# CONTENTS

**01.**

Introduction

**02.**

Application Architecture

**03.**

Database Management

**04.**

Bookmark Feature Implementation

**05.**

Testing and Deployment

**06.**

Future Enhancements

# 01

## Introduction

# Overview of News Application

## Purpose and Objectives

The purpose of the news application is to provide timely and relevant news to users. Objectives include user engagement, ensuring credibility, and expanding the news reach.

## Target Audience

The target audience consists of individuals seeking comprehensive and reliable news. This includes working professionals, students, and general audiences interested in current events.

# Introduction to MERN Stack

## Components of MERN Stack

MERN stands for MongoDB, Express.js, React, and Node.js. Together, they provide a framework for developers to build robust and scalable web applications.



## Benefits of Using MERN

Using the MERN stack allows for full-stack JavaScript development, fostering efficient code reuse and rapid development across both the front end and back end.

02

Application Architecture

# Frontend

## React Basics

Detailed description about this title about 20- 30 words.
Understanding the fundamentals of React, including components, props, state, and the component lifecycle, which enable dynamic and efficient user interfaces.

**01**

## UI/UX Design

Detailed description about this title about 20- 30 words.
Exploring principles of user interface and user experience design to create intuitive, engaging, and accessible interfaces that meet user needs and enhance satisfaction.
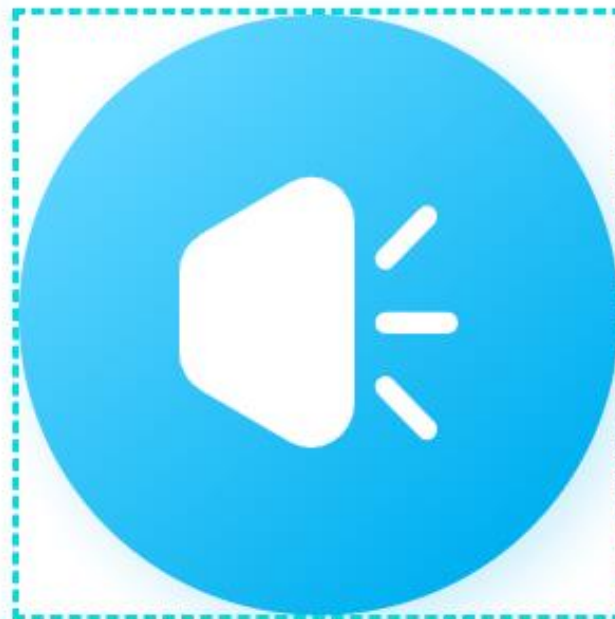
**02**

## State Management with Redux

Detailed description about this title about 20- 30 words.
Learning to manage application state effectively with Redux, highlighting the concepts of actions, reducers, and the store for predictable state updates.

**03**

# Backend

## Node.js and Express

Detailed description about this title about 20- 30 words.
Building the server side of applications using Node.js and Express, focusing on core concepts like routing, middleware, and asynchronous programming.

**01**

## RESTful API Design

Detailed description about this title about 20- 30 words.
Creating RESTful APIs to facilitate communication between frontend and backend, emphasizing principles like statelessness, resource identification, and CRUD operations.

**02**

# 03

## Database Management

# MongoDB

## Schema Design

It ensures functionality, scalability, and aesthetics, balancing user needs with technical requirements for optimal performance.

## CRUD Operations

They enable users to add, retrieve, modify, and remove data in applications, ensuring complete data manipulation and control.

# Data Security

## Authentication

Detailed description about this title about 20- 30 words

## Authorization

Detailed description about this title about 20- 30 words

## Data Encryption

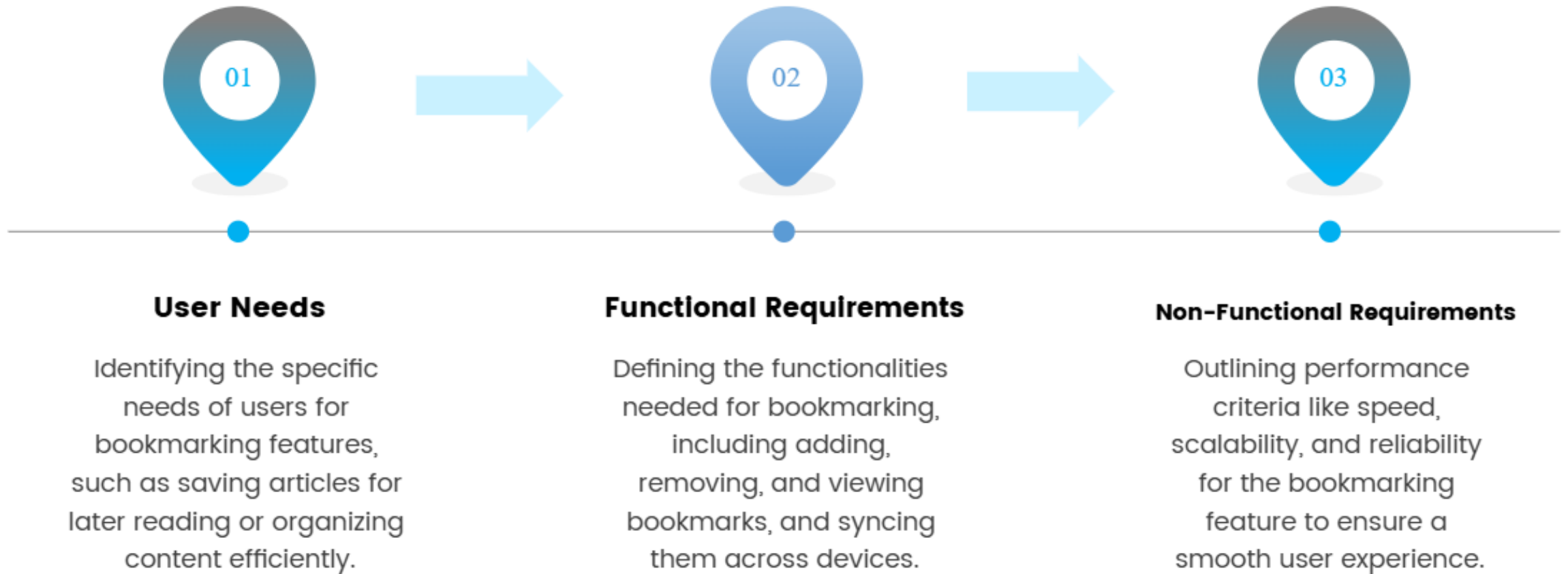Detailed description about this title about 20- 30 words

04

**Bookmark Feature
Implementation**

# User Stories and Requirements

01

02

03

## User Needs

Identifying the specific needs of users for bookmarking features, such as saving articles for later reading or organizing content efficiently.

## Functional Requirements

Defining the functionalities needed for bookmarking, including adding, removing, and viewing bookmarks, and syncing them across devices.

## Non-Functional Requirements

Outlining performance criteria like speed, scalability, and reliability for the bookmarking feature to ensure a smooth user experience.

# Technical Implementation

## Data Model for Bookmarks

Detailing the database schema and data relationships necessary to store and manage bookmarks effectively within the system.

## API Endpoints for Bookmarking

Defining the necessary API calls for creating, managing, and retrieving bookmarks, ensuring secure and efficient interactions.

# User Interface Integration

## Bookmark Button in UI

Describing the design and placement of the bookmark button within the user interface, ensuring it is intuitive and accessible.

## Displaying Bookmarked News

Explaining how the bookmarked news will be displayed to users, including layout, filtering options, and ease of access to bookmarked content.

# 05

## Testing and Deployment

# Testing Strategies

## 01

### Unit Testing

Unit testing is a software testing method that involves testing individual components or modules of a program in isolation to ensure they function correctly. It helps identify bugs early in development by validating the behavior of specific functions or methods against expected outputs.

## 02

### Integration Testing

Integration testing is a type of software testing where individual modules or components are tested collectively to ensure they work together as expected. It focuses on verifying the data flow and interactions between integrated units, identifying defects in their interfaces or dependencies.

# Deployment Process

## Deployment Tools

Deployment tools automate the process of deploying applications to servers, managing configurations, and ensuring updates. Common tools include Docker, Kubernetes, Jenkins, GitHub Actions, AWS Elastic Beanstalk, and Heroku.

## Continuous Integration/Continuous Deployment (CI/CD)

CI/CD (Continuous Integration/Continuous Deployment) automates code integration, testing, and deployment, enabling faster, reliable software delivery by merging changes frequently and deploying updates seamlessly to production environments.

06

Future Enhancements

# Additional Features

## Social Media Sharing

01

Incorporating social media sharing options will enable users to easily share content across multiple platforms, thereby increasing engagement and reach.

## Personalized News Feeds

02

Personalized news feeds will enhance user experience by delivering content tailored to individual preferences, made possible through advanced algorithms and user data analysis.

# Performance Improvements

## 01

### Server Optimization

Optimizing server performance will ensure faster load times, higher reliability, and the capability to handle increased traffic without degradation in user experience.

## 02

### Caching Strategies

Implementing advanced caching strategies will significantly reduce data retrieval time, improve application responsiveness, and decrease server load.

```tsx
import { useEffect, useMemo, useState } from 'react';  Calculating...
import toast, { Toaster } from 'react-hot-toast';  Calculating...
import { ArticleGrid } from './components/ArticleGrid';
import { BookmarksDrawer } from './components/BookmarksDrawer';
import { CategoryFilter } from './components/CategoryFilter';
import { Header } from './components/Header';
import { LoadingGrid } from './components/LoadingGrid';
import { SearchBar } from './components/SearchBar';
import { useBookmarks } from './hooks/useBookmarks';
import { fetchLiveNews } from './services/newsApi';
import { Article, Category } from './types/news';

function App() {
  const [selectedCategory, setSelectedCategory] = useState<Category | 'All'>('All');
  const [searchQuery, setSearchQuery] = useState('');
  const [articles, setArticles] = useState<Article[]>([]);
  const [isLoading, setIsLoading] = useState(true);
  const [isBookmarksOpen, setIsBookmarksOpen] = useState(false);
  const { bookmarks, addBookmark, removeBookmark, isBookmarked } = useBookmarks();

  useEffect(() => {
    const loadNews = async () => {
      setIsLoading(true);
      try {
        const newsArticles = await fetchLiveNews(
          selectedCategory === 'All' ? '' : selectedCategory
        );
        setArticles(newsArticles);
      } catch (error) {
```

# Project Structure

```
> node_modules
v src
  v components
      ArticleCard.tsx
      ArticleGrid.tsx
      BookmarkButton.tsx
      BookmarksDrawer.tsx
      CategoryFilter.tsx
      Header.tsx
      LoadingGrid.tsx
      SearchBar.tsx
  v data
      TS articles.ts
  v hooks
      TS useBookmarks.ts
  v services
      TS newsApi.ts
```

```
v src
  v services
  v types
      TS news.ts
    App.tsx
    css index.css
    main.tsx
    TS vite-env.d.ts
  .gitignore
  eslint.config.js
  index.html
  npm package-lock.json
  npm package.json
  postcss.config.js
  tailwind.config.js
  TS tsconfig.app.json
  TS tsconfig.json
  TS tsconfig.node.json
```

🔍 Search articles...

**All** | Technology | Science | Business | Health | Entertainment | Sports

---

Technology  about 24 hours ago  🔖

### Live Briefing: U.S. strikes Houthi targets in Yemen in escalating...

U.S. Central Command said it struck the capital, Sanaa, and coastal locations within Houthi-controlled territory in Yemen on Monday and...

👤 Victoria Bisset, Frances Vinall, Amanda Coletta, Leo Sands, Kelly Kasulis Cho, Kelsey Baker, Hajar Harb

🕐 1 min read  ↗ Read More

---

Technology  1 day ago  🔖

### Final New Year's Eve prep underway in cities across the globe as world...

Fox News is ringing in the new year with live updates on celebrations across the globe. Major cities are wrapping up their preparations to ring...

👤 Anders Hagstrom  🕐 1 min read  ↗ Read More

---

Technology  1 day ago  🔖

### Massive outage leaves nearly 90% of Puerto Rico customers without powe...

A critical failure in the power grid has caused a massive blackout affecting a large part of the island of Puerto Rico, according to Governor...

👤 Unknown  🕐 1 min read  ↗ Read More

# News Hub

Search articles...

All    Technology    Science    Business    Health    Entertainment

Technology    about 24 hours ago

## Live Briefing: U.S. strikes Houthi targets in Yemen in escalating...

U.S. Central Command said it struck the capital, Sanaa, and coastal locations within Houthi-controlled territory in Yemen on Monday and...

Victoria Bisset, Frances Vinall, Amanda Coletta, Leo Sands, Kelly Kasulis Cho, Kelsey Baker, Hajar Harb
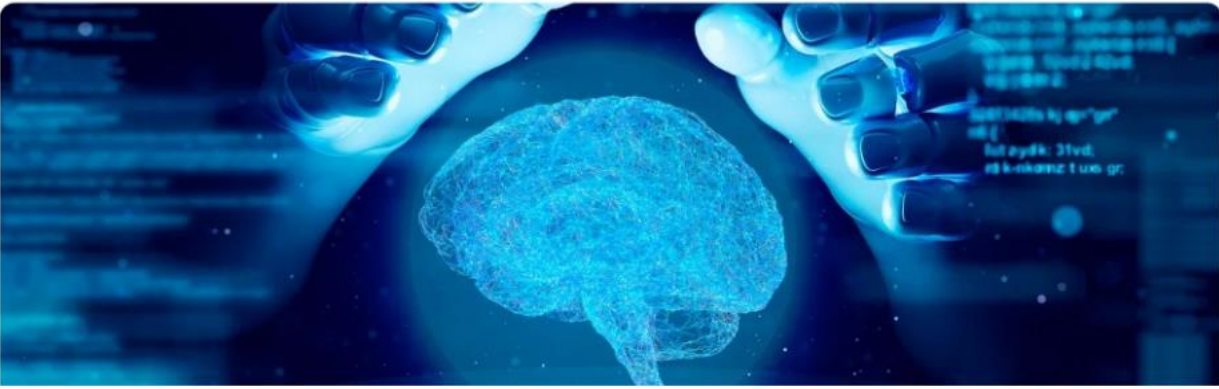
1 min read    Read More

Technology    1 day ag

## Final New Year' cities across the

Fox News is ringing updates on celebra cities are wrapping

Anders Hagstrom

---

Technology    25 days ago

## OpenAI Employee Says They've "Already Achieved AGI" - Futurism

Just a few days after the full release of OpenAI's o1 model, a company staffer is now claiming that the company has achieved AGI.

Noor Al-Sibai

1 min read    Read More

# News Hub

# Thanks

Karan Patel