Index	1.1 s	First CPU Idle	1.2 s
Time to Interactive	1.2 s	Estimated Input Latency	10 ms



Opportunities

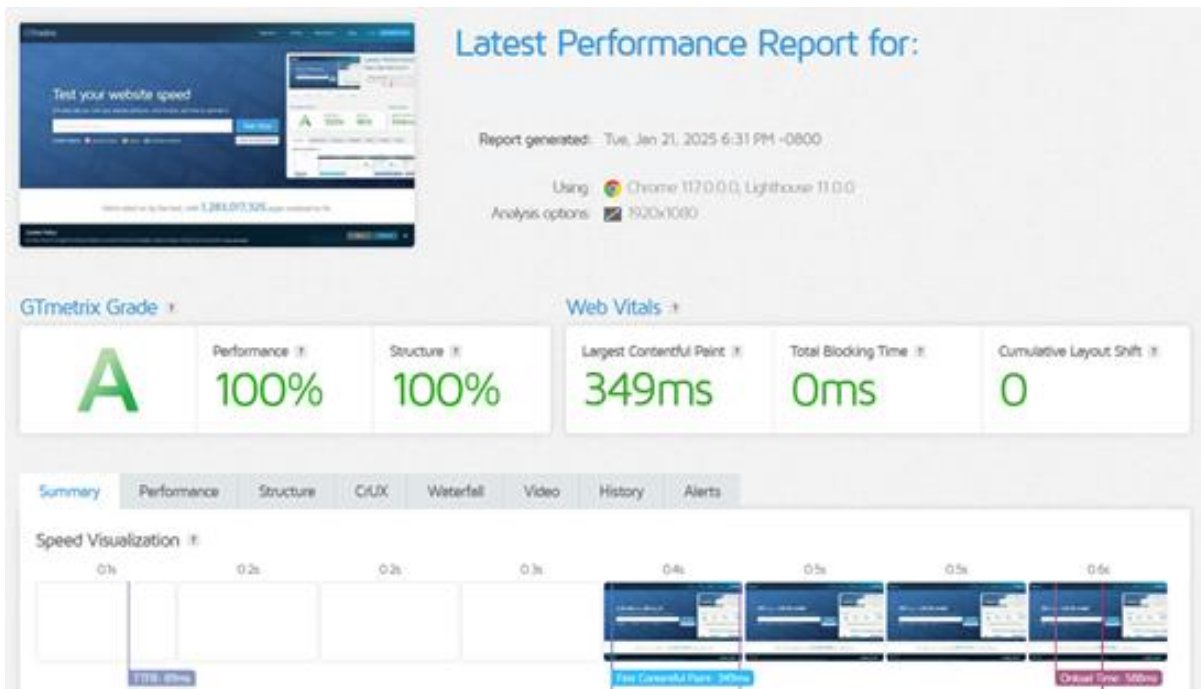
These optimizations can speed up your page load.

Opportunity	Estimated Savings
1 Serve images in next-gen formats	0.3 s

Diagnostics

More information about the performance of your application.

- 1 Ensure text remains visible during webfont load
- 2 Serve static assets with an efficient cache policy (57 resources found)



Chapter 4

Fixing Indexing Problems

Indexing issues are among the most common technical SEO problems.

Even if a website has excellent content, pages cannot rank if they are **not indexed by Google**.

Understanding how to diagnose and fix indexing problems is essential for improving organic visibility.

Common Indexing Errors

Google Search Console may report several types of indexing issues.

Crawled – Currently Not Indexed

This means Googlebot crawled the page but chose not to include it in the search index.

Possible reasons include:

- thin content
- duplicate content
- low internal link signals

Solution:

Improve the page by adding:

- better content depth
- internal links
- relevant schema markup

Discovered – Currently Not Indexed

In this case, Google has discovered the URL but has not crawled it yet.

This often occurs due to:

- crawl budget limitations
- large websites
- poor internal linking

Solution:

Improve internal linking and ensure the page is included in the XML sitemap.

Duplicate Without Canonical

Google detected duplicate pages but cannot determine which version should be indexed.

Example duplicate URLs:

example.com/page

example.com/page?ref=home

example.com/page?utm_source=google

Solution:

Use canonical tags to indicate the preferred version.

Example:

```
<link rel="canonical" href="https://example.com/page">
```

Chapter 5

Robots.txt Optimization

The **robots.txt file** controls how search engine crawlers access different sections of a website.

This file is located at:

example.com/robots.txt

A properly configured robots.txt file helps guide search engine crawlers efficiently.

Basic Robots.txt Structure

Example robots.txt file:

```
User-agent: *  
Disallow: /wp-admin/  
Allow: /wp-admin/admin-ajax.php
```

Sitemap: <https://example.com/sitemap.xml>

Explanation:

- **User-agent** specifies which crawler the rule applies to
 - **Disallow** blocks certain directories
 - **Allow** permits specific files
-

Common Robots.txt Mistakes

Many websites accidentally block important resources.

Examples include blocking:

- CSS files
- JavaScript files
- images

Blocking these resources can prevent Google from properly rendering the page.

Incorrect example:

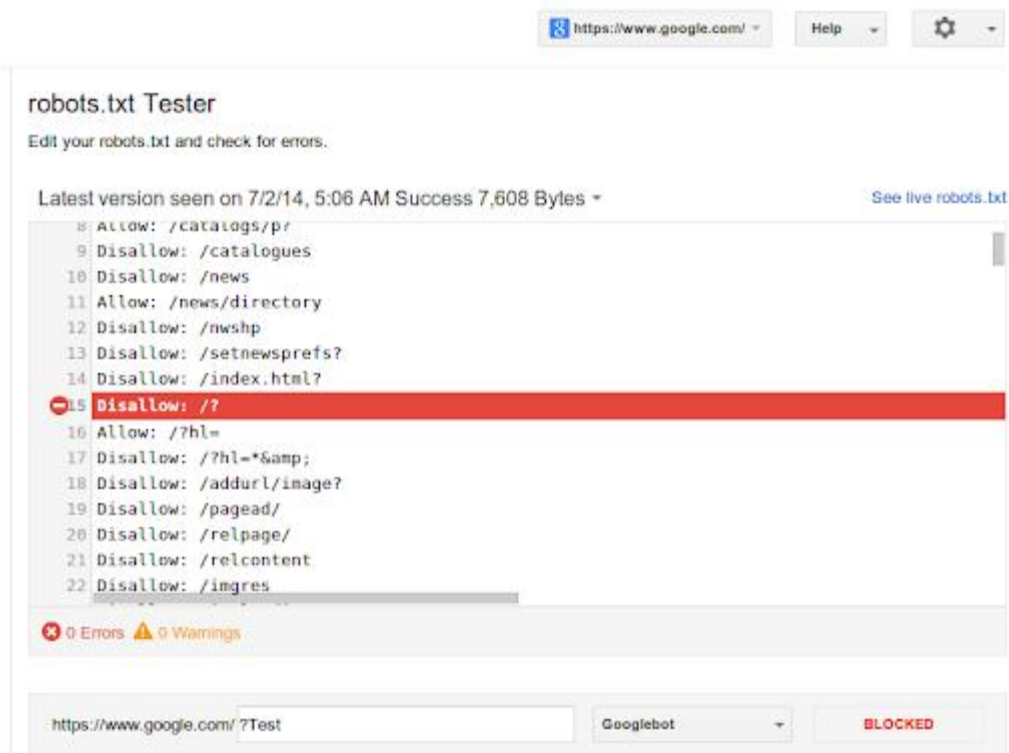
```
Disallow: /wp-content/
```

This rule blocks CSS and JavaScript files, which may negatively affect indexing.

Testing Robots.txt

Google provides a tool to test robots.txt rules.

Example interface:



4 Testing helps confirm whether important pages are accessible to search engines.

Chapter 6

XML Sitemap Optimization

An **XML sitemap** is a file that lists important URLs on a website to help search engines discover content more efficiently.

Although search engines can discover pages through internal links, sitemaps provide an additional layer of guidance.

What an XML Sitemap Looks Like

Example XML sitemap entry:

```
<url>
  <loc>https://example.com/seo-services</loc>
  <lastmod>2026-01-05</lastmod>
</url>
```

The key elements include:

- **loc** – the page URL
- **lastmod** – last modification date

Types of Sitemaps

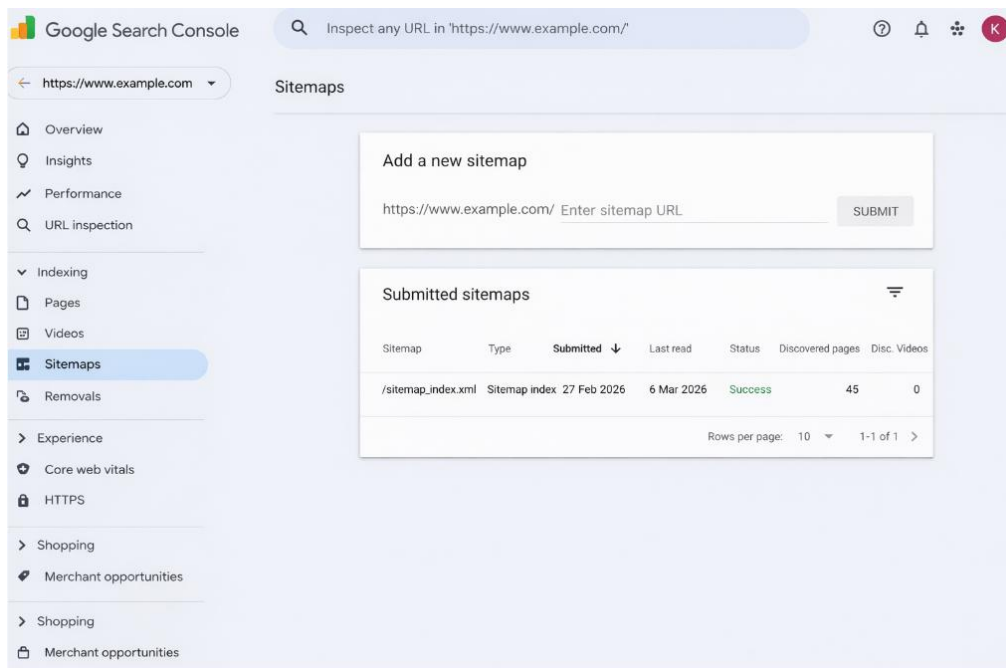
Websites can use multiple sitemap formats.

Common types include:

- XML sitemap (standard pages)
- image sitemap
- video sitemap
- news sitemap

You need to submit your website SiteMap url in Google Search Console.

Example sitemap report in Search Console:



The screenshot shows the Google Search Console interface for the domain <https://www.example.com>. The 'Sitemaps' section is active, displaying an 'Add a new sitemap' form with the URL <https://www.example.com/> and a 'SUBMIT' button. Below this, the 'Submitted sitemaps' table shows one entry:

Sitemap	Type	Submitted ↓	Last read	Status	Discovered pages	Disc. Videos
/sitemap_index.xml	Sitemap index	27 Feb 2026	6 Mar 2026	Success	45	0

At the bottom of the table, it indicates 'Rows per page: 10' and '1-1 of 1'.

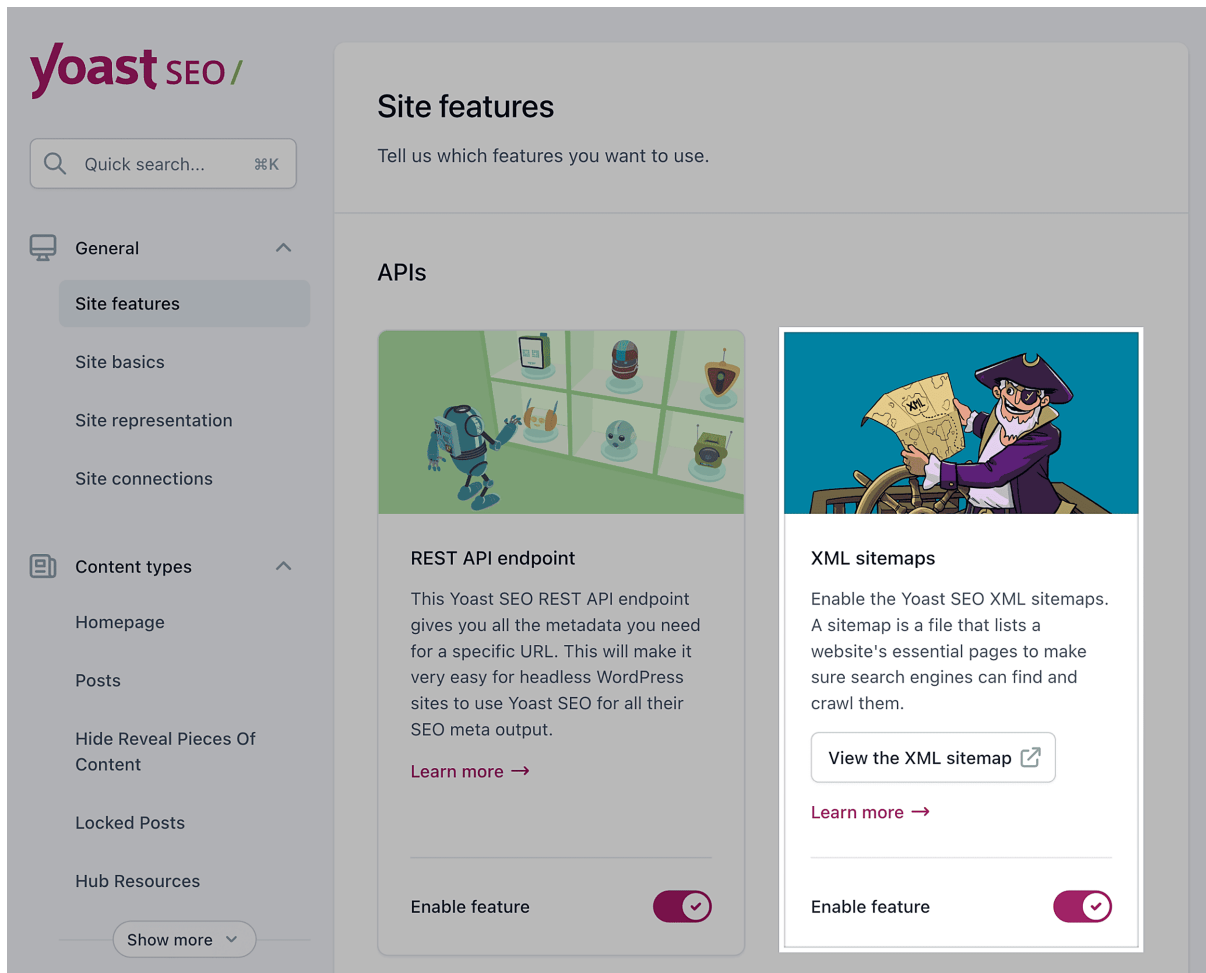
```
1 <xml-stylesheet type="text/xsl" href="/assets/sitemap/sitemap-style.xsl"?>
2 <sitemapindex xmlns="http://www.sitemaps.org/schemas/sitemap/0.9">
    <sitemap>
        <loc>https://example.com/sitemap/internal-pages</loc>
    </sitemap>
    <sitemap>
        <loc>https://example.com/sitemap/categories</loc>
        <lastmod>2025-07-18T20:15:43+00:00</lastmod>
    </sitemap>
    <sitemap>
        <loc>https://example.com/sitemap/products</loc>
        <lastmod>2025-12-03T20:30:05+00:00</lastmod>
    </sitemap>
    <sitemap>
        <loc>https://example.com/sitemap/pages</loc>
        <lastmod>2025-09-13T07:44:56+00:00</lastmod>
    </sitemap>
    <sitemap>
        <loc>https://example.com/sitemap/blogs</loc>
        <lastmod>2025-03-25T14:27:52+00:00</lastmod>
    </sitemap>
</sitemapindex>
```



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if you have website has been created in WordPress, and you have installed Yoas SEO Plugin then then Yost SEO Plug will automatically create XML Sitemap for you. You just need to enable the XML Sitemap feature in Yoast SEO plugin and click on “[View the XML sitemap](#)”.



4

When you click on “[View the XML sitemap](#)”. Your website XML SiteMap will open in browser and just need to copy link https://example.com/sitemap_index.xml of your sitemap and paste in “Google Search Console” in SiteMap area.

Note :you only need to copy following part of link and paste in Google Search Console.
/sitemap_index.xml

XML Sitemap

Generated by **Yoast SEO**, this is an XML Sitemap, meant for consumption by search engines.

You can find more information about XML sitemaps on sitemaps.org.

This XML Sitemap Index file contains 4 sitemaps.

Sitemap	Last Modified
https://www.example.com/post-sitemap.xml	2026-03-05 16:54 +00:00
https://www.example.com/page-sitemap.xml	2026-03-06 13:41 +00:00
https://www.example.com/uibp_post-sitemap.xml	2026-02-28 09:15 +00:00
https://www.example.com/web-story-sitemap.xml	2023-10-08 08:09 +00:00

Best Practices for XML Sitemaps

Follow these guidelines when creating a sitemap:

- include only indexable pages
- exclude noindex pages
- exclude redirect URLs
- exclude duplicate pages

Google also recommends limiting each sitemap to:

- **50,000 URLs**

Large websites can use **sitemap index files** to organize multiple sitemaps.

How to Submitting a Sitemap to Google

To submit a sitemap:

1. Open Google Search Console
2. Navigate to **Indexing** → **Sitemaps**
3. Enter the sitemap URL
4. Click **Submit**

Once submitted, Google will begin processing the sitemap and crawling the listed URLs.



PART III — Website Speed Optimization

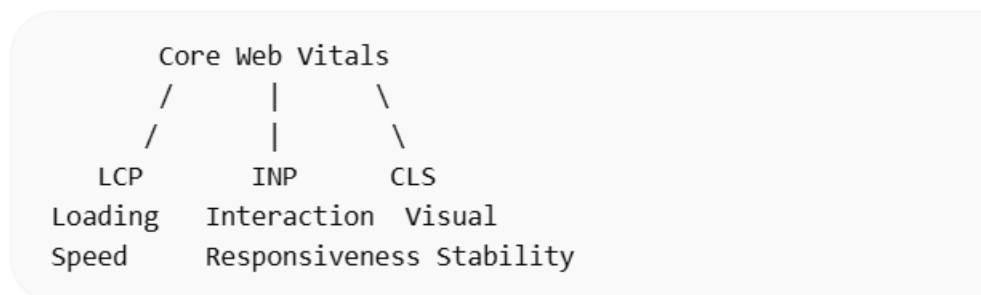
Chapter 7

Understanding Core Web Vitals

Google introduced Core Web Vitals to measure real-world user experience on websites.

These metrics are based on **real user data collected through Chrome browsers**.

Diagram Structure



Helps readers understand the **three performance metrics quickly**.

The three primary metrics include:

Metric	What It Measures	Ideal Score
LCP	Loading speed	Under 2.5 seconds
INP	Interaction responsiveness	Under 200 ms
CLS	Visual stability	Under 0.1

These metrics directly impact search rankings.

If your website performs poorly on Core Web Vitals, Google may rank competing websites higher.

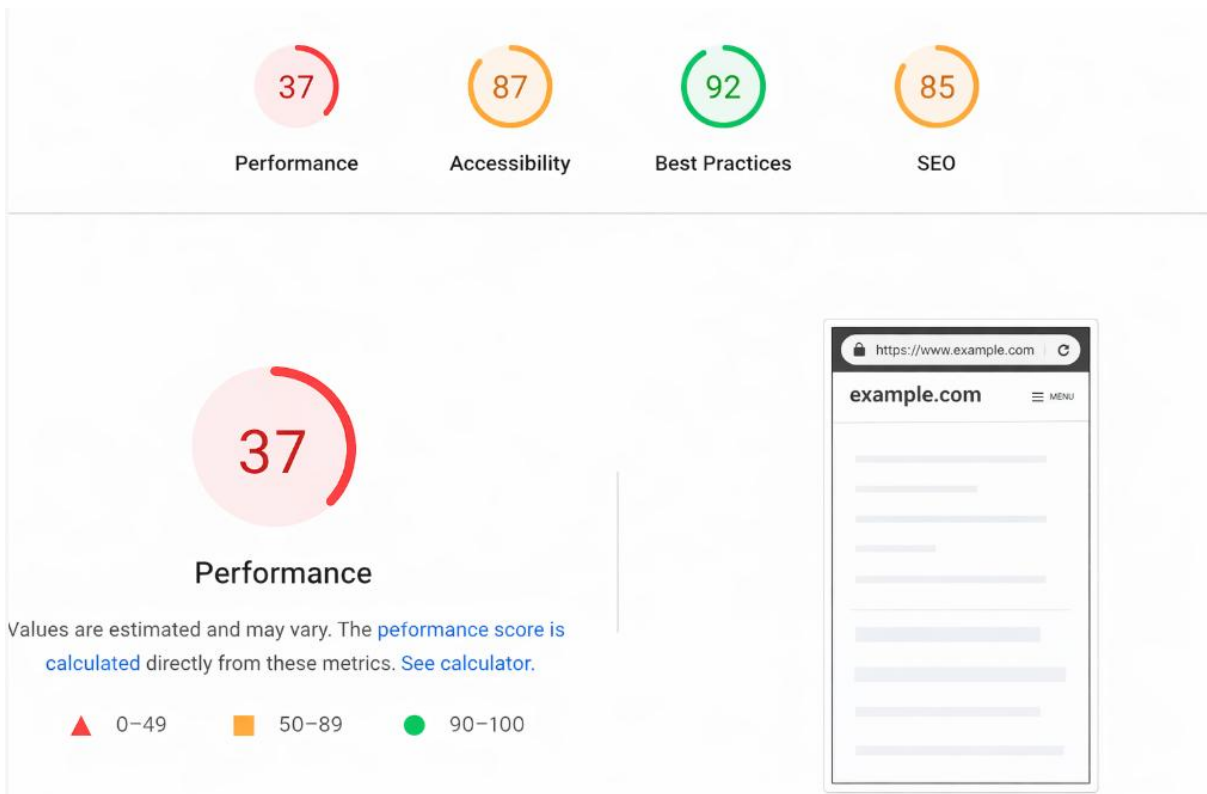
How to Measure Core Web Vitals

Website performance can be tested using several tools.

Popular tools include:

- Google Page Speed Insights
- Lighthouse
- Chrome DevTools
- Web Page Test

([Google Page Speed Insights](https://pagespeed.web.dev/)) Example performance report for **example.com** from <https://pagespeed.web.dev/> (insert your website your url instead of example.com) if would like to test your website in Google Page Speed Insight



Metric	What It Measures	Ideal Score
--------	------------------	-------------

LCP	Loading speed	Under 2.5 seconds
INP	Interaction responsiveness	Under 200 ms
CLS	Visual stability	Under 0.1

(Lighthouse) Example performance report for **example.com**

Example.com



100	92	88	100	100
Performance	Progressive Web App	Accessibility	Best Practices	SEO
Score scale: ● 0-49 ● 50-89 ● 90-100				

Performance

100

Metrics

First Contentful Paint	0.9 s ✔	First Meaningful Paint	1.2 s ✔
Speed Index	1.1 s ✔	First CPU Idle	1.2 s ✔
Time to Interactive	1.2 s ✔	Estimated Input Latency	10 ms ✔



Opportunities

These optimizations can speed up your page load.

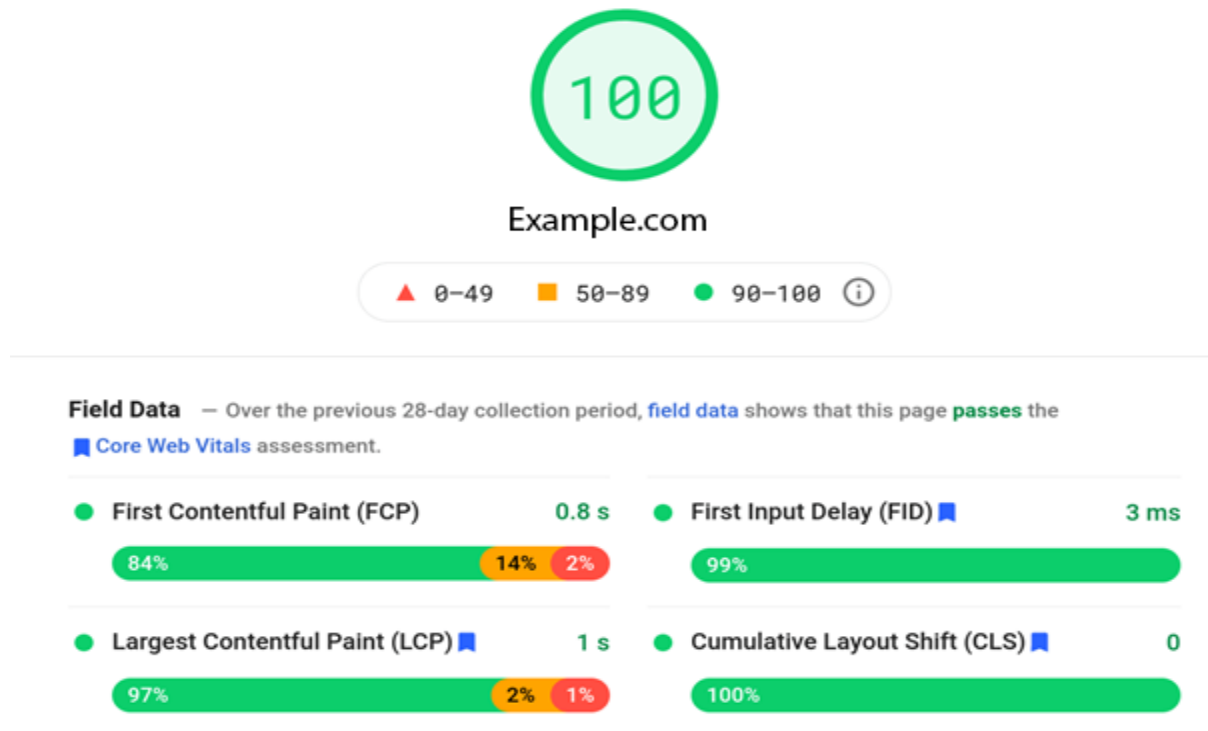
Opportunity	Estimated Savings
1 Serve images in next-gen formats	▬ 0.3 s ▼

Diagnostics

More information about the performance of your application.

- 1 Ensure text remains visible during webfont load ▲ ▼
- 2 Serve static assets with an efficient cache policy ● 57 resources found ▼

(Google Page Speed Insights) Example performance report for **example.com** from <https://pagespeed.web.dev/> (insert your website your url instead of example.com) if would like to test your website in Google Page Speed Insight



4

These reports highlight performance issues that need optimization.

Metric	What It Measures	Ideal Score
LCP	Loading speed	Under 2.5 seconds
INP	Interaction responsiveness	Under 200 ms
CLS	Visual stability	Under 0.1

Chapter 8

Fixing Largest Contentful Paint (LCP)

Largest Contentful Paint measures **how quickly the main content of a page becomes visible**.

This is usually the largest visible element on the screen, such as:

- hero images

- banner images
- large headings
- featured images

Example PageSpeed report highlighting the LCP element on **example.com**:

Google Page Speed <https://www.example.com>

Google Page Speed

37

Metrics

- Largest Contentful Paint** 4.7 s
- First Contentful Paint 3.1 s
- Total Blocking Time 740 ms
- Cumulative Layout Shift 0.08

Metrics

- Largest Contentful Paint** 4.7 s
- First Contentful Paint 3.1 s
- Total Blocking Time 740 ms
- Cumulative Layout Shift 0.08

LCP Element

This represents the largest contentful paint element.

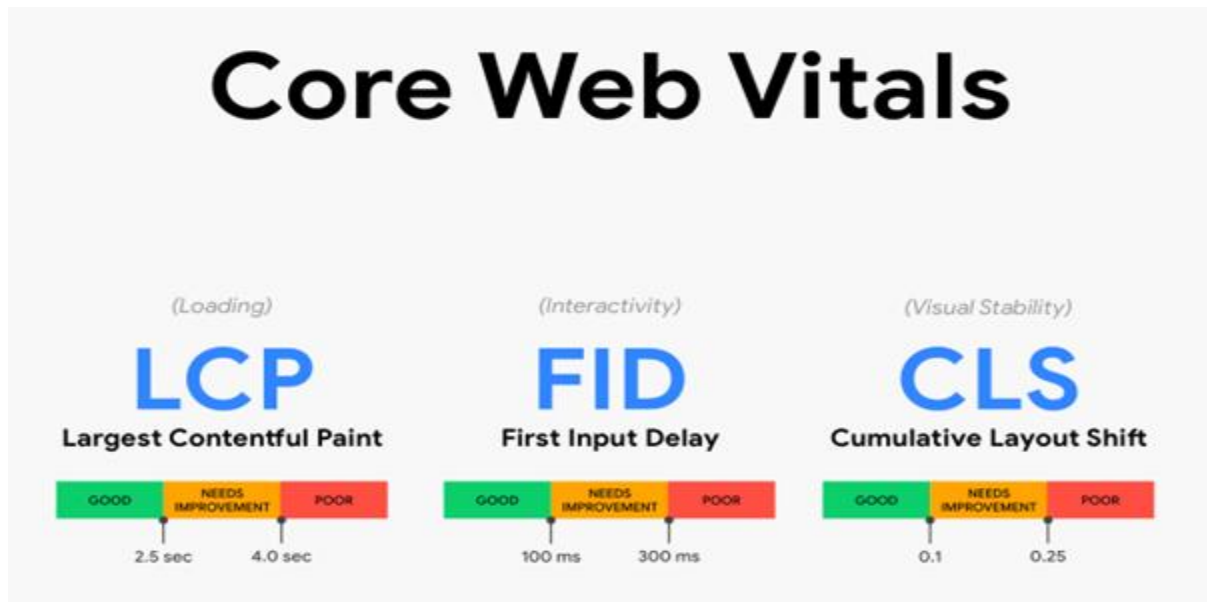
Lighthouse Scores Show Performance Subscores

- Performance** +7 62
- Accessibility** 100
- Best Practices** 52
- SEO** 100

Lighthouse Performance Subscores

METRIC	VALUE	SCORE	CONTRIBUTION	
Total Blocking Time	1,640 ms	0%	0/30%	View Details
Cumulative Layout Shift	0.001	100%	25/25%	View Details
Largest Contentful Paint	1.2 s	90%	23/25%	View Details
Speed Index	1.8 s	70%	7/10%	View Details
First Contentful Paint	1.2 s	76%	8/10%	View Details

Core Web Vitals



Common Causes of Poor LCP

Several issues can cause slow LCP.

Large Images

Large images are the most common cause.

Example problem:

hero-banner.jpg

Size: 1.8MB

Optimized version:

hero-banner.webp

Size: 180KB

Reducing image size dramatically improves load speed.

Slow Server Response Time

If the server takes too long to respond, the entire page will load slowly.

This metric is known as **Time to First Byte (TTFB)**.

Slow TTFB often results from:

- cheap hosting

- overloaded servers
 - poor caching configuration
-

Render Blocking Resources

CSS and JavaScript files may block rendering.

Example blocking file:

example.com/css/main.css

If the browser must download this file before displaying content, the LCP time increases.



Fixing LCP Step-by-Step

Step 1 — Optimize Images

Convert images to modern formats such as:

- WebP
- AVIF

Example HTML:

```

```

Step 2 — Preload Important Images

Preloading allows the browser to prioritize important resources.

Example:

```
<link rel="preload"
as="image"
href="https://example.com/images/hero-image.webp">
```

Step 3 — Improve Hosting

Faster hosting can dramatically improve LCP.

Recommended features include:

- NVMe storage
 - server caching
 - modern PHP versions
 - HTTP/3 support
-

Chapter 9

Image Optimization for Website Speed

Images often account for **60–80% of page weight** on many websites.

Poorly optimized images are one of the biggest causes of slow websites.

Example Image Optimization

Original file:

<https://example.com/images/seo-banner.jpg>

Size: 2MB

Optimized file:

<https://example.com/images/seo-banner.webp>

Size: 220KB

This reduces page load time significantly.

Image Optimization Techniques

Compression

Use tools such as:

- TinyPNG
- Squoosh
- ShortPixel

These tools compress images without significantly reducing quality.

Lazy Loading

Lazy loading ensures images load only when they become visible.

Example HTML:

```

```

Lazy loading reduces initial page load time.

Responsive Images

Responsive images ensure different devices load appropriate image sizes.

Example:

```

```

This technique prevents mobile devices from downloading unnecessarily large images.

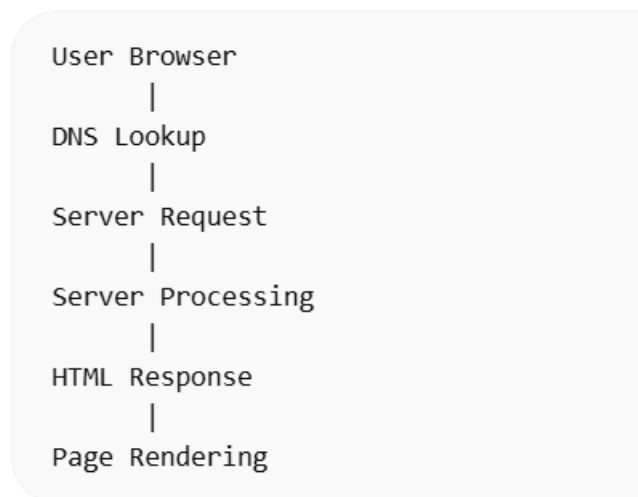


Chapter 10

Reducing Server Response Time (TTFB)

Page Load Process Diagram

Diagram Structure

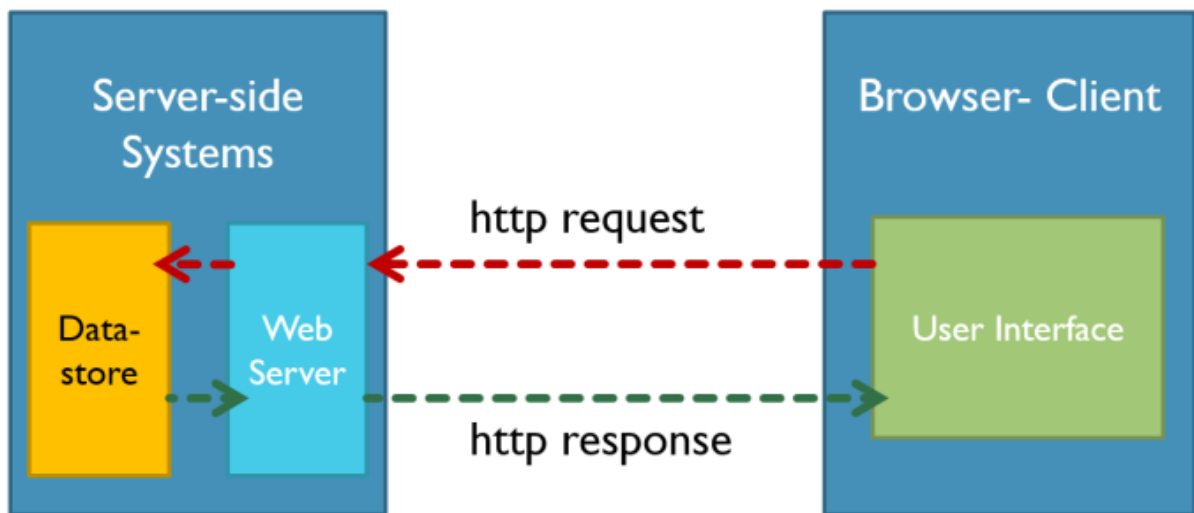
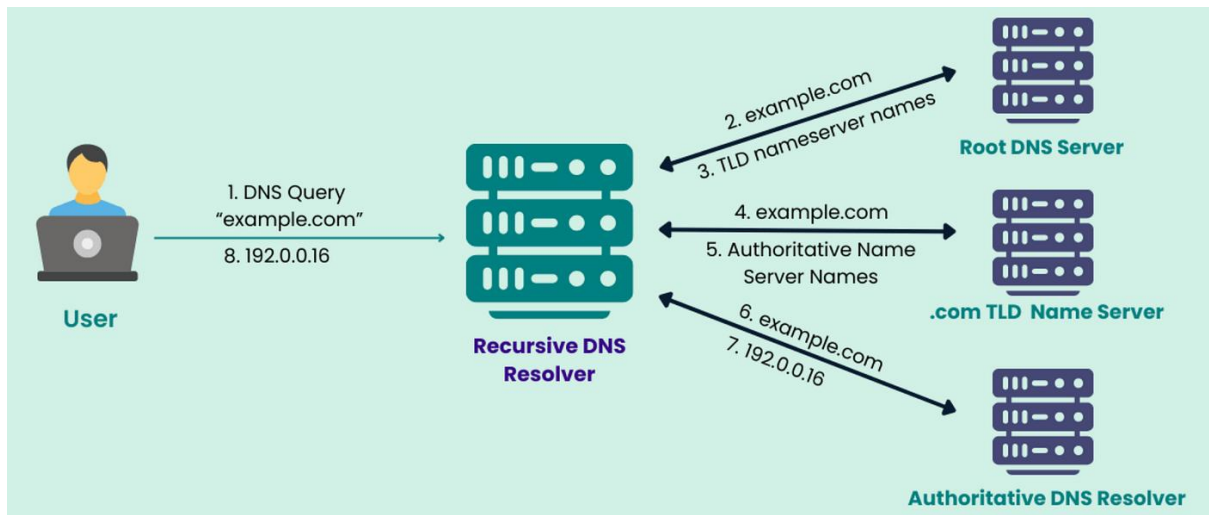


Shows how web pages load step-by-step.

Time to First Byte measures how quickly a server responds to a browser request.

The faster the server responds, the faster the page begins loading.

Example request process for **example.com**:



4

Causes of Slow TTFB

Several factors can increase server response time.

Slow Hosting

Cheap shared hosting often suffers from overloaded servers.

No Server Caching

Without caching, the server must regenerate each page for every visitor.

Too Many Plugins

Many WordPress websites install dozens of plugins, which can slow server processing.

Fixing TTFB

Enable Server Caching

Server caching allows pre-generated pages to be served instantly.

Example caching methods:

- Nginx FastCGI cache
 - Varnish cache
 - Redis object cache
-

Use a Content Delivery Network (CDN)

CDNs distribute website content across multiple servers worldwide.

This reduces latency for visitors.

Reduce Database Queries

Large numbers of database queries slow down page generation.

Optimizing plugins and themes can reduce unnecessary queries.



Chapter 11

JavaScript Optimization for Website Speed

JavaScript powers many modern website features such as animations, interactive menus, analytics tracking, and dynamic content loading. However, excessive or poorly optimized JavaScript can significantly slow down website performance.

When a browser loads a webpage, it must download, parse, and execute JavaScript before certain content can appear. If large JavaScript files block rendering, the page will appear slow to users.

This problem is known as **render-blocking JavaScript**.

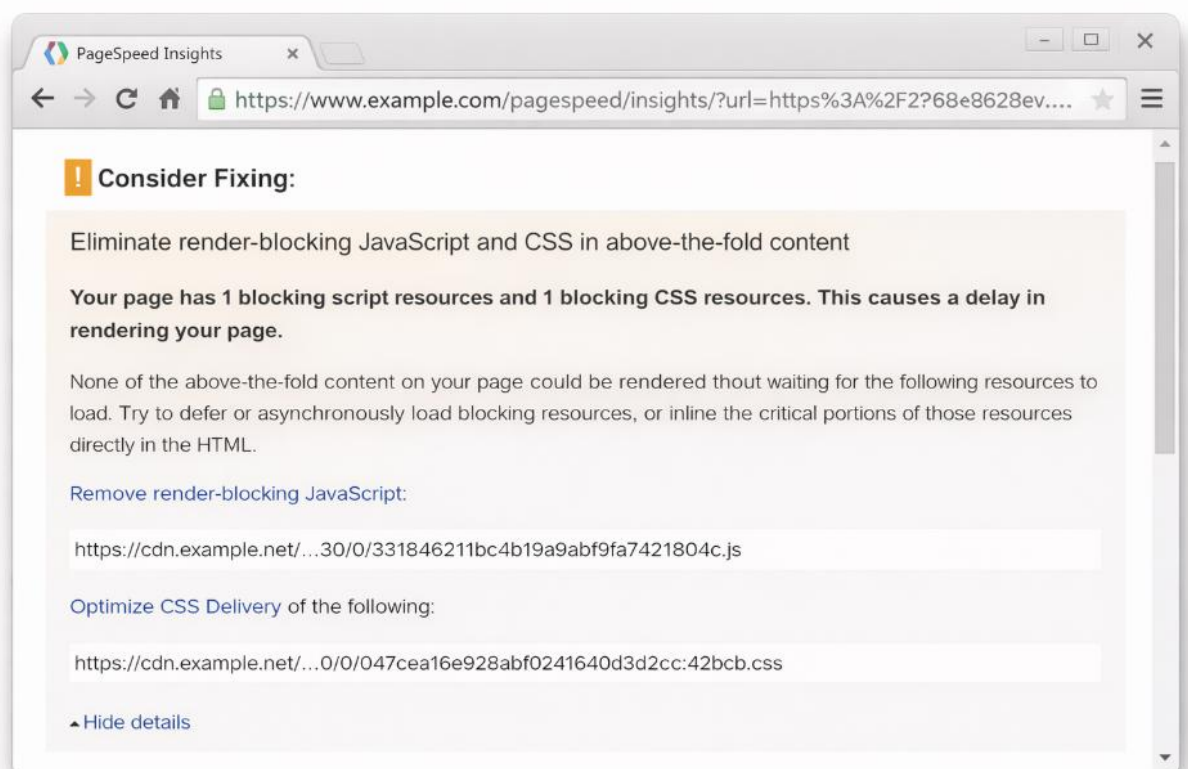
How JavaScript Slows Down Websites

JavaScript can slow websites in several ways:

- large file sizes
- blocking scripts in the page header
- unused JavaScript code
- long execution times

Example Page Speed report highlighting JavaScript issues on **example.com**

These reports identify JavaScript files that delay page rendering.



⚠ Remove unused JavaScript 8.26 s ^

Remove unused JavaScript to reduce bytes consumed by network activity. [Learn more.](#)

Show 3rd-party resources (0)

URL	Transfer Size	Potential Savings
/cdn.example.net/.../voxxcustomfpd152dabb71d.js	213.5 KB	123.1 KB
/cdn.example.net/.../search/ads.js	117.5 KB	98.1 KB
/cdn.example.net/.../d2fb08da-1c03-4c8a-978f-ad8a96baf874-web.js	147.6 KB	92.6 KB
/cdn.example.net/.../packs/chorus-09100feebdcef.js	174.9 KB	88.7 KB



Step 1 — Defer JavaScript

The **defer** attribute tells the browser to download the script but execute it only after the HTML document has finished parsing.

Example:

```
<script src="https://example.com/js/main.js" defer></script>
```

This prevents the script from blocking page rendering.

Step 2 — Use Async for Independent Scripts

For scripts that do not depend on other resources (such as analytics), use the **async** attribute.

Example:

```
<script src="https://example.com/js/analytics.js" async></script>
```

Async scripts load independently and do not delay page rendering.

Step 3 — Remove Unused JavaScript

Many websites load large JavaScript libraries that are never fully used.

Common examples include:

- unused slider libraries
- animation libraries
- outdated plugins

Removing unused code can significantly reduce JavaScript execution time.

Step 4 — Code Splitting

Code splitting divides large JavaScript files into smaller chunks that load only when needed.

Example scenario:

Instead of loading a 500KB JavaScript file on every page, a website may load smaller modules depending on user actions.

This approach improves initial page load performance.

Chapter 12

CSS Optimization

CSS controls the visual appearance of a website. However, large or poorly optimized CSS files can slow page rendering.

When the browser encounters CSS files, it must download and process them before displaying the page layout.

This means CSS can become **render-blocking resources**.

Example CSS Problem

Example file on **example.com**:

`https://example.com/css/style.css`

Size: 220KB

If this file loads before the page renders, it can delay the Largest Contentful Paint.



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Example Page Speed warning:

Performance

Values are estimated and may vary. The performance score is calculated directly from these metrics. [See calculator.](#)

▲ 0-49 ■ 50-89 ● 90-100

METRICS Expand view

■ First Contentful Paint 2.0 s	■ Time to Interactive 5.1 s
● Speed Index 2.1 s	● Total Blocking Time 90 ms
▲ Largest Contentful Paint 5.2 s	● Cumulative Layout Shift 0.004

Captured at Sep 16, 2022, 11:29PM+8 Estimated with Githouse 6.5.6 Analyze page load
Newest form load Show 702 shelling Using WebPageTimings 103.2022.02.1-mobile

[View Treemap](#)

Show audits relevant to: **CS** JS

OPPORTUNITIES

Opportunity	Estimated Savings	
▲ Eliminate render-blocking resources	4.15 s -	
Resources are blocking the first paint of your page. Consider delivering critical JS/CSS inline and deferring all non-critical JS/styles. Learn more		
URL	Transfer Size	Potential Savings
https://cdn.example.com/styles/bootstrap.css	188 KB	1,090 ms
https://cdn.example.com/scripts/jquery-3.4.1.js	621 KB	3,050 ms
https://cdn.example.com/scripts/jquery-3.4.1.js	621 KB	3,050 ms

These suggestions can help your page load faster. They don't directly affect the Performance score.

⚠ Eliminate render-blocking resources

4.15 s ^

Resources are blocking the first paint of your page. Consider delivering critical JS/CSS inline and deferring all non-critical JS/styles.

Show 3rd-party resources (0)

URL	Size	Potential Savings
https://cdn.example.com/styles/bootstrap.css	188 KB	1,090 ms
https://cdn.example.com/scripts/jquery-3.4.1.js	621 KB	3,050 ms
https://cdn.example.com/scripts/jquery-3.4.1.js	621 KB	3,050 ms

UnusedCSS – Remove Unused CSS
Easily Clean Up Your Unused CSS Rules

<https://www.example.com/> Remove Unused CSS

example.com

- cdn.example.com /styles/bootstrap.min.css 154 KB
- cdn.example.com /assets/stylesheets/main.css 334 KB
- cdn.example.com /styles/unused-styles.css 4.2 KB

11Ba1733146k-4293... -76.4 KB

1a9f522774822711hS... -42.2 KB

139763f42890140102... -4.2 KB

<https://cdn.example.com/styles/bootstrap/4.5.2/styles/bootstrap.min.css>

Used (kb) Unused (kb)

The cleaned CSS file size is 35% smaller - 45% of CSS selectors are used

Preview of the changes in the CSS file:

```
/* Bootstrap v4.5.2 (https://cdn.example.com)
** Copyright 2011-2019 Twitter, Inc.
** Licensed under MIT (https://github.com/twbs/bootstrap/blob/master/LICENSE)
** URL normalize.css v8.0.1 | MIT License | (https://normalize.home)
**/
font-family: sans-serif; }
```

4

Step 1 — Minify CSS

Minification removes unnecessary characters such as spaces and comments.

Example before minification:

```
body {
  background-color: white;
  font-size: 16px;
}
```

After minification:

```
body{background-color:#fff;font-size:16px}
```

Minification reduces file size and improves loading speed.

Step 2 — Remove Unused CSS

Many WordPress themes and frameworks load CSS that is not used on every page.

Tools such as **Chrome DevTools Coverage Report** can identify unused CSS.

Removing unused CSS can significantly reduce page weight.

Step 3 — Inline Critical CSS

Critical CSS refers to styles required to render above-the-fold content.

By inlining critical CSS in the HTML head, the browser can render important content immediately.

Example:

```
<style>
.hero-title{font-size:42px;font-weight:bold}
</style>
```

Remaining CSS files can load later.

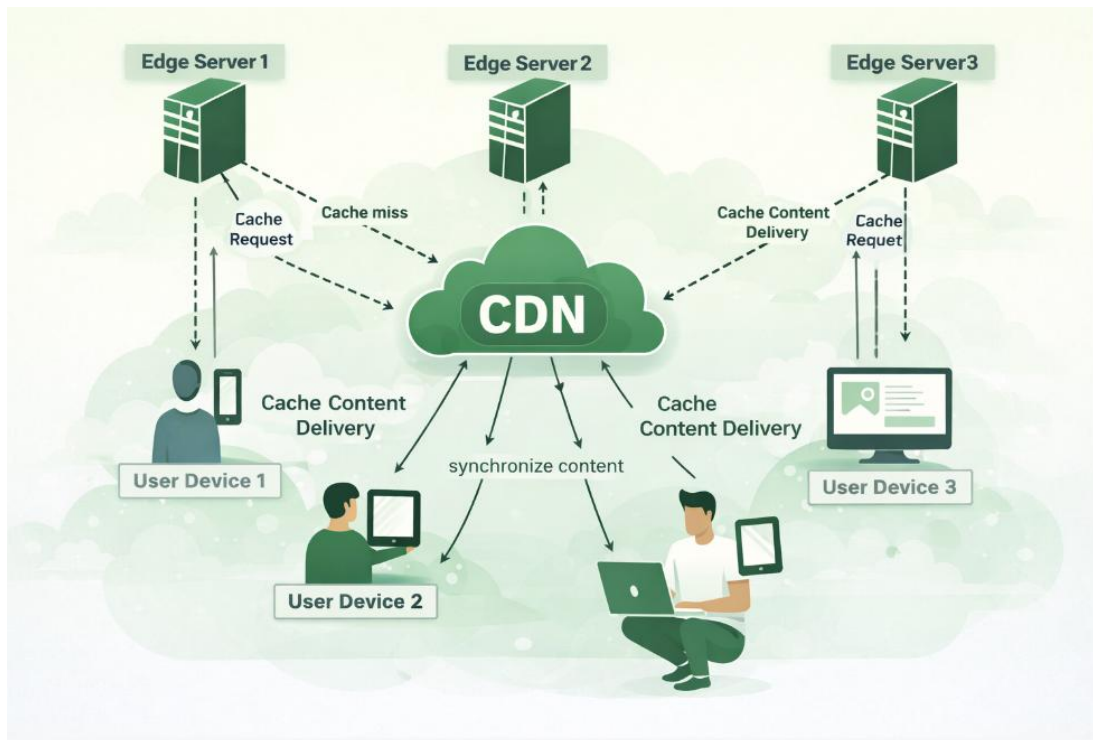


Chapter 13

CDN Optimization

A **Content Delivery Network (CDN)** is a network of servers distributed across multiple geographic locations.

CDNs store cached versions of website assets such as images, CSS files, and JavaScript.



Benefits of Using a CDN

Using a CDN provides several advantages.

Faster Load Times

Visitors receive content from nearby servers.

Reduced Server Load

The origin server handles fewer requests.

Improved Security

Many CDNs include protection against:

- DDoS attacks
- malicious traffic

Popular CDN Providers

Common CDN providers include:

- Cloudflare
- BunnyCDN

- KeyCDN
- Fastly

Each provider offers different performance features and pricing models.

How to Set Up a CDN

Basic CDN setup steps:

1. Create a CDN account
2. Add your domain (example.com)
3. Update DNS settings
4. Enable caching

Once configured, the CDN begins serving cached content globally.

PART IV — Core Web Vitals Optimization

Chapter 14

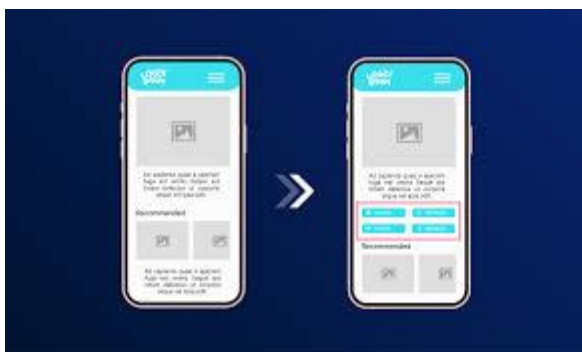
Fixing Cumulative Layout Shift (CLS)

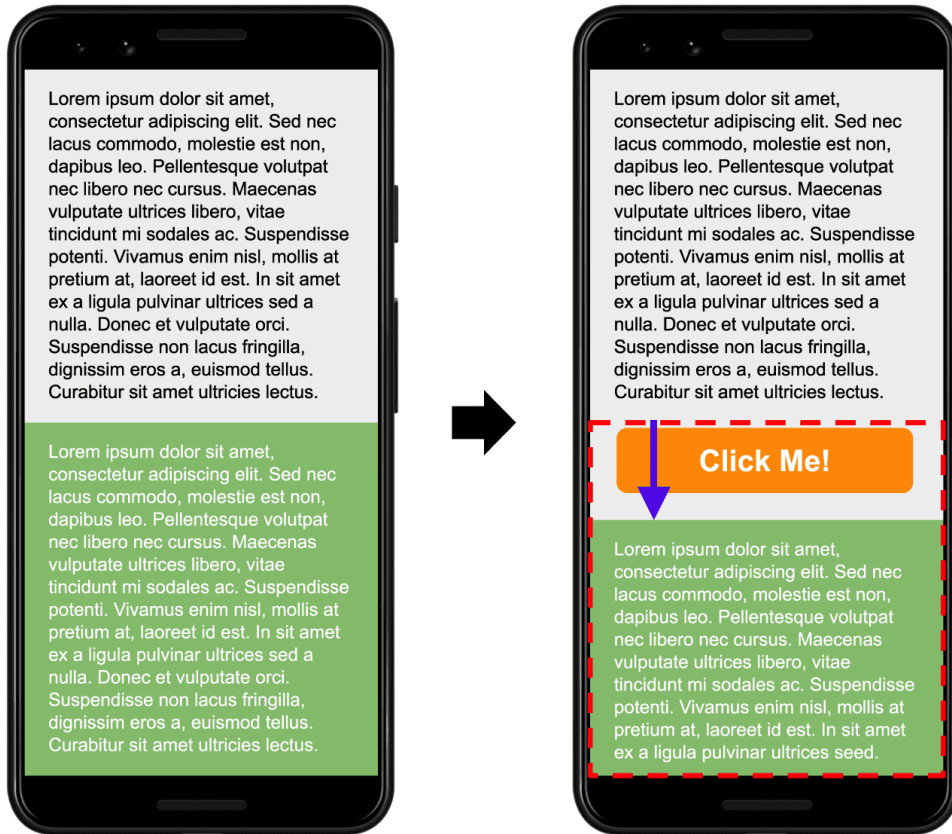
Cumulative Layout Shift measures visual stability during page loading.

Layout shifts occur when page elements move unexpectedly while the page loads.

These movements create a poor user experience.

Example CLS issue on **example.com**:





Core Web Vitals



Common Causes of CLS

Several issues can cause layout shifts.

Images Without Dimensions

Example problematic HTML:

```

```

Correct version:

```

```

Specifying dimensions prevents layout shifts.

Ads Loading Dynamically

Advertisements that load after page content can push elements down the page.

Reserve space for ads to prevent shifting.

Web Fonts Causing Reflow

When custom fonts load slowly, text may briefly appear using a fallback font and then change.

This effect is known as **FOIT (Flash of Invisible Text)** or **FOUT (Flash of Unstyled Text)**.

Using font-display: swap can reduce these issues.



Chapter 15

Fixing Interaction to Next Paint (INP)

Interaction to Next Paint measures how quickly a page responds to user interactions.

These interactions include:


- clicking buttons
- opening menus
- submitting forms

If the browser takes too long to process interactions, users experience delays.

Example INP report for **example.com**:

Elements Console Sources **Lighthouse** >> ⚙️ ⋮ ✕

+ (new report) ⌵ ⌵ ⚙️

 **Generate a Lighthouse report** [Start timespan](#)

Mode [Learn more](#)

Navigation (Default)

Timespan

Snapshot

Device

Mobile

Desktop

Categories

Performance

Accessibility

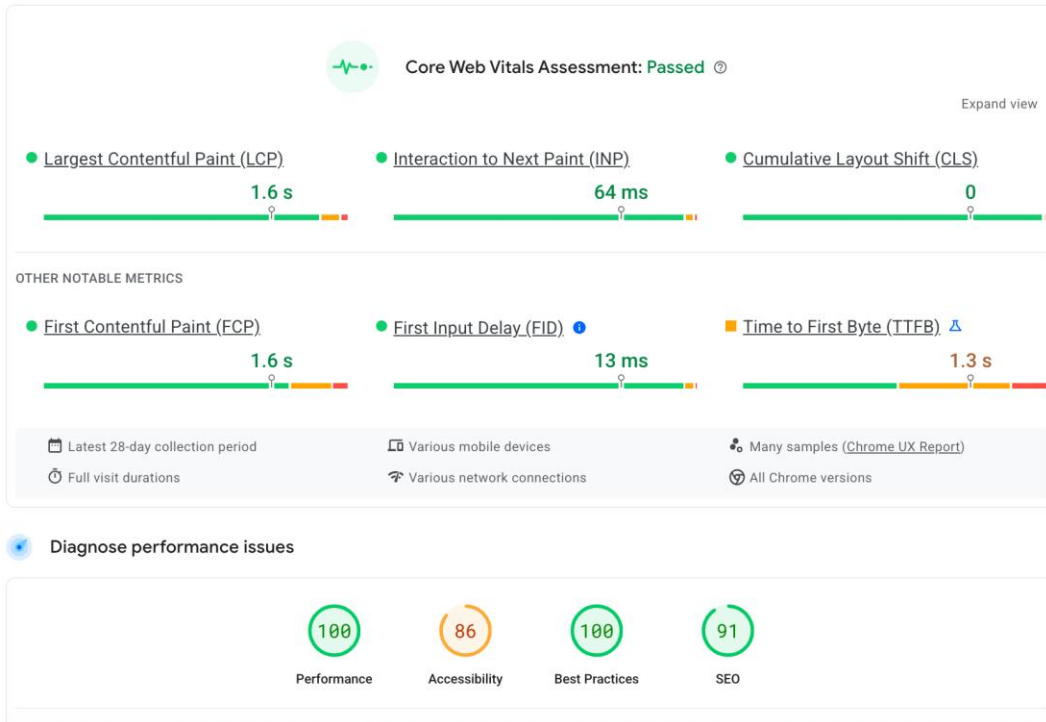
Best practices

SEO

Progressive Web App

[Analyze](#)[Mobile](#) [Desktop](#)

Discover what your real users are experiencing

[This URL](#) [Origin](#)

4

Common Causes of Poor INP

Slow interaction performance is usually caused by:

- heavy JavaScript execution
- long main-thread tasks
- excessive event listeners

Step 1 — Break Long JavaScript Tasks

Large tasks block the browser from responding to user input.

Splitting tasks into smaller functions improves responsiveness.

Step 2 — Reduce Third-Party Scripts

Many websites load external scripts such as:

- advertising scripts
- tracking scripts
- social media widgets

Each script adds processing overhead.

Removing unnecessary scripts improves interaction speed.

Step 3 — Optimize Event Handlers

Poorly optimized event listeners can slow user interactions.

Optimizing these functions ensures smoother page responsiveness.



PART V — Advanced Technical SEO

Chapter 16

Structured Data for Technical SEO

Structured data helps search engines understand the meaning of content on a webpage. Instead of guessing what a page is about, structured data provides clear labels that describe the content.

Search engines like **Google Search** use structured data to create enhanced search results called **rich results**.

Examples of rich results include:


- FAQ snippets
- product ratings
- recipe cards
- article previews

How to Create structured data (schema) easily


You can use this website : <https://technicalseo.com/tools/schema-markup-generator/>

For generating structured data (schema) code easily

demo rich results generated for **example.com**:





EXAMPLE.COM
<https://www.example.com> > apply-apprent...

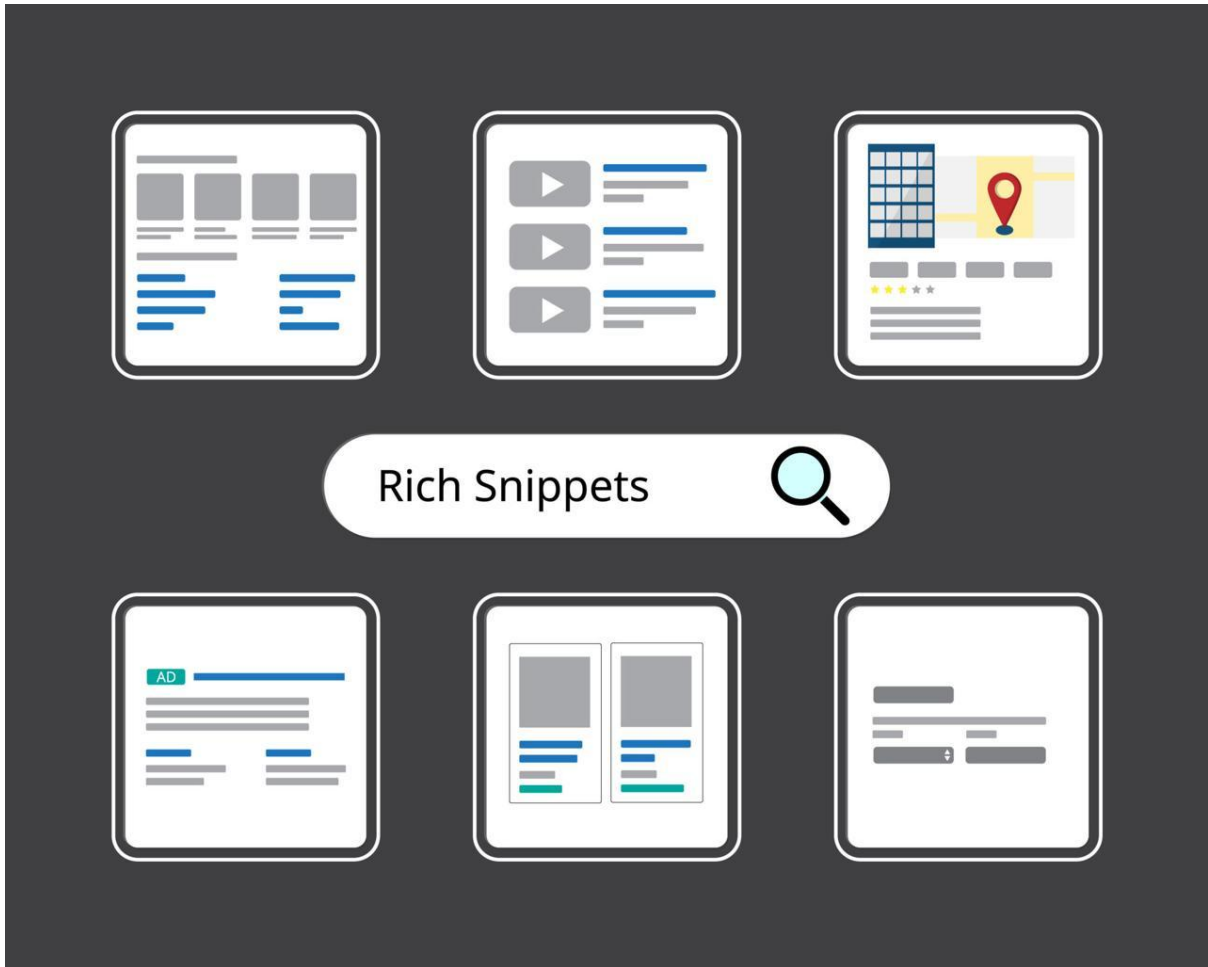


Find an apprenticeship

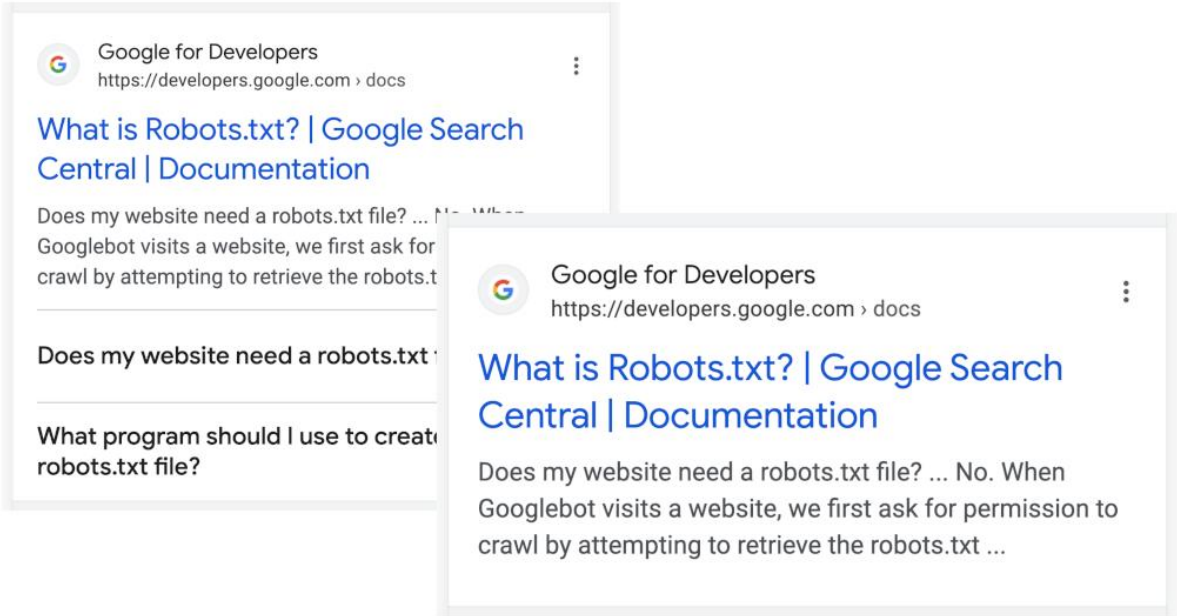
Search vacancies, register your profile, and apply for an apprenticeship - you ... You can apply for apprenticeships in these regions:

How to find an apprenticeship? 

Whom to contact? 



Rich Snippets 



Many websites publish excellent content but fail to implement structured data.

Without structured data:

- search engines rely only on HTML signals
- page meaning may be unclear
- rich results cannot appear

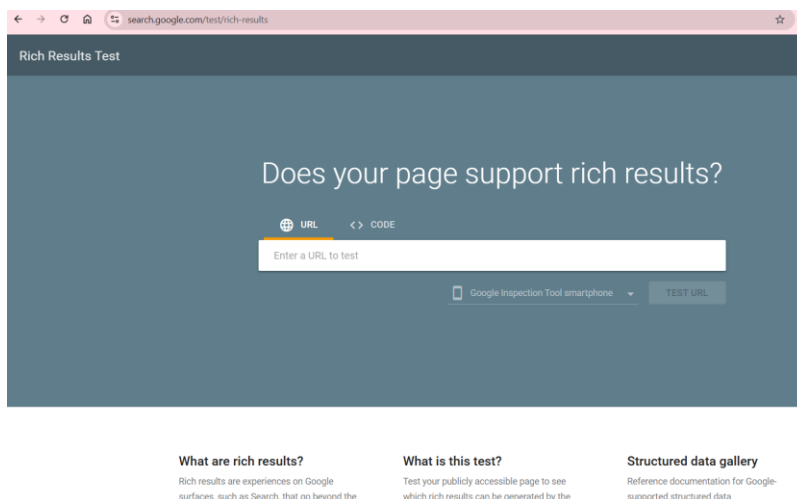
Example scenario:

A blog article on **example.com/technical-seo-guide** may contain FAQs, but Google may not display FAQ results unless FAQ structured data (FAQ schema) is implemented.

Diagnosis

Use Google's Rich Results Test.

<https://search.google.com/test/rich-results>



<https://search.google.com/test/rich-results>

Steps:

1. Visit the Rich Results Test tool.
2. Enter a URL such as:

`https://example.com/technical-seo-guide`

3. Run the test.

If structured data is missing, the report will show:

No structured data detected



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Step-by-Step Fix

You can use this website : <https://technicalseo.com/tools/schema-markup-generator/>

For generating structured data (schema) code easily

Step 1 — Add Schema Markup

Article schema:

```
{
"@context": "https://schema.org",
"@type": "Article",
"headline": "Technical SEO Guide",
"author": {
"@type": "Person",
"name": "SEO Expert"
},
"publisher": {
"@type": "Organization",
"name": "Example Media"
}
}
```

Step 2 — Add FAQ Schema

Example:

```
{
"@context": "https://schema.org",
"@type": "FAQPage",
"mainEntity": [{
"@type": "Question",
"name": "What is Technical SEO?",
"acceptedAnswer": {
"@type": "Answer",
"text": "Technical SEO improves crawling, indexing, and website performance."
}
}
}
```

```
}}  
}
```

Step 3 — Validate Schema

After implementation:

1. Run the Rich Results Test again.
2. Confirm schema is detected.
3. Request indexing in Search Console.

Results

Proper structured data implementation can result in:

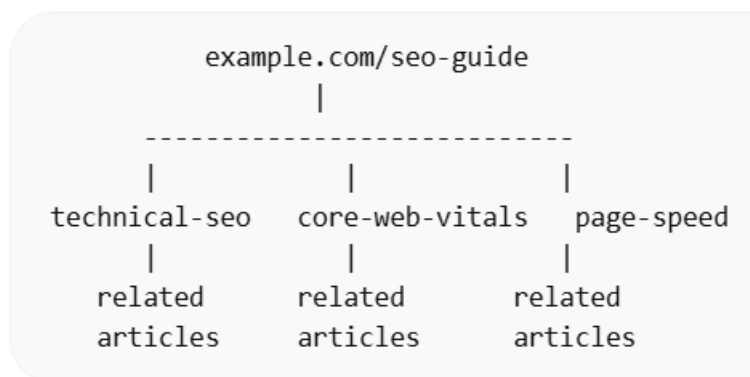
- higher click-through rates
- enhanced search results
- better understanding of page content

Chapter 17

Advanced Internal Linking Architecture

Internal linking is one of the most powerful but underutilized technical SEO strategies.

Diagram Structure



Explains **topic clusters and link authority flow**.

Internal links help search engines:

- discover pages
- understand topic relationships
- distribute ranking authority

Websites with poor internal linking often struggle to rank important pages.

Problem: Important Pages Are Buried

Imagine a website with the following structure:

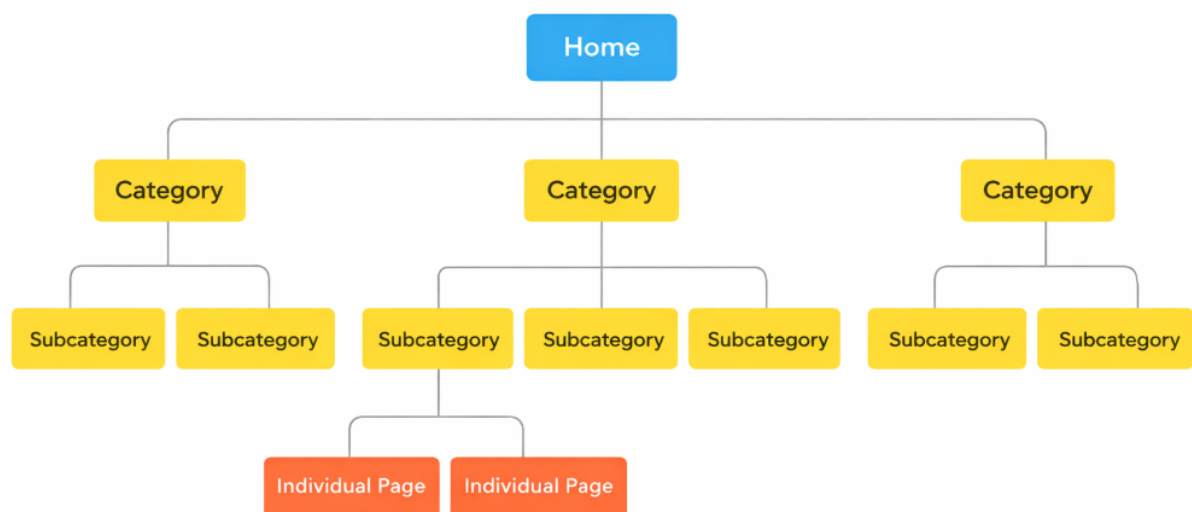
example.com



If important pages are not linked properly, Google may crawl them infrequently.

Example crawl visualization of **example.com**:

Website Architecture Example



Diagnosis

Use an SEO crawler.

Tool:

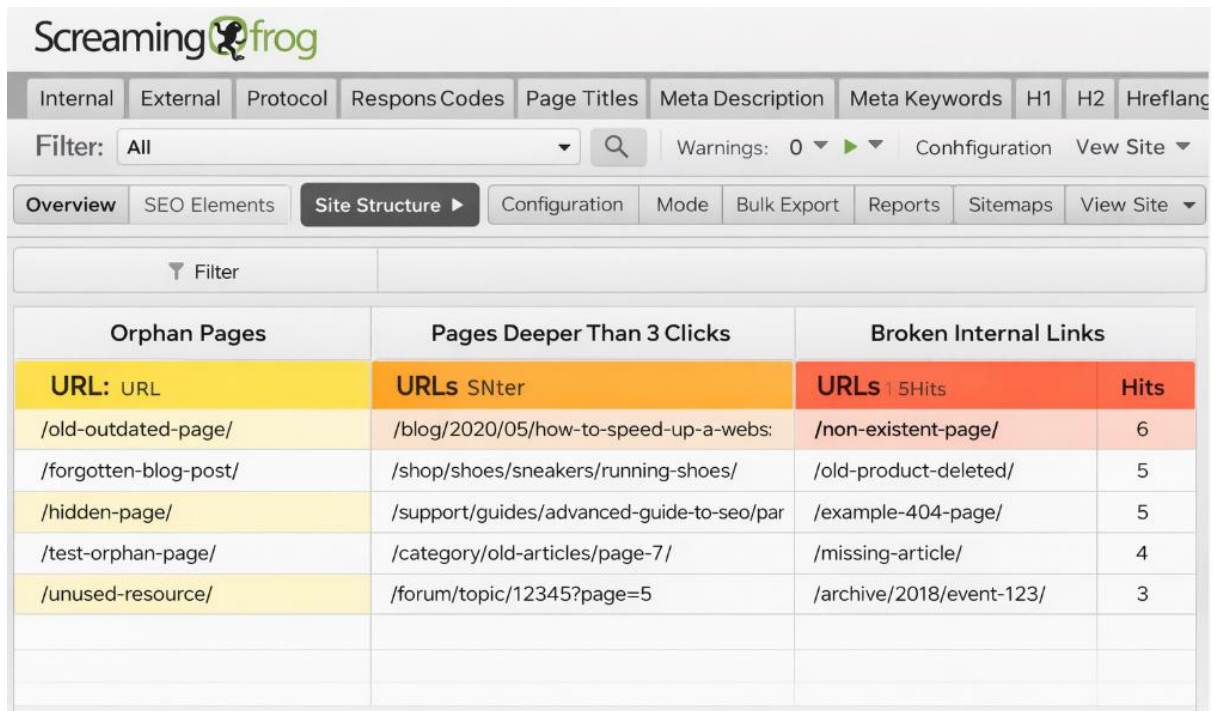
- Screaming Frog

Run a crawl on:

<https://example.com>

Look for:

- orphan pages
- pages deeper than 3 clicks
- broken internal links



The screenshot shows the Screaming Frog SEO Spider interface. The top navigation bar includes tabs for Internal, External, Protocol, Respons Codes, Page Titles, Meta Description, Meta Keywords, H1, H2, and Hreflang. Below this is a filter dropdown set to 'All' and a search icon. The main navigation bar includes Overview, SEO Elements, Site Structure (selected), Configuration, Mode, Bulk Export, Reports, Sitemaps, and View Site. The main content area displays a table with three columns: Orphan Pages, Pages Deeper Than 3 Clicks, and Broken Internal Links. The table has a header row with 'URL: URL', 'URLs SNter', 'URLs 1 5Hits', and 'Hits'. The data rows are as follows:

Orphan Pages	Pages Deeper Than 3 Clicks	Broken Internal Links	Hits
URL: URL	URLs SNter	URLs 1 5Hits	Hits
/old-outdated-page/	/blog/2020/05/how-to-speed-up-a-webs:	/non-existent-page/	6
/forgotten-blog-post/	/shop/shoes/sneakers/running-shoes/	/old-product-deleted/	5
/hidden-page/	/support/guides/advanced-guide-to-seo/par	/example-404-page/	5
/test-orphan-page/	/category/old-articles/page-7/	/missing-article/	4
/unused-resource/	/forum/topic/12345?page=5	/archive/2018/event-123/	3

Orphan Pages

- Example pages like:
 - example.com/old-blog-post
 - example.com/hidden-landing-page
 - example.com/test-page

These pages:

- Exist on the server
- Are sometimes indexed
- But **have no internal links pointing to them**



How find orphan pages through Screaming Frog

Finding **orphan pages** (pages that exist but have **no internal links pointing to them**) in **Screaming Frog SEO Spider** requires combining crawl data with external sources like XML sitemaps, analytics, or URL lists. Here's the standard workflow used by SEO professionals.

1 Crawl the Website Normally

1. Open **Screaming Frog**.
2. Enter your website URL.
3. Click **Start** to run the crawl.

This collects all **internally linked pages**.

2 Enable Orphan Page Detection

Before the crawl (or after stopping it), configure this:

1. Go to **Configuration → Spider → Crawl**
2. Make sure **Crawl Linked XML Sitemaps** is enabled.

Then go to:

Configuration → Spider → Advanced

Enable:

- ✓ **Crawl XML Sitemaps**
- ✓ **Crawl URL List**
- ✓ **Crawl GA / GSC APIs** (if connected)

These sources allow Screaming Frog to find URLs **not discovered through internal links**.

3 Add External URL Sources

Orphan detection works best when you supply additional URLs.

Option A — XML Sitemap

1. Go to **Configuration → Spider → Crawl**

2. Tick **Crawl Linked XML Sitemaps**

Or manually add:

- **Configuration → Spider → XML Sitemaps → Add**
-

Option B — Google Analytics

Connect:

- **Configuration → API Access → Google Analytics**

Import:

- Landing pages
 - Last 30–90 days
-

Option C — Google Search Console

Connect:

- **Configuration → API Access → Google Search Console**

Import:

- URLs with impressions or clicks
-

Option D — Upload URL List

If you have exported URLs from CMS or database:

1. **Mode → List**
 2. Upload CSV list.
-

4 Re-Run the Crawl

Start the crawl again after adding the sources.

Screaming Frog will now compare:

- **Crawled URLs**
 - **External URL sources**
-

5 View Orphan Pages Report

Go to:

Reports → Orphan Pages

Export the report.

The report shows URLs that:

- Exist in **sitemap / GA / GSC**
- But **were not discovered through internal links.**

Fast Method (XML Sitemap vs Crawl)

Step 1 — Crawl the Website

1. Open Screaming Frog
2. Enter your domain
3. Click **Start**

Let the crawl finish.

Step 2 — Add XML Sitemap URLs

1. Go to **Mode → List**
2. Click **Upload → Download XML Sitemap**

Paste your sitemap URL like:

`https://domain.com/sitemap.xml`

Screaming Frog will import all URLs from the sitemap.

Step 3 — Check Orphan Pages

Go to the tab:

URL Details → Orphan Pages


Or export via:

Reports → Orphan Pages

These URLs are:

In **sitemap**

But **not found through internal links**

 These are **orphan pages.**

6 How to Verify Orphan Pages

Common reasons:

- Pages removed from navigation
- Pagination issues
- Old blog posts
- Landing pages used only for ads
- Incorrect internal linking

Check:

- Do they need internal links?
- Should they be **redirected or deleted?**
- Should they remain **orphan intentionally (e.g., PPC pages)?**



Why Orphan Pages Are a Problem

Orphan pages can cause several SEO issues:

1. **Google may not discover them easily**
2. **Internal link equity is not passed**
3. **Poor crawl efficiency**
4. **Low ranking potential**

How Orphan Pages Usually Occur

Common causes:

- Deleted internal links
 - Migration mistakes
 - Old landing pages from ads
 - CMS publishing errors
 - Pages only listed in XML sitemap
-

Step-by-Step Fix

Step 1 — Create Topic Clusters

Group related content into clusters.

Example cluster:

example.com/technical-seo

↓

example.com/core-web-vitals

↓

example.com/page-speed-optimization

Each page links to related articles.

Pages with many backlinks should pass authority to other pages.

Example:

example.com/seo-guide

Link from this page to:

abc.com/technical-seo

abc.com/website-speed

Step 3 — Use Descriptive Anchor Text

Example bad anchor:

Click here

Better anchor:

technical SEO audit checklist

Results

Optimized internal linking improves:

- crawl efficiency
- page authority distribution
- keyword rankings

Chapter 18

Fixing Duplicate Content

Duplicate content occurs when multiple URLs contain identical or very similar content.

Search engines struggle to determine which version should rank.

Diagram Structure

```
example.com/page
example.com/page/
example.com/page?utm_source=google
example.com/page?ref=homepage
    ↓
  Canonical URL
  example.com/page
```

Shows how **canonical tags** consolidate duplicate URLs.

Example Duplicate URLs on example.com

```
https://example.com/seo-guide
https://example.com/seo-guide/
https://example.com/seo-guide?ref=homepage
https://example.com/seo-guide?utm_source=google
```

Although these URLs show the same content, search engines treat them as separate pages.

Example duplicate detection report for **example.com**:

The screenshot shows the Screaming Frog SEO Spider interface. At the top, there's a navigation bar with tabs for Internal, External, Protocol, Respons Codes, Page Titles, Meta Description, Meta Keywords, H1, H2, and Hreflang. Below this is a filter dropdown set to 'All' and a search icon. A 'Warnings: 0' indicator is visible. The main navigation bar includes Overview, SEO Elements, Site Structure (selected), Configuration, Mode, Bulk Export, Reports, Sitemaps, and View Site. A secondary navigation bar has a Filter dropdown. The main content area is titled 'Duplicate URLs Found' and contains two tables. The first table lists four duplicate URLs with their respective IDs. The second table, also titled 'Duplicate URLs Found', lists two duplicate URLs with their respective IDs.

#	URL
1	https://example.com/seo-guide
2	https://example.com/seo-guide/
3	https://example.com/seo-guide?ref=homepage
4	https://example.com/seo-guide?utm_source-google

#	URL
1	https://example.com/seo-guide
2	https://example.com/seo-guide/

Problems Caused by Duplicate Content

Duplicate pages create several SEO issues.

- ranking signals split across multiple URLs
- crawl budget wasted
- indexing confusion

As a result, none of the duplicate pages may rank well.

Diagnosis

Run a crawl of **yourwebsite.com** through Screaming Frog, you need to download Screaming Frog and insert the your website url in screaming frog.

How find duplicate content through Screaming Frog

You need to download Screaming Frog and install.

To find duplicate content in **Screaming Frog**, **crawl your site**, then navigate to the **Content tab** and select the Exact or Near Duplicates filters. For best results, enable **"Near Duplicates"** under

Configuration > Content > Duplicates before crawling, and run a Crawl Analysis after the crawl completes

Look for:

- duplicate titles
- duplicate meta descriptions
- identical page content

Also check Search Console under:

Indexing → Pages → Duplicate without canonical

Step-by-Step Fix

Step 1 — Add Canonical Tags

Canonical tags tell search engines which version is the preferred URL.

Example:

```
<link rel="canonical" href="https://example.com/seo-guide">
```

Note: if you are using WordPress website, Yoast SEO Plugin already add Canonical tags in your website. It should be enabled in Yoast SEO Plugin Setting. Please check in setting of Yoast SEO Plugin.

Step 2 — Redirect Duplicate URLs

301 Redirect unnecessary versions to the main page.

Example redirect:

```
example.com/seo-guide/  
→ example.com/seo-guide
```

if you are using WordPress website, they you can 301 re-direct through Re-Direct Plugin, you need to install plugin first, or by insert code in .htaccess file

To implement a permanent 301 redirect in your .htaccess file

Redirecting a Single Page

```
Redirect 301 "/old-page.html" http://www.yourwebsite.com/new-page.html
```

Replace "/old-page.html" with the path of the old page (relative to your website's root directory).

Replace "http://www.yourwebsite.com/new-page.html" with the full URL of the new destination page

Step 3 — Remove Parameter Indexing

Prevent parameter URLs from being indexed.

Example:

example.com/product?sort=price
example.com/product?color=blue

Use canonical tags or noindex directives.

Results

After fixing duplicate content issues:

- crawl efficiency improves
 - ranking signals consolidate
 - search visibility increases
-



PART VI — AI Technical SEO & Automation

Chapter 19

AI SEO and Google AI Overviews

Search engines are evolving rapidly with the integration of artificial intelligence. Modern search results increasingly rely on AI-generated summaries and conversational answers.

These features are commonly known as **AI Overviews** in **Google Search**.

AI search systems analyze webpages and extract structured information to generate answers directly in search results.

Example AI search result referencing information



scare quotes mla style



All

Images

Forums

Videos

Shopping

News

Maps

More

Tools

AI Overview

According to the Modern Language Association (MLA) Handbook, scare quotes are **quotation marks used to indicate disapproval, skepticism, or purposeful misuse**. They should be used sparingly and with caution because their intended purpose can be unclear.

Here are some examples of scare quotes in MLA style:

- "A silver dome concealed the robot's 'brain'"
- "Many 'experts' offer advice on training babies to sleep on a schedule"
- "Bob experienced the 'catastrophe' of having his tooth pulled"
- "The minister found the stripper's attire somewhat too 'mature' for vacation bible study"
- "I 'liked' her post on Facebook"
- "Women achieved 'equality' when they were granted the right to vote in 1920"

What is Google's AI Overviews (SGE)?



All

Images

Videos

Shopping

Forums

More

Tools

AI Overview

Learn more

"AI Overviews and more" is an experiment in Search Labs that lets you see **AI Overviews** on more Google searches and offers access to additional generative AI features in Search. "AI Overviews and more" has replaced the Search Labs experiment known as SGE (Search Generative Experience).

Show more

How AI Systems Select Content

AI systems evaluate several signals when selecting sources:

- content clarity
- structured information
- page speed
- domain authority
- topical relevance

Websites that clearly answer questions and structure content effectively have a higher chance of appearing in AI summaries.

Problem: Content Not Selected by AI Search

Many websites fail to appear in AI-generated search results because:

- content lacks clear answers
 - structured data is missing
 - page performance is slow
 - information is scattered across multiple pages
-

Diagnosis

Analyze how your content answers search queries.

Example page:

<https://example.com/technical-seo-guide>

Check whether the page clearly answers questions such as:

- What is technical SEO?
- How to fix crawl errors?
- How to improve page speed?

If answers are not structured clearly, AI systems may ignore the page.

Step-by-Step Fix

Step 1 — Add Clear Answer Sections

Structure content with direct answers.

Example:

What is Technical SEO?

Technical SEO improves website infrastructure so search engines can crawl and index pages efficiently.

Step 2 — Use Structured Data

Add FAQ schema to highlight questions and answers.

Step 3 — Improve Page Performance

AI systems prefer fast pages.

Optimize:

- LCP
 - INP
 - CLS
-



Chapter 20

AI Powered Technical SEO Audits

Artificial intelligence can significantly improve the efficiency of technical SEO audits.

AI tools can analyze HTML code, identify performance issues, and suggest improvements.

AI has transformed how technical SEO audits are performed. Traditionally, SEOs manually checked crawl errors, page speed, indexing problems, and internal linking issues using multiple tools. In 2026, AI can automate most of these processes, identify patterns, and even suggest fixes.

An AI-powered technical SEO audit analyzes a website's infrastructure, performance, and search engine accessibility using artificial intelligence to detect problems faster and prioritize the most impactful improvements

1. What is an AI-Powered Technical SEO Audit?

An **AI technical SEO audit** uses machine learning and automation to analyze:

- Crawlability
- Indexability

- Page speed & Core Web Vitals
- Internal linking structure
- Structured data
- Duplicate content
- Log files & crawl budget
- JavaScript rendering issues

AI tools can process **thousands of URLs in minutes** and identify hidden patterns that manual audits may miss.

Example:

Traditional SEO audit

- Check pages manually
- Export data from tools
- Analyze spreadsheets

AI SEO audit

- Upload site data
- AI identifies problems
- AI recommends fixes

2. Why AI SEO Audits Are Important in 2026

Search engines now use **AI ranking systems** that analyze websites at scale.

Important Google systems include:

- **AI ranking systems**
- **Helpful content evaluation**
- **User experience signals**
- **Core Web Vitals**

AI SEO audits help websites align with these signals by identifying issues affecting rankings.

Benefits:

- ✓ Faster website audits
- ✓ Automated error detection
- ✓ Prioritized SEO fixes
- ✓ Better technical optimization
- ✓ Improved search visibility

3. Key Components of an AI Technical SEO Audit

1. Crawlability Analysis

AI crawlers analyze how search engines access your website.

Audit checks include:

- Broken links
- Crawl depth
- Orphan pages
- Redirect chains
- Robots.txt issues

Example problems:

Broken links: 45

Orphan pages: 32

Pages deeper than 4 clicks: 120

Redirect chains: 18

AI tools prioritize the **most critical crawl problems first**.

2. Indexability Audit

AI identifies pages that **Google cannot index properly**.

Issues detected:

- Noindex tags
- Canonical errors
- Duplicate URLs
- Blocked resources
- Soft 404 pages

Example:

Indexed pages: 420

Submitted pages: 550

Excluded pages: 130

Duplicate pages: 40

AI helps determine **which pages should be indexed vs excluded**.

3. Core Web Vitals & Page Speed Analysis

AI analyzes page performance and user experience.

Important metrics:

Metric	Target
LCP	< 2.5 sec
INP	< 200 ms
CLS	< 0.1

AI can detect:

- Render-blocking scripts
- Large images
- Slow server response
- JavaScript delays
- Third-party script issues

Example AI recommendation:

Largest Contentful Paint = 3.8s

Problem: Hero image not optimized

Fix: Use WebP and preload image

4. Internal Linking Analysis

AI analyzes the **entire internal linking structure** of the site.

It identifies:

- Orphan pages
- Weak pages with few internal links
- Broken internal links
- Poor anchor text distribution

Example AI insight:

Important page:

SEO Guide

Internal links: 3 (Too low)

Recommendation:

Add 10 internal links from high authority pages

5. Duplicate Content Detection

AI can detect duplicate pages across the website.

Examples:

/seo-guide

/seo-guide/

/seo-guide?ref=home

/seo-guide?utm=google

AI recommendations:

- Implement canonical tags
- Fix parameter URLs
- Consolidate duplicate pages

6. Structured Data & Schema Audit

AI checks schema markup to ensure search engines understand the content.

Common schemas:

- Article
- FAQ
- Local Business
- Course
- Product

AI identifies:

- Missing schema
- Incorrect schema types
- Validation errors

Example:

Page: SEO Course Page

Missing Schema:

Course schema

FAQ schema

7. Log File Analysis (AI Based)

AI analyzes **server log files** to understand how search engines crawl your site.

Insights include:

- Googlebot crawl frequency
- Crawl waste on unimportant pages
- Important pages rarely crawled

Example:

Googlebot Crawl Distribution

Important pages: 25%

Parameter URLs: 45%

Images: 20%

Other pages: 10%

AI recommendation:

Block parameter URLs to improve crawl budget

4. Best AI Tools for Technical SEO Audits (2026)

Popular tools include:

1. Screaming Frog + AI

Used for:

- Full site crawl
- Duplicate detection
- Internal link analysis

Now integrated with **AI pattern detection**.

2. Sitebulb AI

Provides:

- Visual crawl maps
 - Technical SEO scoring
 - Automated recommendations
-

3. Surfer AI Audit

Helps analyze:

- On-page SEO
 - Content structure
 - Technical improvements
-

4. ChatGPT SEO Prompts

AI can analyze exported crawl data.

Example prompt:

Analyze this crawl report and identify:

- orphan pages
 - pages deeper than 3 clicks
 - duplicate URLs
 - internal link problems
-

5. Example AI SEO Audit Workflow

Step-by-step process:

Step 1 — Crawl Website

Use tools like:

- Screaming Frog
- Sitebulb

Export crawl data.

Step 2 — Feed Data to AI

Upload:

- Crawl reports
- Page speed data
- Search Console data

AI analyzes the dataset.

Step 3 — Identify Critical Issues

AI prioritizes issues such as:

1. Slow pages
 2. Crawl errors
 3. Duplicate URLs
 4. Orphan pages
-

Step 4 — Generate Fix List

Example AI fix list:

Priority	Issue	Fix
High	Slow LCP	Optimize hero image
High	Orphan pages	Add internal links
Medium	Duplicate URLs	Use canonical tag
Medium	Broken links	Fix 404 links

6. AI SEO Audit Example (Real Scenario)

Website audit results:

Total Pages Crawled: 1,200

Errors Found:

Broken links: 52

Orphan pages: 78

Duplicate URLs: 35

Slow pages: 210

Missing schema: 95

AI priorities:

1. Fix internal linking
 2. Improve page speed
 3. Remove duplicate URLs
 4. Add structured data
-

7. AI Technical SEO Audit Checklist

Use this checklist:

Crawling

- ✓ Fix broken links
- ✓ Remove redirect chains
- ✓ Improve crawl depth

Indexing

- ✓ Fix canonical tags
- ✓ Remove unnecessary noindex pages
- ✓ Fix duplicate URLs

Speed

- ✓ Optimize images
- ✓ Reduce JavaScript
- ✓ Improve server response time

Structure

- ✓ Improve internal linking
 - ✓ Add schema markup
 - ✓ Fix orphan pages
-

8. Future of AI Technical SEO

In the future AI will:

- Automatically fix technical SEO issues
- Predict ranking problems before they happen
- Optimize crawl budgets automatically
- Generate internal linking structures

AI will shift SEO from **manual auditing** → **intelligent automation**.

AI-powered technical SEO audits allow websites to detect and fix technical problems faster than traditional methods. By combining AI with professional SEO tools, businesses can improve crawling, indexing, page speed, and overall search visibility.

Websites that adopt **AI-driven SEO auditing in 2026** will gain a major competitive advantage in search rankings.

Chapter: AI Prompts for Technical SEO Audits (50+ Expert Prompts)

Artificial Intelligence has become a powerful assistant for SEO professionals. Instead of manually analyzing large datasets from crawling tools, AI can quickly identify patterns, detect errors, and recommend solutions.

SEO professionals can combine AI tools with technical SEO software such as:

- Screaming Frog
- Sitebulb
- Google Search Console
- PageSpeed Insights
- Server log analyzers

By providing structured prompts to AI tools, marketers can extract actionable insights from large datasets within minutes.

50+ AI prompts designed specifically for technical SEO audits.

1. AI Prompts for Website Crawl Analysis

After crawling your website with a tool like Screaming Frog, export the crawl report and provide it to AI.

Prompt 1

Analyze this crawl report and identify:

- Broken links
- Redirect chains
- Redirect loops
- Server errors

Prompt 2

From this crawl dataset, list pages that are **more than 3 clicks deep** from the homepage.

Prompt 3

Identify **orphan pages** that do not receive any internal links.

Prompt 4

List URLs returning the following status codes:

- 404
- 500
- 302
- 301

Explain how to fix them.

Prompt 5

From this crawl report, identify **important pages that receive very few internal links**.

2. AI Prompts for Indexing Issues

Indexing issues are one of the most common technical SEO problems.

Prompt 6

Analyze this Google Search Console export and identify pages that are **submitted in sitemap but not indexed**.

Prompt 7

Find pages that contain **noindex tags but should be indexed**.

Prompt 8

Identify URLs blocked by robots.txt that may prevent search engines from crawling important content.

Prompt 9

List pages with **canonical tags pointing to different URLs**.

Prompt 10

Identify duplicate pages competing for the same canonical URL.

3. AI Prompts for Duplicate Content Detection

Duplicate content can dilute ranking signals and waste crawl budget.

Prompt 11

Identify duplicate URLs caused by:

- trailing slashes
- URL parameters
- uppercase/lowercase variations

Example:

/seo-guide

/seo-guide/

/seo-guide?utm_source=google

Prompt 12

Group duplicate pages and recommend which URL should be canonical.

Prompt 13

Identify pages with **very similar titles and meta descriptions**.

Prompt 14

Analyze the content similarity between these URLs and detect duplicates.

Prompt 15

Recommend canonicalization strategies to consolidate duplicate pages.

4. AI Prompts for Internal Linking Optimization

Internal linking plays a major role in SEO performance.

Prompt 16

Analyze this internal link dataset and identify **pages receiving fewer than 3 internal links**.

Prompt 17

List important pages that are **too deep in the site structure**.

Prompt 18

Recommend internal linking opportunities for these blog posts.

Prompt 19

Analyze anchor text distribution and detect **over-optimized anchor text**.

Prompt 20

Suggest internal links to improve crawlability for this website.

5. AI Prompts for Page Speed & Core Web Vitals

Page speed is a confirmed ranking factor.

Prompt 21

Analyze this PageSpeed Insights report and identify the **main causes of slow LCP**.

Prompt 22

List all render-blocking resources detected on this page.

Prompt 23

Explain how to fix **Largest Contentful Paint above 2.5 seconds**.

Prompt 24

Analyze JavaScript execution time and recommend optimizations.

Prompt 25

Recommend improvements to reduce **Total Blocking Time**.

6. AI Prompts for JavaScript SEO

Modern websites rely heavily on JavaScript, which can cause crawling issues.

Prompt 26

Analyze this website and identify content that may not render without JavaScript.

Prompt 27

Explain how Googlebot renders JavaScript and how to optimize it.

Prompt 28

Identify JavaScript files blocking page rendering.

Prompt 29

Recommend server-side rendering or dynamic rendering solutions.

Prompt 30

Explain how JavaScript affects indexing for this website.

7. AI Prompts for Schema Markup Audits

Structured data helps search engines understand content.

Prompt 31

Analyze this page and recommend schema markup types.

Prompt 32

Identify schema errors from this structured data report.

Prompt 33

Suggest structured data for the following page types:

- Blog posts
- Courses
- Local business pages
- Product pages

Prompt 34

Validate this schema markup and detect errors.

Prompt 35

Generate FAQ schema for this page.

8. AI Prompts for Log File Analysis

Log file analysis helps understand how search engines crawl a website.

Prompt 36

Analyze this server log file and identify:

- Googlebot crawl frequency
- Most crawled pages
- Least crawled important pages

Prompt 37

Identify crawl budget waste on parameter URLs.

Prompt 38

List pages that Googlebot frequently crawls but have low SEO value.

Prompt 39

Identify pages rarely crawled by Googlebot.

Prompt 40

Recommend strategies to optimize crawl budget.

9. AI Prompts for Technical SEO Reporting

AI can also generate SEO audit reports automatically.

Prompt 41

Create a **technical SEO audit summary** from this dataset.

Prompt 42

Prioritize technical SEO issues based on impact on rankings.

Prompt 43

Create a technical SEO **fix roadmap for the next 90 days**.

Prompt 44

Generate a client-friendly SEO audit report.

Prompt 45

Explain technical SEO issues in simple language for non-technical clients.

10. Advanced AI Technical SEO Prompts

These prompts help perform deeper analysis.

Prompt 46

Identify technical SEO issues affecting crawl budget.

Prompt 47

Predict which pages are likely to lose rankings due to technical problems.

Prompt 48

Analyze site architecture and recommend improvements.

Prompt 49

Identify pages with **thin content combined with technical issues**.

Prompt 50

Create a full **technical SEO audit checklist for this website**.

Real Workflow Example

Example workflow used by SEO professionals:

Step 1

Crawl website using Screaming Frog

Step 2

Export reports:

- Internal links
- Crawl depth
- Status codes
- Page titles

Step 3

Upload reports to AI

Step 4

Run prompts to detect:

- Orphan pages
- Duplicate URLs
- Slow pages
- Indexing issues

Step 5

Create a prioritized technical SEO fix list.

Why AI Prompts Are Powerful for SEO

AI dramatically speeds up SEO analysis.

Without AI

Manual data analysis

Time required: **5–10 hours**

With AI

Automated pattern detection

Time required: **15–30 minutes**

This allows SEO professionals to focus on **strategy instead of manual auditing**.

Key Takeaway

AI does not replace SEO experts. Instead, it enhances their ability to analyze large datasets and identify opportunities faster.

When used correctly, AI becomes a **technical SEO co-pilot**, helping marketers fix problems before they impact rankings.



Chapter: AI Technical SEO Automation Workflows

Technical SEO audits traditionally required hours of manual work. SEO professionals had to collect data from multiple tools, analyze spreadsheets, and manually identify technical problems.

With the rise of artificial intelligence, technical SEO workflows are becoming increasingly automated. AI can analyze large datasets, detect technical patterns, and generate actionable recommendations within minutes.

In this chapter, we will explore how to automate technical SEO audits using artificial intelligence and combine it with industry tools.

This system is widely used by professional SEO teams to audit websites faster and more accurately.

Section 1: Automated AI SEO Audit Workflow

An AI-powered SEO audit follows a structured workflow that combines multiple data sources.

The process typically includes:

1. Website crawling
2. Search Console data analysis
3. Page speed analysis
4. Internal linking analysis
5. AI-powered data interpretation
6. Technical issue prioritization

Instead of manually analyzing thousands of rows of data, AI helps identify patterns and highlight the most critical problems.

Step 1 — Crawl the Website

The first step in any technical SEO audit is crawling the website.

Website crawling allows SEO professionals to analyze how search engines access and interpret the website structure.

Typical crawl data includes:

- Page URLs
- Status codes
- Page titles
- Meta descriptions
- Canonical tags
- Internal links
- Crawl depth

This data helps identify problems such as broken links, duplicate pages, and orphan pages.

Step 2 — Export Crawl Data

After the crawl is completed, export the most important datasets.

Important crawl exports include:

Internal links report
Status codes report
Duplicate content report
Page titles and meta descriptions
Crawl depth data

These exports will be used for AI analysis.

Step 3 — Upload Data to AI

Once the data is exported, upload the dataset to an AI assistant.

AI can analyze the dataset and detect patterns such as:

- Broken links
- Redirect chains
- Pages too deep in site structure
- Duplicate URLs
- Orphan pages

Example prompt:

Analyze this crawl report and identify the most critical technical SEO issues affecting the website.

AI will analyze the data and generate insights within seconds.

Step 4 — AI Issue Prioritization

AI can prioritize issues based on their potential impact on rankings.

Example prioritization:

High Priority

Broken internal links

Pages returning server errors

Pages blocked by robots.txt

Medium Priority

Duplicate titles

Redirect chains

Missing meta descriptions

Low Priority

Minor crawl depth issues

Metadata improvements

This helps SEO professionals focus on **the most impactful technical fixes first**.



Section 2: AI + Screaming Frog Integration

Screaming Frog is one of the most widely used technical SEO tools. It crawls websites and collects detailed technical data.

When combined with AI, Screaming Frog becomes even more powerful.

Step 1 — Crawl the Website

Run a full website crawl using Screaming Frog.

Important crawl settings include:

- Enable JavaScript rendering
- Crawl internal links
- Detect duplicate content
- Analyze page titles and headings

After the crawl is completed, the tool generates a full technical dataset.

Step 2 — Export Key Reports

Export the following reports for AI analysis:

- Internal links report
- Response codes report
- Duplicate content report
- Crawl depth report
- Canonical tags report

These datasets contain the technical structure of the website.

Step 3 — AI Dataset Analysis

Upload the exported reports into an AI assistant.

Example prompt:

Analyze this Screaming Frog crawl report and identify:

- orphan pages
- pages deeper than three clicks
- duplicate URLs

- broken internal links
- redirect chains

AI will analyze thousands of rows of data instantly.

Step 4 — Generate Fix Recommendations

AI can then generate recommendations such as:

- Add internal links to orphan pages
- Fix broken links returning 404 errors
- Consolidate duplicate URLs with canonical tags
- Reduce crawl depth for important pages

This dramatically reduces the time required for technical SEO analysis.

Section 3: AI + Google Search Console Analysis

Google Search Console provides direct insights into how Google interacts with your website.

Combining this data with AI enables deeper analysis.

Step 1 — Export Search Console Data

Export the following reports:

- Coverage report
- Indexing report
- Search performance report
- Core Web Vitals report

These datasets reveal indexing and ranking issues.

Step 2 — Identify Indexing Problems

Upload the indexing report into AI.

Example prompt:

Analyze this Search Console indexing report and identify:

- pages submitted but not indexed
- pages excluded by Google
- soft 404 pages
- duplicate pages detected by Google

AI will identify the most important indexing issues.

Step 3 — Analyze Search Performance

Export keyword performance data.

AI can analyze:

- pages with high impressions but low clicks
- keywords losing rankings
- pages that need optimization

Example prompt:

Analyze this Search Console performance report and identify pages that have high impressions but low click-through rates.

Step 4 — Identify Crawl Problems

Google Search Console can reveal crawling issues such as:

Server errors

Blocked resources

Mobile usability problems

AI can summarize these issues and generate a technical fix list.

Section 4: AI Technical SEO Dashboards

SEO professionals often manage large websites with thousands of pages. Monitoring technical health manually becomes difficult.

AI dashboards allow continuous monitoring of technical SEO metrics.

Key Metrics in an AI SEO Dashboard

A technical SEO dashboard should track the following metrics.

Crawling metrics

Total pages crawled

Broken links

Redirect chains

Orphan pages

Indexing metrics

Indexed pages

Excluded pages

Pages with noindex tags

Duplicate pages

Performance metrics

Largest Contentful Paint
Interaction to Next Paint
Cumulative Layout Shift
Server response time

Internal linking metrics

Average crawl depth
Internal links per page
Orphan page count

Benefits of AI SEO Dashboards

AI dashboards offer several advantages.

Automated monitoring of technical issues
Real-time alerts for crawl problems
Automated SEO health scoring
Trend analysis for site performance

These dashboards help SEO teams identify issues before they impact rankings.

Example AI Technical SEO Dashboard

An AI-powered SEO dashboard might display:

Website Health Score: 87/100

Technical Issues

Broken links: 12
Orphan pages: 18
Duplicate URLs: 7
Slow pages: 24

Indexing Status

Indexed pages: 520
Excluded pages: 110
Pages with noindex: 35

Performance Metrics

Average LCP: 2.3 seconds
Average CLS: 0.04
Average INP: 160 ms

This provides a clear overview of website technical health.

Real-World AI SEO Workflow Used by Agencies

Professional SEO agencies often use the following workflow.

Weekly

Run website crawl
Analyze crawl data with AI
Fix critical issues

Monthly

Analyze Search Console data
Review page speed reports
Update internal linking

Quarterly

Full technical SEO audit
Schema markup review
Log file analysis

This workflow ensures websites remain technically optimized for search engines.

Key Takeaways

AI automation is transforming technical SEO audits.

Instead of spending hours analyzing spreadsheets, SEO professionals can use AI to quickly identify problems and generate solutions.

By combining AI with tools such as crawling software and Search Console, marketers can automate large parts of the technical SEO process.

The future of SEO will rely heavily on **AI-assisted auditing, automation, and predictive analysis.**



Chapter: AI SEO for Core Web Vitals & Website Speed Optimization
(2026 Edition)

Website speed has become one of the most important technical SEO factors. Search engines now evaluate websites not only based on content and backlinks but also on the quality of the user experience.

Google introduced **Core Web Vitals** as a set of performance metrics that measure real-world user experience on a website.

These metrics help search engines determine whether a page loads quickly, responds quickly to user interactions, and maintains visual stability during loading.

In 2026, artificial intelligence is playing an increasingly important role in diagnosing performance issues and recommending speed improvements.

AI tools can analyze performance reports, detect bottlenecks, and suggest technical optimizations automatically.

Section 1: Understanding Core Web Vitals

Core Web Vitals measure three key aspects of page performance.

Metric	What It Measures	Recommended Value
LCP	Largest Contentful Paint (loading performance)	Under 2.5 seconds
INP	Interaction to Next Paint (responsiveness)	Under 200 milliseconds
CLS	Cumulative Layout Shift (visual stability)	Under 0.1

These metrics are based on **real user experience data**, meaning they reflect how actual visitors interact with the website.

Poor Core Web Vitals scores can negatively impact search rankings and user engagement.

Section 2: How AI Improves Website Speed Audits

Traditional speed optimization requires manual analysis of performance reports.

AI simplifies this process by automatically identifying performance issues.

AI can analyze reports from tools such as:

- PageSpeed Insights
- Chrome User Experience Report
- Lighthouse reports
- Website crawl datasets

By analyzing this data, AI can detect patterns such as:

- Large unoptimized images
- Slow server response time
- Heavy JavaScript files

Render-blocking resources
Inefficient CSS loading

AI can then generate recommendations for improving website speed.

Section 3: AI Workflow for Website Speed Optimization

A structured workflow helps automate performance analysis.

Step 1 — Run Performance Tests

Start by analyzing the page using speed testing tools.

These tools provide performance metrics such as:

- Largest Contentful Paint
- Total Blocking Time
- Time to First Byte
- JavaScript execution time

Run multiple tests to get consistent data because performance metrics may vary depending on network conditions.

Step 2 — Export Performance Reports

Export key performance metrics including:

- Page speed scores
- Core Web Vitals metrics
- Resource loading data
- JavaScript execution time

These reports will be used for AI analysis.

Step 3 — Analyze Reports with AI

Upload performance reports to AI tools.

Example prompt:

Analyze this page speed report and identify the main factors causing slow LCP and high JavaScript execution time.

AI will identify the most critical issues affecting page speed.

Step 4 — Prioritize Performance Fixes

AI can prioritize performance fixes based on their impact.

Example:

High Priority Issues

Large hero images

Slow server response time

Render-blocking CSS

Medium Priority Issues

Unused JavaScript

Large CSS files

Third-party scripts

Low Priority Issues

Minor layout shifts

Small unused resources

This prioritization allows developers to focus on the most important improvements first.

Section 4: Optimizing Largest Contentful Paint (LCP)

Largest Contentful Paint measures how quickly the main content of the page becomes visible.

Common elements that trigger LCP include:

Hero images

Large banners

Featured images

Headline text blocks

Common Causes of Slow LCP

Large unoptimized images

Slow server response time

Render-blocking CSS

Heavy JavaScript execution

AI-Based LCP Optimization

AI can analyze page elements and detect the LCP element automatically.

Example recommendation generated by AI:

Problem

Hero image size: 2.8 MB

Solution

Convert image to WebP format
Reduce image size to under 200 KB
Preload the hero image

These optimizations significantly improve page load performance.

Section 5: Improving Interaction to Next Paint (INP)

INP measures how quickly the page responds to user interactions.

Examples of interactions include:

Clicking buttons
Opening menus
Submitting forms

Slow INP usually occurs due to heavy JavaScript execution.

Common Causes of Poor INP

Large JavaScript bundles
Blocking scripts
Third-party scripts
Inefficient event handling

AI Recommendations for Improving INP

AI can analyze JavaScript performance and recommend improvements such as:

Splitting JavaScript files into smaller bundles
Deferring non-essential scripts
Removing unused JavaScript libraries

Reducing JavaScript execution time improves page responsiveness.

Section 6: Fixing Cumulative Layout Shift (CLS)

CLS measures visual stability during page loading.

If elements shift unexpectedly while the page loads, users may click the wrong buttons or lose their reading position.

Common CLS Problems

Images without defined dimensions
Ads loading dynamically
Fonts loading late
Content inserted above existing content

AI-Based CLS Fixes

AI tools can detect layout shift sources and recommend fixes.

Common solutions include:

Defining width and height for images

Reserving space for advertisements

Using font-display swap for web fonts

These changes prevent layout shifts and improve user experience.

Section 7: Server Performance Optimization

Server performance plays a major role in website speed.

Slow servers increase the **Time to First Byte (TTFB)**, which delays page rendering.

Common Server Performance Issues

Slow hosting infrastructure

Unoptimized database queries

Heavy server-side scripts

AI Recommendations for Server Optimization

AI can analyze server response data and suggest improvements such as:

Implementing caching systems

Using a content delivery network

Optimizing database queries

Improving server response time significantly enhances page load performance.

Section 8: Continuous AI Performance Monitoring

Website performance should be monitored continuously rather than only during audits.

AI monitoring systems can track performance metrics over time.

Important metrics to monitor include:

Core Web Vitals scores

Average page load time

Server response time

JavaScript execution time

If performance drops, AI systems can automatically alert website administrators.

Example AI Performance Report

Website Performance Score: 89/100

Core Web Vitals Status

Largest Contentful Paint: 2.3 seconds

Interaction to Next Paint: 170 milliseconds

Cumulative Layout Shift: 0.05

Performance Issues

Large hero images detected

Unused JavaScript detected

Render-blocking CSS detected

Recommended Fixes

Compress hero images

Remove unused JavaScript

Defer non-critical CSS

Real-World Example

A website with slow performance had the following metrics:

LCP: 4.1 seconds

INP: 380 milliseconds

CLS: 0.18

After AI-guided optimizations:

LCP improved to 2.2 seconds

INP improved to 160 milliseconds

CLS improved to 0.04

The improvements significantly increased user engagement and search rankings.

Key Takeaways

Website speed is a critical factor for both user experience and search engine rankings.

Core Web Vitals provide measurable benchmarks for evaluating page performance.

Artificial intelligence allows SEO professionals to analyse performance reports faster and identify optimization opportunities more effectively.

By combining AI analysis with performance monitoring tools, businesses can continuously improve their website speed and maintain strong search visibility.

This chapter focuses on **AI-powered site architecture and internal linking**, which is one of the **most overlooked ranking factors** in SEO.



Chapter: AI SEO for Site Architecture & Internal Linking Optimization

A well-structured website architecture helps search engines crawl, understand, and rank pages more effectively. Poor site structure can cause serious SEO issues such as orphan pages, deep crawl paths, and weak internal link distribution.

Internal linking is one of the strongest signals that search engines use to determine the importance of pages within a website.

In modern SEO, artificial intelligence can analyze entire websites and recommend improvements to site architecture and internal linking structures.

AI tools can evaluate thousands of pages and detect linking opportunities that would be difficult to identify manually.

Section 1: Why Site Architecture Matters for SEO

Site architecture refers to how pages are organized and connected within a website.

A clear and logical structure helps search engines:

- Discover pages faster
- Understand topic relationships
- Distribute link authority efficiently
- Improve crawl efficiency

Websites with poor architecture often experience problems such as:

Orphan pages that receive no internal links

Important pages buried deep in the site

Unbalanced internal link distribution

Duplicate category structures

These issues can significantly affect search visibility.

Section 2: Ideal SEO Site Architecture

A good SEO architecture follows a **hierarchical structure**.

Example structure:

Homepage

→ Category pages

→ Subcategory pages

→ Content pages

Example:

Homepage

→ SEO Guide

→ Technical SEO Guide

→ Core Web Vitals Guide

This structure helps search engines understand the topical hierarchy of the website.

Important pages should always be accessible within **three clicks from the homepage**.

Section 3: Internal Linking and Page Authority

Internal links distribute ranking signals across a website.

When a page receives many internal links, search engines interpret it as an important page.

Internal linking helps:

Improve page discovery

Pass link authority between pages

Strengthen topical relevance

However, many websites make internal linking mistakes such as:

Too few internal links

Over-optimized anchor text

Broken internal links

Unlinked important pages

AI can help identify and fix these problems.

Section 4: AI Workflow for Internal Linking Optimization

Artificial intelligence can analyze the entire internal linking structure of a website.

Step 1 — Crawl the Website

The first step is crawling the website to collect internal linking data.

Crawl reports usually include:

Page URLs

Number of internal links

Number of outgoing links

Anchor text distribution
Crawl depth

These reports reveal how pages are connected.

Step 2 — Identify Weak Pages

AI can analyze crawl data to identify pages that receive very few internal links.

Example output:

Page: Technical SEO Guide
Internal links: 2

Page: AI SEO Guide
Internal links: 1

These pages may struggle to rank because they receive little internal authority.

Step 3 — Detect Orphan Pages

Orphan pages are pages that do not receive internal links from other pages.

These pages are difficult for search engines to discover.

AI can automatically detect orphan pages and recommend linking opportunities.

Example:

Page: Advanced Core Web Vitals Guide

Problem: No internal links detected.

Solution: Add internal links from related articles.

Step 4 — Improve Crawl Depth

Pages located deep within the website structure may not receive sufficient crawl attention.

Example:

Homepage → Category → Subcategory → Subpage → Article

If a page requires more than four clicks to reach, search engines may crawl it less frequently.

AI can detect deep pages and recommend shortcuts through internal linking.

Section 5: AI for Topic Clusters and Content Hubs

Modern SEO strategies often use **topic clusters**.

A topic cluster groups related articles around a central pillar page.

Example:

Pillar Page

Technical SEO Guide

Cluster Pages

Core Web Vitals optimization

Website crawl optimization

Indexing issues

Technical SEO tools

All cluster pages link back to the pillar page.

This structure signals strong topical authority to search engines.

AI can analyze content topics and recommend cluster structures automatically.

Section 6: AI Anchor Text Optimization

Anchor text plays an important role in internal linking.

Example anchor text:

“technical SEO audit checklist”

However, over-optimized anchor text can appear manipulative.

AI can analyze anchor text distribution and detect issues such as:

Excessive use of exact-match keywords

Lack of descriptive anchors

Repeated anchor patterns

AI recommendations may include:

Diversifying anchor text

Adding contextual internal links

Replacing generic anchors such as “click here”

Section 7: Automated Internal Linking Suggestions

AI tools can automatically recommend internal links between related pages.

Example analysis:

Page: Technical SEO Guide

Relevant pages detected:

Core Web Vitals Guide

Crawl Budget Optimization

Log File Analysis Guide

AI recommendation:

Add internal links from the Technical SEO Guide to these pages.

This helps search engines understand topical relationships.

Section 8: AI-Based Site Architecture Improvements

Artificial intelligence can analyze the entire website structure and recommend improvements.

Example insights:

Important pages located too deep in the structure

Category pages missing internal links

Duplicate content clusters

AI may recommend restructuring the site hierarchy to improve crawl efficiency.

Example improvement:

Old structure

Homepage → Blog → SEO → Technical SEO → Article

Improved structure

Homepage → Technical SEO → Article

Reducing crawl depth improves search engine accessibility.

Section 9: AI Internal Linking Dashboard

An AI dashboard can monitor internal linking health across the website.

Key metrics may include:

Total internal links

Average internal links per page

Orphan page count

Average crawl depth

Broken internal links

Example dashboard data:

Total pages: 520

Internal linking metrics

Average internal links per page: 12

Orphan pages: 9

Broken internal links: 6

Pages deeper than 3 clicks: 48

Monitoring these metrics helps maintain a healthy site structure.

Real-World Example

A content website had the following internal linking problems:

Orphan pages: 32

Pages deeper than 4 clicks: 90

Average internal links per page: 3

After AI-guided internal linking optimization:

Orphan pages reduced to: 4

Average internal links per page increased to: 11

Crawl depth improved significantly

These changes improved both crawl efficiency and search rankings.

Key Takeaways

A well-structured site architecture helps search engines crawl and understand website content more effectively.

Internal linking distributes authority across pages and improves page discoverability.

Artificial intelligence can analyze internal linking structures at scale and recommend improvements that would be difficult to detect manually.

By using AI for site architecture optimization, website owners can strengthen topical authority and improve their overall SEO performance.



Chapter: AI SEO for Crawl Budget Optimization & Log File Analysis

Search engines cannot crawl every page on the internet continuously. Instead, they allocate a limited amount of crawling resources to each website. This allocation is known as the **crawl budget**.

For small websites, crawl budget is rarely a problem. However, for medium and large websites with hundreds or thousands of pages, inefficient crawling can prevent important pages from being discovered or indexed quickly.

Artificial intelligence can help analyze crawl behavior, detect crawl waste, and optimize how search engines access a website.

By combining AI with log file analysis, SEO professionals can gain deeper insights into how search engine bots interact with their websites.

Section 1: What Is Crawl Budget?

Crawl budget refers to the number of pages a search engine bot is willing to crawl on a website during a specific period of time.

Search engines determine crawl budget based on two factors:

Crawl capacity limit

This is the maximum number of requests a search engine bot can make without overloading the website server.

Crawl demand

This represents how important or popular the website content is.

Websites with strong authority and frequently updated content usually receive higher crawl budgets.

Section 2: Why Crawl Budget Matters

If search engines spend most of their crawl budget on unimportant pages, they may not crawl important pages frequently.

Common crawl budget problems include:

- Duplicate URLs
- Parameter-based URLs
- Thin or low-quality pages
- Broken links
- Endless navigation filters

These issues can waste crawl resources.

For example:

A website may have 500 valuable pages but 5,000 parameter URLs created by filters or tracking parameters.

Search engines may spend a large portion of the crawl budget crawling these unnecessary URLs.

Section 3: How AI Helps Analyze Crawl Behavior

Artificial intelligence can analyze crawl patterns using data from:

- Website crawl reports
- Server log files
- Search Console crawl stats
- Internal linking data

AI can identify patterns such as:

Pages frequently crawled by search engines

Pages rarely crawled

Crawl waste on unnecessary URLs

Crawl errors and server issues

AI can also recommend strategies to optimize crawl efficiency.

Section 4: Introduction to Log File Analysis

Log files record every request made to a web server.

Each time a search engine bot visits a page, the request is stored in the server log file.

Log file data typically includes:

Date and time of request

Requested URL

HTTP status code

User agent (Googlebot, Bingbot, etc.)

Server response time

By analyzing log files, SEO professionals can see exactly how search engines crawl their websites.

Section 5: What Log Files Reveal

Log file analysis provides valuable insights into search engine behavior.

Examples include:

How often Googlebot crawls the website

Which pages receive the most crawl activity

Which pages are rarely crawled

Whether important pages are being ignored

Example log analysis output:

Most Crawled Pages

Homepage

Category pages

Popular blog posts

Least Crawled Pages

Deep articles

Older blog posts

Pages with weak internal linking

This data helps identify crawl inefficiencies.

Section 6: AI Workflow for Crawl Budget Optimization

Artificial intelligence can automate much of the crawl budget analysis process.

Step 1 — Collect Crawl Data

Gather data from the following sources:

- Website crawl reports
- Server log files
- Search Console crawl stats
- Internal linking reports

This data provides a complete picture of website crawling behavior.

Step 2 — Identify Crawl Waste

AI can analyze datasets and detect crawl waste.

Examples of crawl waste include:

Parameter URLs

Example:

- /product?color=blue
- /product?color=red
- /product?sort=price

Duplicate URLs

Example:

- /seo-guide
- /seo-guide/
- /seo-guide?ref=homepage

Low-value pages

Thin content pages

Tag pages

Archive pages

AI can detect these patterns automatically.

Step 3 — Detect Important Pages Not Crawled

Sometimes important pages receive very little crawl attention.

AI can identify these pages by comparing:

Crawl frequency
Internal linking strength
Content importance

Example:

Page: Technical SEO Guide

Internal links: 15

Content length: 3,000 words

Googlebot crawls page only once every two weeks.

AI recommendation:

Increase internal links to improve crawl frequency.

Step 4 — Fix Crawl Inefficiencies

AI can generate recommendations such as:

- Blocking parameter URLs in robots.txt
- Using canonical tags for duplicate pages
- Improving internal linking to important pages
- Fixing broken links and redirect chains

These improvements help search engines focus on valuable pages.

Section 7: AI Detection of Crawl Errors

Crawl errors can waste crawl budget and prevent pages from being indexed.

Common crawl errors include:

- 404 errors
- 500 server errors
- Redirect chains
- Redirect loops

AI tools can analyze crawl reports and highlight critical errors.

Example:

- Broken pages detected: 28
- Redirect chains detected: 12
- Server errors detected: 5

Fixing these issues improves crawl efficiency.

Section 8: AI-Based Crawl Budget Dashboard

An AI crawl dashboard can monitor crawling activity continuously.

Example dashboard metrics:

Total pages crawled by Googlebot

Average crawl requests per day

Top crawled pages

Least crawled pages

Example dashboard report:

Daily crawl requests: 2,400

Top crawled sections:

Homepage

Blog category

Top articles

Low crawl activity sections:

Older blog posts

Deep category pages

These insights help identify opportunities for optimization.

Section 9: Practical Crawl Budget Optimization Techniques

Several strategies can improve crawl efficiency.

Improve internal linking

Strong internal linking helps search engines discover pages faster.

Block unnecessary URLs

Parameter URLs and filters can be blocked using robots.txt.

Use canonical tags

Canonical tags consolidate duplicate URLs.

Remove low-quality pages

Thin content pages can dilute crawl efficiency.

Improve site architecture

Shallow site structures allow faster crawling.

Real-World Example

A large website had the following crawl issues:

Total pages: 2,000

Parameter URLs: 6,000

Duplicate pages: 800

Googlebot was wasting crawl budget on unnecessary URLs.

After AI-driven crawl optimization:

Parameter URLs blocked in robots.txt

Canonical tags implemented

Internal linking improved

Result:

Googlebot crawl efficiency improved significantly and more important pages were indexed faster.

Key Takeaways

Crawl budget optimization is an advanced technical SEO strategy that ensures search engines crawl important pages efficiently.

Log file analysis provides direct insights into search engine crawling behavior.

Artificial intelligence can automate the analysis of crawl data and detect inefficiencies quickly.

By optimizing crawl budget and fixing crawl errors, websites can improve indexing efficiency and overall search visibility.



Chapter: The Complete AI Technical SEO Audit Checklist (2026 Edition)

Technical SEO audits can be complex because websites contain hundreds or thousands of pages. Without a clear framework, it is easy to overlook critical technical issues that affect search rankings.

A structured SEO audit checklist ensures that every important technical factor is evaluated systematically.

Artificial intelligence has made the audit process faster and more efficient. AI tools can analyze large datasets, identify patterns, and recommend solutions automatically.

This chapter provides a **complete AI-powered technical SEO audit checklist** used by SEO professionals and agencies.

Section 1: Website Crawling Audit

The first step in any technical SEO audit is analyzing how search engines crawl the website.

A website crawler collects data about all pages and their technical attributes.

Crawl Audit Checklist

- ✓ Crawl the entire website using an SEO crawler
- ✓ Identify broken links returning 404 errors
- ✓ Detect redirect chains and redirect loops
- ✓ Check HTTP status codes across all pages
- ✓ Identify pages blocked by robots.txt
- ✓ Detect crawl depth for important pages
- ✓ Identify orphan pages without internal links
- ✓ Check canonical tags across pages

AI Analysis

AI can analyze crawl reports and identify patterns such as:

Pages deeper than three clicks from the homepage
Clusters of duplicate URLs
Broken internal link networks

These insights help prioritize crawl fixes.

Section 2: Indexing Audit

Indexing issues prevent pages from appearing in search results.

Search engines may exclude pages due to technical errors, duplication, or incorrect indexing signals.

Indexing Checklist

- ✓ Compare indexed pages with submitted sitemap pages
- ✓ Identify pages excluded from indexing
- ✓ Detect pages with noindex tags
- ✓ Check canonical tags pointing to different pages
- ✓ Identify duplicate pages competing for indexing
- ✓ Detect soft 404 pages
- ✓ Verify that important pages are indexed

AI Analysis

AI can analyze Search Console data to detect:

Pages submitted in sitemap but not indexed
Duplicate pages excluded by search engines
Indexing conflicts caused by canonical tags

This analysis helps resolve indexing problems faster.

Section 3: Site Architecture Audit

Website architecture affects both crawl efficiency and user experience.

A well-structured website helps search engines understand topic relationships and page importance.

Site Architecture Checklist

- ✓ Ensure important pages are within three clicks of the homepage
- ✓ Analyze category and subcategory structure
- ✓ Detect pages buried deep in the site hierarchy
- ✓ Identify unnecessary subfolder complexity
- ✓ Check internal linking between related pages

AI Analysis

AI tools can analyze site structure and recommend improvements such as:

Flattening deep structures
Reorganizing categories
Improving internal linking distribution

Section 4: Internal Linking Audit

Internal linking distributes authority across pages and helps search engines discover content.

Internal Linking Checklist

- ✓ Identify pages with very few internal links
- ✓ Detect orphan pages
- ✓ Fix broken internal links
- ✓ Review anchor text distribution
- ✓ Ensure important pages receive strong internal links
- ✓ Check contextual links within articles

AI Analysis

AI can automatically recommend internal linking opportunities between related pages.

For example:

Technical SEO article → link to Core Web Vitals article
Core Web Vitals article → link to Website Speed Optimization guide

This improves topical authority.

Section 5: Duplicate Content Audit

Duplicate content can dilute ranking signals and waste crawl resources.

Duplicate Content Checklist

- ✓ Identify duplicate URLs caused by parameters
- ✓ Detect duplicate page titles and meta descriptions
- ✓ Identify pages with identical or very similar content
- ✓ Check canonical tag implementation
- ✓ Detect trailing slash duplication

Example duplicate URLs

example.com/seo-guide
example.com/seo-guide/
example.com/seo-guide?ref=homepage

AI Analysis

AI tools can group duplicate pages and recommend canonicalization strategies.

Section 6: Core Web Vitals Audit

Website performance plays a major role in search rankings and user experience.

Core Web Vitals Checklist

- ✓ Analyze Largest Contentful Paint (LCP)
- ✓ Analyze Interaction to Next Paint (INP)
- ✓ Analyze Cumulative Layout Shift (CLS)
- ✓ Identify render-blocking resources
- ✓ Detect heavy JavaScript files
- ✓ Optimize large images

Recommended benchmarks

LCP: under 2.5 seconds
INP: under 200 milliseconds
CLS: under 0.1

AI Analysis

AI can identify:

Slow hero images
Large JavaScript bundles
Render-blocking CSS

It can also recommend performance improvements automatically.

Section 7: Mobile Optimization Audit

Most web traffic now comes from mobile devices.

Mobile usability issues can negatively impact search rankings.

Mobile SEO Checklist

- ✓ Ensure responsive design
- ✓ Check mobile page speed
- ✓ Identify touch element spacing issues
- ✓ Detect viewport configuration problems
- ✓ Test mobile usability in Search Console

AI Analysis

AI tools can analyze mobile performance data and identify usability problems.

Section 8: Structured Data Audit

Structured data helps search engines understand the meaning of page content.

It also enables rich search results.

Schema Audit Checklist

- ✓ Check for structured data implementation
- ✓ Validate schema markup using testing tools
- ✓ Detect schema errors and warnings
- ✓ Implement schema for key content types

Common schema types

Article schema

FAQ schema

Local business schema

Course schema

Product schema

AI Analysis

AI can recommend schema types based on page content.

Section 9: Crawl Budget Audit

Large websites must ensure that search engines crawl important pages efficiently.

Crawl Budget Checklist

- ✓ Identify parameter URLs wasting crawl resources
- ✓ Detect duplicate URLs consuming crawl budget
- ✓ Analyze crawl frequency for important pages
- ✓ Fix crawl errors and server issues
- ✓ Improve internal linking to important pages

AI Analysis

AI can analyze server logs to determine:

Which pages are crawled frequently

Which important pages are rarely crawled

Section 10: Technical SEO Monitoring

SEO audits should not be performed only once.

Websites must continuously monitor technical health.

SEO Monitoring Checklist

- ✓ Monitor crawl errors regularly
- ✓ Track Core Web Vitals performance
- ✓ Monitor indexing status
- ✓ Review internal linking changes
- ✓ Track page speed improvements

AI-powered dashboards can automate this monitoring process.

Example AI Technical SEO Audit Report

Website Health Score: 86/100

Technical Issues Detected

Broken links: 14

Orphan pages: 7

Duplicate URLs: 10

Pages deeper than three clicks: 25

Performance Issues

Large hero images detected

Unused JavaScript detected

Render-blocking CSS detected

Indexing Issues

Pages submitted but not indexed: 18

Duplicate pages excluded: 9

Recommended Fixes

Improve internal linking

Optimize hero images

Fix duplicate URLs

Final Key Takeaways

Technical SEO is essential for ensuring that search engines can crawl, understand, and rank website content effectively.

A structured SEO audit checklist helps identify technical problems systematically.

Artificial intelligence dramatically improves the auditing process by analyzing large datasets and detecting patterns quickly.

By combining AI tools with professional SEO workflows, marketers can perform faster, more accurate technical SEO audits and maintain strong search visibility.



Chapter: The Future of AI SEO (2026–2030)

Search engines are evolving rapidly. Artificial intelligence is transforming how information is discovered, ranked, and presented to users.

Traditional search results are gradually shifting toward **AI-generated answers and conversational search experiences**.

In the coming years, SEO strategies will need to adapt to this new environment.

AI-Powered Search Engines

Modern search engines are increasingly powered by large language models.

These systems can:

- Understand complex queries
- Summarize information from multiple sources
- Generate direct answers to users

As a result, websites must focus on **high-quality, structured, and authoritative content**.

Rise of Answer Engines

Search engines are moving toward **answer engines**.

Instead of simply displaying a list of links, AI systems generate answers directly in search results.

This trend emphasizes:

- Structured content
- Clear information architecture
- High topical authority

Websites that provide **clear and well-organized information** are more likely to be referenced by AI systems.

Importance of Technical SEO

Even as AI transforms search, technical SEO remains critical.

Search engines must still crawl, index, and understand websites.

Technical SEO ensures that:

- Websites load quickly
- Pages are easily discoverable
- Content is structured properly

Without strong technical foundations, websites may struggle to appear in AI-generated search results.

The Role of Website Speed

User experience will continue to play a major role in search rankings.

Fast websites improve:

- User engagement
- Conversion rates
- Search visibility

Core Web Vitals and performance optimization will remain essential for SEO success.

AI-Assisted SEO

SEO professionals will increasingly rely on AI tools to analyze data and automate technical tasks.

AI can help with:

- Technical SEO audits
- Performance monitoring
- Internal linking analysis
- Content optimization

Rather than replacing SEO experts, AI will serve as a powerful assistant.

Building Websites for the AI Era

To succeed in the future of search, websites should focus on:

- Clear site architecture
- Strong internal linking
- Fast page loading
- Structured data implementation
- High-quality content

These elements help search engines and AI systems understand website content more effectively

Example AI audit of **example.com**:



Technical SEO Audit Workflow



Problem: Manual Audits Take Too Long

Traditional SEO audits require hours of manual analysis.

Large websites may contain thousands of pages.

Manually identifying issues such as:

- duplicate content
- broken links
- slow pages
- missing schema

can take significant time.

AI Audit Workflow

Example workflow for auditing **example.com**:

Step 1 → Crawl example.com

Step 2 → Export page data

Step 3 → Analyze HTML

Step 4 → Detect technical issues

Step 5 → Generate optimization recommendations

Benefits of AI SEO Automation

AI-powered analysis provides several advantages:

- faster audits
 - pattern recognition across large datasets
 - automated recommendations
 - scalability for large websites
-



Chapter 21

Technical SEO Case Study (example.com)

To understand how technical SEO improvements impact rankings, let's examine a hypothetical audit of **example.com**.

Initial Website Problems

An audit revealed several issues affecting performance.

Example performance report:

Identified problems included:

- slow page loading
 - duplicate pages
 - poor internal linking
 - missing schema
-

Problem 1 — Slow LCP

Example page:

<https://example.com/seo-guide>

Largest content element:

hero-image.jpg

Size: 1.7MB

Fix

Converted image to WebP.

hero-image.webp

Size: 180KB

Result:

Page load time improved significantly.

Problem 2 — Duplicate URLs

Duplicate pages detected:

example.com/seo-guide

example.com/seo-guide/

example.com/seo-guide?ref=homepage

Fix

Added canonical tag.

```
<link rel="canonical" href="https://example.com/seo-guide">
```

Note: if your website in Wordpress Yoast Plugin automatically add canonical tag.

Problem 3 — Poor Internal Linking

Important pages had few internal links.

Example orphan page:

example.com/page-speed-optimization

Fix

Added links from related pages.

example.com/technical-seo-guide

→ example.com/page-speed-optimization

Results After Optimization

After implementing these improvements:

- crawl efficiency increased
- page speed improved
- indexing rate improved

Organic traffic began increasing within several weeks.



Chapter 22

Complete Technical SEO Checklist

The following checklist summarizes the most important steps for maintaining a technically optimized website.

Crawling and Indexing

- ✓ robots.txt configured correctly
 - ✓ XML sitemap submitted
 - ✓ crawl errors fixed
 - ✓ duplicate pages resolved
-

Website Speed

- ✓ LCP under 2.5 seconds
 - ✓ INP under 200 milliseconds
 - ✓ CLS below 0.1
-

Website Structure

- ✓ internal linking optimized
 - ✓ orphan pages removed
 - ✓ clear site architecture
-

Structured Data

- ✓ article schema implemented
 - ✓ FAQ schema added
 - ✓ rich results validated
-

Performance Optimization

- ✓ images compressed
 - ✓ JavaScript optimized
 - ✓ CSS minimized
 - ✓ CDN implemented
-

Final Thoughts

Technical SEO and website performance are foundational elements of modern search engine optimization.

Without proper technical infrastructure, even high-quality content may struggle to rank.

By following the strategies outlined in this book, website owners and SEO professionals can create websites that are:

- fast
- accessible
- search engine friendly
- optimized for modern AI search systems

SEO is entering a new era driven by artificial intelligence. While the tools and technologies may change, the core principles remain the same.

Websites that prioritize **technical excellence, strong content, and excellent user experience** will continue to succeed in search rankings.

The combination of **technical SEO, website speed optimization, and AI-powered analysis** will define the future of search optimization.

End of E-book.



ONLINE-MARKETING

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