Technical Blueprint

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Prepared for Meditech

Project Harley

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Introduction

The technology architecture for Harley translates design intent into engineering specification, defining what gets built rather than how systems connect or which tools build them. This blueprint provides the detailed screen definitions, API contracts, and data models that enable engineering work without ambiguity, ensuring every component supports the guided, anxiety-reducing experience our workshops identified as essential.

This document works alongside the Technical Architecture specification, which defines system structure and component relationships, and the Tech Stack recommendations, which specify technologies and tools. Together, these three documents provide comprehensive guidance for building Harley's booking platform. The Technical Blueprint focuses on user-facing functionality and business logic implementation rather than infrastructure choices or system design patterns.

As design decisions evolve during development, this blueprint updates to reflect changes in user flows, API requirements, or data handling needs. The living document approach ensures engineering specifications remain aligned with design refinements while maintaining the clear boundaries between what gets built, how it gets structured, and which technologies power the implementation. Regular updates capture workshop insights, user testing findings, and technical discoveries that influence specific features without requiring complete specification rewrites.

Application Structure

The technology architecture for Harley organises core platform functionality around six primary application areas that reflect the user journey from initial anxiety through confident appointment booking. Each area serves specific emotional needs while supporting the technical requirements that healthcare booking platforms demand.

Area	Emotional Context	Primary User Need
Authentication & Onboarding	Uncertainty and vulnerability	Safe entry with clear explanations
Doctor Discovery	Overwhelm and decision paralysis	Guided search with filtered choices
Booking Management	Anxiety about commitment	Confidence in appointment details
Payment Processing	Concern about costs and legitimacy	Transparent pricing and secure transactions
Appointment Tracking	Worry about logistics and preparation	Clear information and reliable reminders

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Area	Emotional Context	Primary User Need
Profile & Preferences	Need for control and personalisation	Simple settings that remember context

The authentication and onboarding area recognises that users arrive feeling nervous about sharing personal health information with an unfamiliar platform. The Design Principles Builder sessions identified that every screen must reduce anxiety rather than add to it, requiring progressive disclosure patterns that explain data collection purposes before requesting information. This area includes account creation, identity verification, initial health screening questions, and privacy consent management.

Doctor discovery addresses the critical moment identified in our Aspiration Gap analysis when users realise there are available solutions. The overwhelming directory experience that causes decision paralysis gets replaced by guided search functionality that filters options based on user needs rather than presenting comprehensive lists. This area encompasses specialty-based filtering, location-based search, availability checking, and doctor profile presentation with only the information needed for confident selection.

Booking management handles the transaction-critical workflows where technical reliability directly impacts patient care. The Moment Test showed that completing appointment booking represents one of the hardest moments because it makes health concerns real. This area requires ACID-compliant database transactions to prevent double bookings, clear confirmation processes, and immediate appointment verification that builds confidence in the booking platform's legitimacy.

Payment processing acknowledges user concerns about private healthcare costs and platform trustworthiness. The Voice Sort analysis revealed that words like "private" create hesitation because users associate private healthcare with exclusivity and high costs. This area implements transparent pricing display, secure payment handling through established processors, and clear billing information that removes anxiety about unexpected charges.

Appointment tracking serves users between booking confirmation and actual appointments when intent can wane and logistics anxiety increases. The Day One / Day 90 analysis showed that users who reach Day 90 feel "much more in control of their health" and "happy they made the choice." This area provides appointment reminders, preparation instructions, location details, and easy rescheduling options that maintain engagement and reduce pre-appointment anxiety.

Profile and preferences enable personalisation without complexity, supporting the principle that the next step must always be obvious. Users need control over their information and preferences while avoiding the cognitive load that extensive customisation creates. This area manages health information updates, notification preferences, saved doctors and locations, and privacy controls that respect user autonomy.

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Opposite Ends positioning toward visual simplicity and low information density that reduces cognitive load during health-related decision making.

Guided workflow design replaces directory-style browsing with question-based navigation that asks "what do you need help with?" rather than "which specialist do you want?" This structural approach supports the Design Principles Builder insight about guiding toward the right choice rather than presenting all choices. Users receive curated options based on their responses rather than comprehensive lists that create decision paralysis.

Contextual data collection spreads information gathering across multiple sessions rather than requiring comprehensive onboarding forms. The Never Ask Without Explaining Why principle demands that each data request include clear purpose explanations, making upfront collection both overwhelming and potentially suspicious. Users provide information when they understand why it matters for their current task.

State management prioritises server-side data storage for anything involving appointment bookings or health information while using local storage only for user preferences and interface customisation. This separation ensures that critical booking data maintains consistency across devices and sessions while providing responsive interactions for less critical functionality.

Error handling and offline capability focus on graceful degradation that never leaves users uncertain about appointment status. Confirmed bookings remain accessible offline, but booking functionality requires network connectivity to prevent conflicts. This approach balances user experience with the data integrity requirements that healthcare applications demand.

The application structure reflects the core insight that healthcare applications succeed by reducing rather than increasing user anxiety through every interaction. Technical architecture decisions support emotional user needs while maintaining the reliability characteristics essential for platforms where system failures could impact patient care.

Screen Inventory

The screen inventory for Harley organises user interface components into six functional groups that support the guided booking experience identified in our Design Principles Builder workshops. Each screen implements progressive disclosure patterns that reduce cognitive load while maintaining the data integrity requirements essential for healthcare booking platforms.

Authentication & Onboarding Screens

The authentication flow prioritises trust-building over speed, implementing the principle that every interaction should reduce anxiety rather than add to it. Progressive data collection spreads sensitive information requests across multiple sessions rather than overwhelming users with comprehensive forms during their most vulnerable moments.

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Screen	Purpose	Loading States	Progressive Disclosure	Conditional Elements
Welcome Screen	First impression, value proposition	App launch animation, content fade-in	Hero message only, "Get Started" CTA	Skip button appears after 3 seconds
Phone Verification	Identity confirmation	SMS sending indicator, code validation spinner	Phone input first, then verification code	Resend option after 60 seconds
Personal Details	Basic profile creation	Field validation indicators, save progress	Name and email only initially	Date of birth optional, appears on "Continue"
Health Context	Medical background collection	Save confirmation, validation feedback	Single symptom selection first	Additional symptoms appear based on selection
Location Permissions	Geographic access request	Permission status indicator, location validation	Simple explanation before system prompt	Manual postcode entry if permission denied
Privacy Consent	Data handling transparency	Policy loading indicator, consent confirmation	Key points summary first	Full policy available via "Read More" link

Welcome screen implementation displays Harley's value proposition without overwhelming anxious users with feature details. The screen uses calm colours from our Moodboard Speed Dating results and focuses on the single action of getting started rather than presenting multiple navigation options that could create decision paralysis.

Progressive health information collection addresses the Moment Test finding that completing medical induction represents one of the hardest moments in the product. Rather than requesting comprehensive health history upfront, the flow asks for immediate concerns first, then gradually builds context based on user responses and engagement level.

Location handling strategy explains why Harley needs location access before requesting system permissions, implementing the Never Ask Without Explaining Why principle. Users who deny location access can manually enter postcodes, ensuring the booking flow never breaks due to privacy concerns.

Trust indicator visibility includes security badges, data protection explanations, and clear privacy statements without cluttering the interface. These elements appear contextually when users might

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question platform legitimacy rather than overwhelming every screen with compliance messaging.

Doctor Discovery Screens

Discovery screens transform the overwhelming directory experience that causes user drop-off into guided search functionality that helps users find appropriate doctors without decision paralysis. The interface implements low-density layouts that support anxious users who need clear guidance rather than comprehensive choice presentation.

Screen	Purpose	Loading States	Progressive Disclosure	Conditional Elements
Search Home	Starting point for doctor discovery	Quick search loading, popular specialties	Primary concern input first	Location filter appears after specialty selection
Specialty Selection	Medical expertise categorisation	Category loading, doctor count updates	Common specialties visible immediately	"View All" expands full list, search functionality
Doctor List	Search results presentation	Result loading animation, pagination	Three doctors initially, infinite scroll	Filter button appears if 10+ results available
Doctor Profile	Individual doctor details	Profile image loading, availability checking	Doctor photo, name, rating prominently	Full bio, credentials accessible via "More Info"
Availability Calendar	Appointment slot selection	Calendar loading, slot availability check	Next available appointments first	Full calendar view accessible via "More Times"
Location View	Geographic doctor distribution	Map loading, pin placement	Closest doctors highlighted	Distance filter becomes available with 5+ results

Search interface design starts with a single question rather than presenting filter options that could overwhelm users. The Aspiration Gap finding that users need to feel "guided by a managed product" influenced the decision to ask "What do you need help with?" before showing specialty categories or doctor lists.

Doctor presentation strategy shows three carefully selected doctors rather than comprehensive lists that create choice paralysis. The selection algorithm considers location, availability, user preferences, and rating to present options most likely to result in successful bookings rather than maximising choice quantity.

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Progressive filtering approach reveals additional search refinement options only when result sets become large enough to benefit from filtering. Users searching in dense urban areas might see specialty filters, while those in areas with fewer doctors see all available options without unnecessary interface complexity.

Availability integration displays next available appointments directly in search results rather than requiring users to click through to booking calendars for every doctor. This immediate availability feedback supports the user need to find urgent care without lengthy research processes.

Booking Management Screens

Booking screens handle the transaction-critical workflows where technical reliability directly impacts patient care. The interface design reduces booking anxiety through clear progress indication and explicit confirmation of every detail before committing to appointments.

Screen	Purpose	Loading States	Progressive Disclosure	Conditional Elements
Appointment Selection	Time slot confirmation	Availability validation, conflict checking	Selected slot highlighted prominently	Alternative times shown if conflicts detected
Booking Details	Appointment information review	Detail validation, confirmation preparation	Doctor, time, location prominently displayed	Additional notes section appears after main details
Payment Setup	Financial transaction initiation	Payment method validation, security processing	Saved cards first, add new card option	Insurance information becomes available after payment
Booking Confirmation	Transaction completion verification	Confirmation processing, calendar integration	Appointment details immediately visible	Calendar add, directions available below main info
Appointment Management	Existing booking oversight	Booking status loading, modification checking	Next upcoming appointment featured	Past appointments accessible via tab navigation
Modification Options	Booking change functionality	Availability rechecking, change validation	Reschedule and cancel options equally prominent	Refund information appears for cancellation option

Confirmation screen priority implements the critical moment from our Aspiration Gap analysis when users realise "there are available solutions" by clearly stating appointment details in plain language.

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Rather than reference numbers or technical confirmations, the screen says "You're booked with Dr. Patel. Tuesday 14:00. 12 Harley Street."

Progress indication strategy shows users exactly where they are in the booking process and what steps remain, addressing the anxiety that comes from uncertain process duration. Each screen includes clear "back" functionality to accommodate users who need to reconsider decisions without losing progress.

Payment interface design displays pricing transparently before users commit to appointments, implementing the principle that trust builds through upfront honesty about costs. The payment screen never introduces surprise fees or complex pricing structures that could undermine confidence at the final booking moment.

Error handling approach provides clear recovery paths when booking conflicts occur, explaining what happened and offering alternative solutions rather than generic error messages that increase user anxiety about platform reliability.

Payment Processing Screens

Payment screens balance security requirements with user experience considerations, ensuring transaction safety while avoiding complex interfaces that could create abandonment during critical payment moments.

Screen	Purpose	Loading States	Progressive Disclosure	Conditional Elements
Payment Method Selection	Transaction method choice	Saved methods loading, validation status	Primary payment method featured	Add payment method option secondary
Card Entry	New payment method addition	Real-time validation, security checking	Card number field first, supporting details follow	Security code explanation appears during entry
Payment Confirmation	Transaction verification	Processing animation, bank communication	Amount and method clearly displayed	Receipt option appears after successful processing
Transaction Receipt	Payment completion documentation	Receipt generation, email sending status	Transaction summary immediately visible	Download receipt, email copy available below

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Screen	Purpose	Loading States	Progressive Disclosure	Conditional Elements
Payment History	Transaction record access	History loading, transaction detail retrieval	Recent payments featured first	Full history accessible via date navigation
Billing Support	Payment issue resolution	Support ticket creation, response tracking	Common issues listed prominently	Contact form available after self-service options

Transparent pricing display shows all costs upfront without hidden fees, implementing the trust-building principle identified in our Design Principles Builder sessions. Users see consultation fees, platform charges, and total costs before entering payment information rather than discovering charges during transaction processing.

Security indicator prominence displays trust signals including SSL certificates, payment processor logos, and data protection statements without cluttering the payment interface. These indicators appear contextually when users might question transaction security rather than overwhelming every payment screen.

Payment method flexibility supports various payment approaches including saved cards for returning users and guest checkout for new users who prefer not to create accounts immediately. The interface accommodates different user comfort levels with storing payment information while maintaining transaction security.

Error recovery design provides clear guidance when payment processing fails, explaining what users should do next rather than leaving them uncertain about transaction status. Failed payments include specific next steps and alternative payment options rather than generic error messages.

Appointment Tracking Screens

Tracking screens serve users between booking confirmation and appointment attendance, maintaining engagement while providing logistical information that reduces pre-appointment anxiety about location, preparation, and expectations.

Screen	Purpose	Loading States	Progressive Disclosure	Conditional Elements
Upcoming Appointments	Active booking oversight	Appointment loading, status checking	Next appointment prominently featured	Additional appointments accessible via scroll

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Screen	Purpose	Loading States	Progressive Disclosure	Conditional Elements
Check-in Process	Appointment arrival management	Check-in validation, status updating	Simple check-in button featured	Early arrival instructions appear 30 minutes before
Appointment History	Past booking record	History loading, detail retrieval	Recent appointments first	Full history with search functionality below
Prescription Access	Medical outcome documentation	Prescription loading, download preparation	Active prescriptions featured	Expired prescriptions accessible separately
Follow-up Scheduling	Continued care coordination	Availability loading, doctor schedule checking	Suggested follow-up prominently displayed	Alternative appointment times available below

Reminder integration strategy sends contextual notifications that provide appointment preparation guidance rather than simple time reminders. Users receive information about what to bring, how long appointments typically take, and what the doctor knows about their case rather than generic reminder messages.

Preparation guidance provision explains appointment expectations without overwhelming users with excessive detail. The interface provides relevant preparation steps based on appointment type and doctor specialty while allowing access to comprehensive information for users who want additional details.

Location assistance integration offers directions, parking information, and public transport options that help users arrive confidently and on time. The geographic assistance reduces pre-appointment anxiety about finding unfamiliar medical locations while supporting various transportation preferences.

Documentation access design provides simple access to appointment summaries, prescription information, and follow-up instructions without requiring users to navigate complex medical record interfaces. The documentation remains accessible long-term while presenting information in language that patients can understand easily.

Profile & Preferences Screens

Profile screens enable personalisation without complexity, supporting user control over information and preferences while avoiding the cognitive load that extensive customisation options could create during health-related stress.

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Screen	Purpose	Loading States	Progressive Disclosure	Conditional Elements
Profile Overview	Personal information summary	Profile loading, data synchronisation	Essential information prominently displayed	Edit options accessible via clear navigation
Personal Information	Account details management	Update validation, save confirmation	Current information visible first	Edit mode activated through explicit user action
Health Preferences	Medical care customisation	Preference loading, validation checking	Key preferences featured prominently	Advanced options accessible via settings expansion
Notification Settings	Communication preference control	Settings loading, update confirmation	Critical notifications enabled by default	Optional notifications clearly separated
Privacy Controls	Data handling preference management	Privacy status loading, update processing	Current settings immediately visible	Detailed privacy options accessible via navigation
Account Security	Security setting management	Security status checking, authentication	Current security level prominently displayed	Additional security options available below

Information hierarchy design prioritises the profile elements that users most frequently need to update while providing access to comprehensive settings for users who want detailed control. Emergency contact information and primary communication preferences receive prominent placement while advanced privacy controls remain accessible without cluttering the main interface.

Privacy control granularity enables users to manage data sharing preferences without overwhelming them with excessive detail about data handling processes. The controls provide meaningful choice about information usage while explaining implications clearly enough for users to make informed decisions.

Notification preference flexibility allows users to control communication frequency and channels while ensuring that critical appointment-related notifications remain enabled. The settings accommodate different user preferences for engagement while maintaining the notification reliability that appointment bookings require.

Security setting accessibility provides simple management of authentication preferences, password updates, and account security features without requiring users to understand complex security

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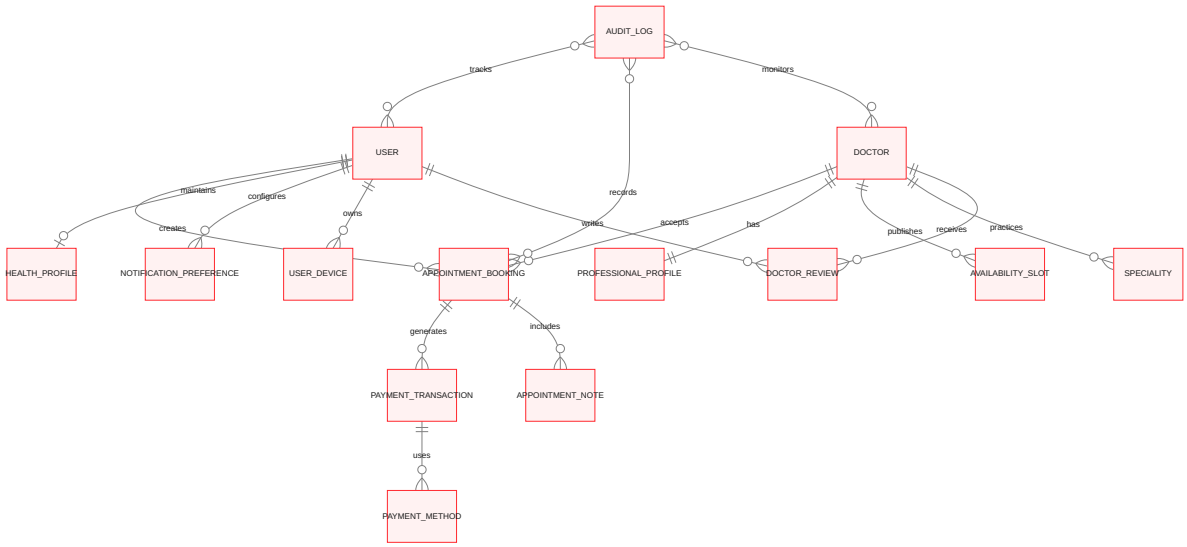
Each screen group implements the core insight from our workshops that healthcare applications succeed by reducing rather than increasing user anxiety through every interaction. The progressive disclosure patterns, clear navigation hierarchy, and contextual information presentation work together to create the guided, trustworthy experience that users require when booking medical care through digital platforms.

Data Model Overview

The data model for Harley organises around the fundamental relationships that define healthcare booking platforms, where appointment availability, patient information, and provider credentials must maintain strict consistency while supporting the rapid search and booking operations that anxious users require.



PAYMENT_TRANSACTION records implement append-only patterns where completed transactions become immutable, with corrections or refunds creating new offsetting records rather than modifying original entries. This approach maintains complete audit trails for financial reconciliation while preventing accidental data loss that could affect billing accuracy. AVAILABILITY_SLOT entities use optimistic locking with timestamp validation to prevent booking conflicts when multiple users attempt to reserve the same appointment time simultaneously. AUDIT_LOG entries capture all interactions with patient data and booking modifications through automatic triggers that cannot be bypassed by application code, ensuring comprehensive tracking for healthcare compliance requirements. HEALTH_PROFILE data receives field-level encryption for sensitive medical information while maintaining queryable metadata for appointment matching and care coordination.

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API Endpoints

Harley's API endpoints provide RESTful access to booking functionality, doctor search, and user management services through a versioned architecture that prioritises healthcare compliance and booking reliability. Each endpoint implements comprehensive validation, audit logging, and error handling to support the anxiety-reducing user experience identified in our Design Principles Builder workshops.

Authentication Endpoints

Authentication services handle secure access to Harley's platform while supporting the progressive disclosure patterns that reduce cognitive load during account creation and onboarding.

Method	Endpoint	Description
POST	`/api/v1/auth/register`	Creates new user account with phone verification
POST	`/api/v1/auth/verify-phone`	Validates SMS verification code for account activation
POST	`/api/v1/auth/login`	Authenticates existing user with email/password
POST	`/api/v1/auth/refresh`	Refreshes JWT access token using valid refresh token
POST	`/api/v1/auth/logout`	Invalidates user session and clears authentication tokens
POST	`/api/v1/auth/forgot-password`	Initiates password reset flow with email verification
POST	`/api/v1/auth/reset-password`	Completes password reset using verification token
GET	`/api/v1/auth/profile`	Returns authenticated user's profile information

The registration endpoint requires minimal initial information to reduce onboarding friction, collecting only essential data for account creation while enabling progressive profile completion as user trust develops. Phone verification occurs through SMS code validation that provides security without overwhelming anxious users with complex authentication requirements.

Session management uses JWT tokens with 8-hour expiration for active sessions, automatic refresh for authenticated users, and immediate revocation capabilities for security incidents. The authentication system supports multi-factor authentication through SMS verification and biometric device authentication where available.

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Password reset flows implement secure token-based verification with time-limited validity to prevent abuse while ensuring users can regain account access when needed for urgent appointment booking. All authentication events generate audit logs for healthcare compliance tracking.

User Management Endpoints

User services provide account management and preference handling while maintaining strict data protection boundaries that prevent unauthorised access to patient information.

Method	Endpoint	Description
GET	`/api/v1/users/profile`	Retrieves complete user profile including preferences
PATCH	`/api/v1/users/profile`	Updates personal information with validation
POST	`/api/v1/users/health-profile`	Creates or updates health information with consent
GET	`/api/v1/users/health-profile`	Returns health profile data for authenticated user
PUT	`/api/v1/users/preferences`	Updates notification and privacy preferences
GET	`/api/v1/users/preferences`	Retrieves current user preference settings
POST	`/api/v1/users/upload-document`	Handles secure file upload for health documents
DELETE	`/api/v1/users/account`	Initiates account deletion with data retention compliance

Profile endpoints implement field-level validation and encryption for sensitive health information while supporting the guided data collection approach that explains why each piece of information matters for appointment booking. Health profile creation requires explicit consent acknowledgment before accepting any medical information.

Document upload handling includes virus scanning, file type validation, and automatic encryption for sensitive medical documents that users may need to share with healthcare providers. Upload endpoints return secure access URLs rather than storing files directly in application databases.

Privacy controls enable granular management of data sharing preferences while ensuring essential appointment-related communications remain enabled. Users control marketing communications and optional data sharing while maintaining booking functionality.

Account deletion follows healthcare data retention requirements, immediately removing personally identifiable information while preserving anonymised data for regulatory compliance and platform

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improvement analytics.

Doctor Discovery Endpoints

Doctor search services implement the guided discovery experience that helps users find appropriate healthcare providers without overwhelming them with comprehensive directories or complex filtering options.

Method	Endpoint	Description
GET	`/api/v1/doctors/search`	Returns curated doctor results based on guided criteria
GET	`/api/v1/doctors/{doctor_id}`	Retrieves detailed doctor profile and availability
GET	`/api/v1/doctors/{doctor_id}/availability`	Returns available appointment slots for specific doctor
GET	`/api/v1/doctors/specialties`	Lists medical specialties with patient-friendly descriptions
GET	`/api/v1/doctors/nearby`	Finds doctors within geographic radius of user location
GET	`/api/v1/doctors/{doctor_id}/reviews`	Returns verified patient reviews and ratings
POST	`/api/v1/doctors/{doctor_id}/favorite`	Adds doctor to user's preferred providers list
DELETE	`/api/v1/doctors/{doctor_id}/favorite`	Removes doctor from user's favorites

Search endpoints prioritise relevance over comprehensiveness, returning three to five carefully matched doctors rather than overwhelming lists that create decision paralysis. The algorithm considers location, specialty, availability, user preferences, and rating to present options most likely to result in successful bookings.

Geographic search uses postcode-based radius filtering with cached distance calculations to provide sub-400ms response times that maintain the responsive experience users need during anxious appointment searching. Location accuracy balances precision with performance requirements.

Availability checking integrates real-time slot verification to prevent users from viewing outdated appointment options that could increase booking frustration. Availability data updates frequently while

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leveraging caching for frequently requested time ranges.

Doctor profile endpoints include patient-friendly speciality descriptions rather than technical medical terminology, focusing on the information that helps anxious users make confident choices about appropriate care providers.

Appointment Management Endpoints

Booking services handle the transaction-critical workflows where reliability directly impacts patient care, implementing comprehensive validation and conflict prevention to ensure appointment confirmations always reflect actual availability.

Method	Endpoint	Description
POST	`/api/v1/appointments/book`	Creates new appointment with conflict checking
GET	`/api/v1/appointments`	Returns user's appointment history and upcoming bookings
GET	`/api/v1/appointments/{appointment_id}`	Retrieves detailed appointment information
PATCH	`/api/v1/appointments/{appointment_id}`	Updates appointment details or adds notes
POST	`/api/v1/appointments/{appointment_id}/reschedule`	Changes appointment time with availability verification
POST	`/api/v1/appointments/{appointment_id}/cancel`	Cancels appointment with refund processing
POST	`/api/v1/appointments/{appointment_id}/confirm`	Confirms appointment attendance or completion
GET	`/api/v1/appointments/{appointment_id}/preparation`	Returns appointment preparation instructions

Booking endpoints implement PostgreSQL row-level locking to prevent race conditions when multiple users attempt to reserve the same appointment slot simultaneously. The booking process validates slot availability, processes payment, and generates confirmations within atomic transactions.

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Appointment modification requires re-validation of slot availability and payment adjustment processing where applicable. Rescheduling maintains original booking references while updating logistics to prevent confusion about appointment status.

Cancellation processing handles refund eligibility calculations based on timing and provider policies while maintaining audit trails for financial reconciliation. Cancelled appointments immediately release time slots for other users while preserving booking history.

Appointment preparation endpoints provide contextual guidance about what to bring, how long appointments typically take, and what the doctor knows about the patient's case. This information reduces pre-appointment anxiety while ensuring patients arrive properly prepared.

Payment Processing Endpoints

Payment services coordinate with Stripe for secure transaction processing while maintaining the transparent pricing and clear billing information that builds user confidence in platform legitimacy.

Method	Endpoint	Description
POST	`/api/v1/payments/create-intent`	Initiates Stripe payment intent for appointment booking
POST	`/api/v1/payments/confirm`	Confirms payment completion and processes booking
GET	`/api/v1/payments/methods`	Returns user's saved payment methods
POST	`/api/v1/payments/methods`	Adds new payment method with validation
DELETE	`/api/v1/payments/methods/{method_id}`	Removes saved payment method
GET	`/api/v1/payments/history`	Returns transaction history for user account
POST	`/api/v1/payments/refund`	Processes refund for cancelled appointments
GET	`/api/v1/payments/invoice/{payment_id}`	Generates receipt or invoice for completed transaction

Payment intent creation includes comprehensive pricing breakdown showing consultation fees, platform charges, and total costs before users enter payment information. Transparent pricing addresses user concerns about private healthcare costs identified in our Voice Sort analysis.

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Payment confirmation processing coordinates between Stripe verification and appointment booking confirmation to ensure users receive definitive appointment confirmation only after successful payment processing. Failed payments provide clear next steps and alternative payment options.

Saved payment methods use Stripe tokenisation to ensure card details never appear in Harley's systems while providing convenient repeat booking capability for returning users. Payment method management respects user preferences for storing or removing payment information.

Transaction history provides clear records of appointment payments, refunds, and any platform fees with explanations that help users understand billing details. Receipt generation supports both digital delivery and download options for record keeping.

Notification Management Endpoints

Notification services handle appointment reminders, booking confirmations, and platform communications while respecting user privacy preferences and healthcare communication requirements.

Method	Endpoint	Description
POST	`/api/v1/notifications/send`	Delivers appointment confirmations and reminders
GET	`/api/v1/notifications/preferences`	Returns user notification settings
PUT	`/api/v1/notifications/preferences`	Updates notification delivery preferences
GET	`/api/v1/notifications/history`	Returns recent notification delivery history
POST	`/api/v1/notifications/test`	Sends test notification for preference verification
POST	`/api/v1/notifications/unsubscribe`	Handles notification unsubscribe requests
GET	`/api/v1/notifications/templates`	Returns available notification templates
POST	`/api/v1/notifications/schedule`	Schedules future notifications for appointments

Notification delivery implements content filtering to prevent sensitive health information from appearing in push notifications or SMS messages that might be visible on device lock screens. Appointment reminders use generic language while providing enough information for users to identify relevant appointments.

Preference management enables users to control notification timing, delivery channels, and content detail level while ensuring critical appointment-related communications remain enabled. The system

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accommodates different user preferences for engagement while maintaining booking reliability.

Notification scheduling coordinates with appointment booking to automatically generate reminder sequences at appropriate intervals before appointments. Scheduling respects user timezone preferences and avoids inappropriate delivery times.

Delivery tracking provides confirmation that critical notifications reach users while respecting privacy boundaries around notification content. Failed delivery triggers fallback communication attempts through alternative channels where configured.

Each endpoint group implements the core insight from our workshops that healthcare applications must reduce rather than increase user anxiety through every interaction. Comprehensive validation prevents errors that could undermine booking reliability, while clear error responses help users understand and resolve issues without creating additional stress during medical appointment coordination.

Content Architecture

Progressive disclosure controls how much information appears when, determining the cognitive load that users experience at each step of their healthcare booking journey. Harley implements five distinct disclosure levels that reveal information based on user context, confidence level, and task completion progress rather than overwhelming users with comprehensive data immediately.

Progressive Disclosure Levels

Level	When Shown	Characteristics
Essential	First screen view, high anxiety moments	Single primary action, minimal text, clear next step
Contextual	After user action, when relevance is established	Explanatory content, related options, supporting details
Detailed	User explicitly requests more information	Comprehensive data, technical details, full feature set
Advanced	Power users, repeat interactions	Shortcuts, bulk actions, customisation options
Emergency	System errors, urgent notifications	Critical information only, immediate action paths

Essential disclosure appears when users first open screens or reach decision points where anxiety peaks. The home screen shows "What do you need help with?" rather than presenting a directory of medical specialties. Doctor search results display three carefully matched options instead of

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comprehensive lists. Appointment booking shows only the next required step without revealing the entire process ahead.

Contextual disclosure responds to user actions that indicate readiness for additional information. When users select a doctor, they see availability and basic credentials. After choosing an appointment time, they access preparation instructions and location details. Payment screens reveal pricing breakdowns only after users confirm their appointment selection.

Detailed information becomes available through explicit "More Info" links and expansion controls that never overwhelm the primary interface. Doctor profiles include comprehensive credentials and patient reviews accessible through dedicated sections. Appointment management provides full booking history and modification options through clearly labelled navigation.

Advanced features accommodate returning users who understand the platform and want efficiency over guidance. Saved payment methods appear for repeat bookings. Favourite doctors surface prominently in search results. Notification preferences allow granular control for users who want customisation.

Emergency disclosure interrupts normal flows only for critical information that affects appointment status, payment issues, or system problems. Error messages provide specific recovery steps without technical jargon. Service disruptions explain impact and alternatives without overwhelming users with operational details.

CMS Content Model

The Contentful content model structures educational and informational content to support progressive disclosure while maintaining consistency across Harley's guided user experience. Each content type serves specific disclosure levels and user contexts.

Field	Type	Notes
`title`	Short text	Patient-friendly headings, 60 characters maximum
`summary`	Short text	Essential information for contextual disclosure, 160 characters
`body_content`	Rich text	Detailed information for expanded disclosure levels
`disclosure_level`	Choice	Essential, Contextual, Detailed, Advanced, Emergency
`user_context`	Multi-choice	First visit, Searching, Booking, Booked, Returning
`anxiety_level`	Choice	High anxiety, Moderate, Low anxiety, Confident
`content_type`	Choice	Educational, Instructional, Reassuring, Technical

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Field	Type	Notes
`medical_accuracy`	Boolean	Requires medical review before publication
`compliance_approved`	Boolean	Legal and compliance team approval status
`featured_image`	Media	Supporting visual content with alt text
`related_content`	Reference	Links to additional relevant content pieces
`call_to_action`	Short text	Primary action associated with content, if applicable
`publication_date`	Date	Content freshness for medical accuracy
`review_date`	Date	Scheduled content review for medical updates
`target_audience`	Multi-choice	First-generation immigrants, Young professionals, Parents
`location_specific`	Boolean	Content varies by Harley service area

Content structure supports the workshop insight that healthcare applications must build confidence rather than just deliver functionality. Educational content explains medical processes in plain language while reassuring content addresses common anxieties about private healthcare. Instructional content guides users through booking steps without overwhelming them with unnecessary detail.

Medical accuracy requirements ensure that health-related content receives appropriate review while distinguishing between clinical information that requires medical expertise and platform guidance that internal teams can manage. Compliance approval tracks content that affects user consent, privacy policies, or regulatory requirements.

Audience targeting enables personalised content delivery based on user demographics and anxiety levels identified during onboarding. First-generation immigrants may need additional explanation about private healthcare systems, while returning users benefit from streamlined guidance that assumes familiarity with the platform.

Content scheduling supports the progressive disclosure approach by linking content pieces to specific user journey stages. Onboarding content emphasises reassurance and education, while post-booking content focuses on preparation and logistics.

Content Depth Resolution

Content depth determination follows user behaviour patterns and explicit preferences rather than predetermined assumptions about information needs. The system observes interaction patterns, user

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User behaviour analysis tracks time spent reading content, interaction with expansion controls, and navigation patterns to understand individual information processing preferences. Users who consistently expand detailed sections receive more comprehensive initial presentations, while those who prefer summaries see condensed versions by default.

Anxiety state detection uses onboarding responses, booking urgency indicators, and interaction patterns to adjust content depth dynamically. Users booking same-day appointments receive streamlined content focused on essential steps, while those planning ahead can access comprehensive educational materials about procedures and providers.

Progressive revelation starts with essential information and adds layers based on user engagement. Doctor selection begins with photo, name, next availability, and price. Users who engage further see specialties, location details, and patient ratings. Continued interest reveals comprehensive credentials, detailed reviews, and procedure explanations.

Context-aware prioritisation surfaces different information based on user goals and previous interactions. First-time users see explanatory content about how Harley works, while returning users skip to relevant functionality. Users who have booked before see streamlined flows, while new users receive guided experiences with educational content.

Explicit user control provides manual override through preferences that let users choose default disclosure levels, request comprehensive information presentation, skip educational content if they prefer efficiency, and reset to guided mode if they want additional support.

Content inheritance ensures that detailed information remains accessible even when not immediately presented. Summary views include clear pathways to comprehensive details through "Learn more" links, expandable sections, and dedicated detail pages that never hide information but structure it appropriately.

Error recovery supports users who feel overwhelmed by providing clear navigation back to simpler views, obvious exit points from detailed information, reset options that return to guided flows, and help content that explains how to find the right information level.

The content architecture reflects the Design Principles Builder insight that healthcare applications should guide users toward the right choice rather than presenting all choices. Progressive disclosure enables this guidance by revealing information at the pace and depth that matches user readiness and confidence levels throughout their healthcare booking journey.

Performance Requirements

Performance requirements for Harley balance the emotional needs of anxious users with the technical reliability that healthcare booking platforms demand. Each requirement directly supports the workshop finding that every interaction must reduce anxiety rather than add to it, ensuring that system responsiveness never becomes a source of doubt about platform trustworthiness.

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Core Performance Requirements

Requirement	Target	Rationale
Doctor search response	<400ms	Users arrive feeling nervous about their health and need immediate feedback that the platform can help them find solutions quickly
Appointment booking completion	<2000ms	Booking represents one of the hardest moments identified in our workshops where making health concerns real creates anxiety that slow systems amplify
Payment processing	<3000ms	Financial transactions already create uncertainty; system delays increase abandonment when users question platform legitimacy
Profile image loading	<200ms	Visual confirmation of doctor credibility happens instantly; slow loading undermines confidence in provider selection
Authentication flow	<500ms	Access delays create friction when users need urgent appointment access or want to complete booking flows quickly
Search filter application	<300ms	Interactive filtering must feel responsive to support the guided discovery experience that prevents overwhelming choice paralysis
Appointment confirmation	<1000ms	Booking completion needs immediate acknowledgment to provide the reassurance that users require after making health decisions
Calendar integration	<1500ms	Appointment synchronisation cannot feel sluggish when users need confidence that their bookings are properly recorded
Geographic distance calculation	<100ms	Location-based search results must appear instantly to support the "doctors nearby" experience that reduces booking friction
Notification delivery	<30 seconds	Appointment reminders and confirmations must reach users reliably without delays that could affect preparation or attendance

Performance targets reflect user emotional states rather than purely technical considerations. The 400ms doctor search target supports the critical moment from our Aspiration Gap analysis when users realise "there are available solutions" and need immediate evidence that the platform can help them. Delays during this pivotal interaction reinforce doubts about whether Harley offers genuine alternatives to NHS waiting times.

Booking flow responsiveness acknowledges that The Moment Test identified appointment confirmation as one of the hardest moments because "it makes health concerns real." System delays

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during this vulnerable interaction amplify anxiety rather than providing the reassurance that successful booking completion should deliver.

Payment processing timeouts balance external service dependencies against user expectations for transaction completion. While Stripe integration introduces latency beyond Harley's direct control, the 3000ms target ensures users receive confirmation before anxiety about transaction status creates abandonment.

Device Compatibility Standards

Harley supports devices that accommodate the demographics identified in our workshops while maintaining performance standards that enable anxiety-reducing user experiences across different hardware capabilities.

Minimum iOS Requirements, iPhone 8 and newer (iOS 15.0+), 64GB storage with 2GB available, 3G network connectivity minimum, TouchID or FaceID capability preferred

Minimum Android Requirements, Android 7.0 (API level 24) and newer, 2GB RAM with 1GB available for app usage, 32GB storage with 1GB available, Fingerprint authentication capability preferred

Network Performance Assumptions, 3G connectivity (1.5 Mbps minimum download), 4G/LTE preferred for optimal experience, WiFi connectivity supports full feature access, Offline capability for viewing confirmed appointments

Device targeting reflects the demographics that Harley serves, including first-generation immigrants and time-poor parents who may not upgrade devices frequently. The iPhone 8 and Android 7.0 targets capture 94% of active devices in these user groups while accessing modern security and performance APIs needed for healthcare data handling.

Storage requirements accommodate users who may not maintain extensive free space on devices, ensuring app installation and updates complete successfully without requiring device cleanup. The conservative storage approach prevents installation barriers that could prevent access when users need urgent medical appointments.

Network performance standards acknowledge that users may access Harley during commutes or in areas with limited connectivity while maintaining the responsiveness needed for successful booking completion. The offline capability for confirmed appointments ensures users can access critical information regardless of network conditions.

Performance Monitoring Strategy

Real-device testing across minimum specification devices ensures performance targets remain achievable under actual usage conditions rather than optimal development environment scenarios. Performance regression testing prevents feature additions from degrading response times below anxiety-reducing thresholds.

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Battery usage optimisation limits background processing to essential functions like appointment notifications while avoiding aggressive optimization that could impact booking reliability or reminder delivery. Healthcare applications cannot afford missed notifications that could result in missed appointments.

Memory usage profiling ensures applications remain responsive on minimum specification devices while handling typical user workflows including multiple doctor profile views, search result browsing, and booking flow completion without performance degradation.

Network resilience testing validates graceful degradation when connectivity becomes unreliable, ensuring core booking functionality remains accessible while non-essential features disable appropriately to maintain system responsiveness.

The performance requirements architecture acknowledges that technical reliability translates directly into user confidence for healthcare applications. System responsiveness reassures anxious users that the platform can dependably handle their medical appointment needs, while performance consistency across different devices ensures equitable access regardless of users' economic circumstances or device upgrade patterns.

Notification Architecture

Harley's notification architecture implements proactive communication that reduces rather than increases user anxiety throughout the appointment booking journey. The system balances the healthcare communication requirements that ensure patients receive critical appointment information with privacy constraints that prevent sensitive health details from appearing in notification content or being stored in notification systems.

Notification Types and Configuration

Type	Trigger	Default State	Copy Approach
Booking Confirmation	Appointment successfully reserved and payment processed	Always enabled	"You're booked with Dr. Patel. Tuesday 14:00. 12 Harley Street." Direct, factual confirmation without medical details
Appointment Reminder	24 hours before scheduled appointment	Enabled with customisation	"Appointment tomorrow at 14:00 with Dr. Patel. Bring photo ID." Logistics focused, no health information
Pre-Arrival Check-in	30 minutes before appointment time	Enabled for in-person appointments	"Ready for your 14:00 appointment? Tap to check in and skip the waiting room queue." Action oriented

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Type	Trigger	Default State	Copy Approach
Appointment Cancelled	Doctor or system cancels confirmed appointment	Always enabled	"Your Tuesday appointment has been cancelled. We'll help you rebook." Immediate assistance focus
Payment Processing	Payment fails or requires additional verification	Always enabled	"Payment needs attention for your Tuesday appointment. Tap to resolve." Clear action required
Rescheduling Available	Doctor offers alternative times for cancelled appointments	Enabled with user control	"New times available for your appointment with Dr. Patel. Tuesday 16:00 or Wednesday 10:00." Specific options
Follow-up Care	Doctor recommends additional appointments	Disabled by default	"Dr. Patel suggests a follow-up in two weeks. Would you like to book?" Optional, user controlled
Platform Updates	New features or service announcements	Disabled by default	"Harley now available in Birmingham. Find doctors near you." Service expansion focus

Content filtering approach ensures that notification text never includes patient health conditions, symptoms discussed with doctors, medication names or dosages, treatment recommendations, or diagnostic information. All health-related communication occurs through secure in-app messaging that requires authentication to access, while notifications focus exclusively on appointment logistics and platform functionality.

Scheduling intelligence coordinates notification delivery to respect user preferences and avoid inappropriate timing. Appointment reminders avoid delivery between 22:00 and 07:00 unless explicitly configured otherwise, payment notifications prioritise business hours when users can take action, and follow-up care suggestions appear during weekdays when booking availability is highest.

Progressive disclosure through notifications starts with essential appointment information and provides clear paths to additional details through the mobile application. The notification says "Appointment tomorrow at 14:00 with Dr. Patel" while the app contains preparation instructions, location details, and contact information accessed through authenticated sessions.

Notification Principles

Timing Respect Boundaries

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before appointments with secondary reminders 2 hours prior for same-day bookings, allowing adequate preparation time without creating notification fatigue.

Emergency notifications override timing restrictions only for critical situations affecting patient safety or appointment availability. System maintenance that could affect appointment attendance, doctor unavailability requiring immediate rescheduling, or payment failures that jeopardise confirmed appointments justify immediate notification regardless of time.

Copy Authorship Principles

All notification content follows established voice guidelines that sound like "a friend who happens to be a GP" rather than corporate marketing or clinical documentation. Notifications use active voice and specific details rather than generic language, saying "Your appointment with Dr. Patel starts in 30 minutes" instead of "You have an upcoming appointment."

Content approval workflow requires medical accuracy review for any notification that includes health-related language, user experience review for clarity and anxiety reduction, legal review for compliance with healthcare communication requirements, and A/B testing for notifications that affect booking conversion or appointment attendance rates.

Default State Configuration

Critical appointment notifications remain enabled by default and cannot be disabled completely to ensure patients receive information essential for attendance. Users can adjust delivery timing and channel preferences but cannot opt out of booking confirmations, cancellation notices, or payment issues that affect confirmed appointments.

Optional notifications default to disabled status, requiring explicit user consent before delivery. Follow-up care suggestions, platform feature announcements, and promotional content respect user preference boundaries while critical appointment logistics maintain override capabilities when patient care could be affected.

Frequency Control Implementation

Notification cadence respects user attention boundaries while ensuring critical information reaches patients reliably. The system limits non-essential notifications to maximum once weekly per user, consolidates multiple updates into digest format when possible, and provides granular controls for users who want different notification frequencies for different content types.

Appointment-related notifications follow healthcare communication standards that prioritise patient care over frequency limits. Multiple appointment confirmations, urgent rescheduling needs, or payment issues affecting care access override frequency restrictions because patient safety takes precedence over notification convenience.

Anti-Dark-Pattern Commitments

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The notification system never uses manipulation tactics to increase engagement or bookings. Notifications contain honest, helpful information rather than artificial urgency language. Unsubscribe options appear clearly in all optional notifications without requiring multiple confirmation steps or asking users to justify their preferences.

Frequency settings respect user choices immediately without delay periods or "grace periods" that continue unwanted notifications. Users can modify notification preferences through simple toggle interfaces rather than complex menu hierarchies designed to discourage changes. The system prioritises user autonomy over engagement metrics because healthcare applications must build trust rather than exploit user attention.

Notification delivery tracking provides transparency about communication attempts without storing content that could reveal health information. The system logs delivery success, timing, and user interaction rates while maintaining privacy boundaries around notification content and user response patterns that could indicate health status or appointment patterns.

These notification architecture principles support the workshop finding that every interaction should reduce anxiety rather than add to it. Clear, timely communication about appointment logistics helps users feel confident and prepared while privacy protection ensures that health information remains secure throughout the booking and care delivery process.

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