# Comprehensive Data Models for a Directory Website

This document outlines a comprehensive set of data models for a versatile directory website, expanding upon the initial core models. It includes additions and enhancements to support features like events, offers, advanced filtering, user interaction, and administrative functions.

\*\*(Note:\*\* A `User` model is fundamental for features like reviews, claims, and bookmarks. While excluded in the initial request, it's included here for completeness.)

## Core Models (Based on Initial List with Enhancements)

\*\*1. User\*\*

\* \*\*Purpose:\*\* Represents registered users of the platform (customers, business owners, administrators).

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `username`: Unique username (String, required, unique)

\* `email`: User's email address (String, required, unique)

\* `password\_hash`: Hashed password (String, required)

\* `first\_name`: User's first name (String, optional)

\* `last\_name`: User's last name (String, optional)

\* `profile\_picture\_url`: URL to profile picture (String, optional)

\* `bio`: Short user biography (Text, optional)

\* `role`: User role (Enum: 'member', 'owner', 'admin', required, default: 'member')

\* `email\_verified\_at`: Timestamp when email was verified (DateTime, optional)

\* `last\_login\_at`: Timestamp of last login (DateTime, optional)

\* `is\_active`: Flag for active accounts (Boolean, default: True)

\* `created\_at`: Timestamp of creation (DateTime)

\* `updated\_at`: Timestamp of last update (DateTime)

\*\*2. Category\*\*

\* \*\*Purpose:\*\* To classify businesses/listings hierarchically.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `name`: Name of the category (String, required, unique)

\* `slug`: URL-friendly version (String, required, unique)

\* `description`: Optional brief description (Text)

\* `parent\_category\_id`: Self-referential foreign key (ForeignKey to Category, optional)

\* `icon`: Optional path/class for an icon (String)

\* `level`: Hierarchy level (Integer, calculated)

\* `listing\_count`: Cached count of active listings in this category (Integer, default: 0)

\* `created\_at`: Timestamp (DateTime)

\* `updated\_at`: Timestamp (DateTime)

\*\*3. Location\*\*

\* \*\*Purpose:\*\* Stores address and geographical information.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `address\_line\_1`: Street address (String, required)

\* `address\_line\_2`: Optional suite, unit, etc. (String)

\* `city`: City name (String, required)

\* `state\_province`: State or province (String, required)

\* `postal\_code`: Zip or postal code (String, required)

\* `country`: Country (String, required)

\* `latitude`: Geographical latitude (Decimal/Float, indexed for geo-queries)

\* `longitude`: Geographical longitude (Decimal/Float, indexed for geo-queries)

\* `neighbourhood`: Optional neighbourhood name (String)

\* `created\_at`: Timestamp (DateTime)

\* `updated\_at`: Timestamp (DateTime)

\*\*4. Business / Listing\*\*

\* \*\*Purpose:\*\* The core entity representing a place, service, or item in the directory.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `name`: Name of the business/listing (String, required)

\* `slug`: URL-friendly version (String, required, unique)

\* `description`: Detailed description (Text)

\* `primary\_category\_id`: Link to the main category (ForeignKey to Category, required)

\* `location\_id`: Link to the location (ForeignKey to Location, required)

\* `claimed\_by\_user\_id`: Link to the user who claimed/owns the listing (ForeignKey to User, optional)

\* `phone\_number`: Contact phone (String)

\* `website\_url`: Business website (URL/String)

\* `email`: Contact email (Email/String)

\* `social\_media\_links`: JSON/HStore for links (e.g., {"facebook": "url", "instagram": "url"})

\* `average\_rating`: Calculated average rating (Decimal/Float, updated via triggers/jobs)

\* `review\_count`: Total number of approved reviews (Integer, updated via triggers/jobs)

\* `price\_range`: Indication of price (Enum/String: '$', '$$', '$$$', '$$$$', or 1, 2, 3, 4)

\* `is\_claimed`: Flag if claimed by an owner (Boolean, default: False)

\* `is\_verified`: Flag if verified by admins (Boolean, default: False)

\* `verification\_details`: Notes regarding verification (Text, optional)

\* `status`: Listing status (Enum: 'active', 'pending\_approval', 'temporarily\_closed', 'permanently\_closed', 'rejected', required, default: 'pending\_approval')

\* `year\_established`: Year the business was established (Integer, optional)

\* `video\_url`: URL to a promotional video (String, optional)

\* `attributes`: Flexible field for type-specific data (JSON/HStore, e.g., {"cuisine": "Italian", "takes\_reservations": true})

\* `created\_at`: Timestamp (DateTime)

\* `updated\_at`: Timestamp (DateTime)

\* \*\*Relationships:\*\*

\* ManyToMany: `Category` (for secondary categories via `Business\_Secondary\_Category`)

\* ManyToMany: `Tag` (via `Business\_Tag`)

\* ManyToMany: `Amenity` (via `Business\_Amenity`)

\* ManyToMany: `PaymentMethod` (via `Business\_PaymentMethod`)

\* ManyToMany: `AccessibilityFeature` (via `Business\_AccessibilityFeature`)

\* OneToMany: `OperatingHours`, `Photo`, `Review`, `Service`, `Menu`, `Event`, `Offer`, `Question`

\*\*5. OperatingHours\*\*

\* \*\*Purpose:\*\* Stores opening/closing times, including exceptions.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `business\_id`: Link to the business (ForeignKey to Business, required)

\* `day\_of\_week`: Day (Enum/Integer: 0=Mon, 6=Sun, required for regular hours)

\* `open\_time`: Opening time (Time, nullable if closed)

\* `close\_time`: Closing time (Time, nullable if closed)

\* `is\_closed`: Flag indicating closed all day (Boolean, default: False)

\* `is\_24\_hours`: Flag indicating open 24 hours (Boolean, default: False)

\* `specific\_date`: Specific date for overrides (Date, optional, for holidays/events)

\* `notes`: Additional info (Text, optional, e.g., "Split shift", "Holiday hours")

\* `created\_at`: Timestamp (DateTime)

\* `updated\_at`: Timestamp (DateTime)

\*\*6. Amenity / Feature\*\*

\* \*\*Purpose:\*\* Lists specific features offered (e.g., Wi-Fi, Parking).

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `name`: Name of the amenity (String, required, unique)

\* `description`: Optional description (Text)

\* `icon`: Optional path/class for an icon (String)

\* `category`: Optional grouping (String, e.g., "General", "Dining", "Accessibility")

\* \*\*Relationship:\*\* ManyToMany with `Business` via `Business\_Amenity`.

\*\*7. Tag / Keyword\*\*

\* \*\*Purpose:\*\* Allows granular classification and searching.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `name`: The tag text (String, required, unique)

\* `slug`: URL-friendly version (String, required, unique)

\* \*\*Relationship:\*\* ManyToMany with `Business` via `Business\_Tag`.

\*\*8. Review\*\*

\* \*\*Purpose:\*\* Stores user reviews and ratings.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `user\_id`: Link to the reviewer (ForeignKey to User, required)

\* `business\_id`: Link to the reviewed business (ForeignKey to Business, required)

\* `rating`: Star rating (Integer, 1-5, required)

\* `title`: Optional review title (String)

\* `comment`: Review text (Text, optional but common)

\* `aspect\_ratings`: JSON/HStore for specific ratings (e.g., {"food": 5, "service": 4})

\* `helpful\_count`: Counter for helpful votes (Integer, default: 0)

\* `reply\_to\_review\_id`: Self-referential FK for owner replies (ForeignKey to Review, optional)

\* `status`: Review status (Enum: 'pending', 'approved', 'rejected', 'flagged', required, default: 'pending')

\* `created\_at`: Timestamp (DateTime)

\* `updated\_at`: Timestamp (DateTime)

\* \*\*Relationship:\*\* ManyToMany with `Photo` (via `Review\_Photo`) for photos attached to a review.

\*\*9. Photo\*\*

\* \*\*Purpose:\*\* Stores images associated with a business or review.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `user\_id`: Link to the uploader (ForeignKey to User, required)

\* `business\_id`: Link to the business (ForeignKey to Business, required)

\* `image\_url`: Path/URL to the image file (String/URL, required)

\* `thumbnail\_url`: Path/URL to a thumbnail version (String/URL, optional)

\* `caption`: Optional text description (String)

\* `alt\_text`: Accessibility text (String, optional)

\* `is\_primary`: Flag for the main business photo (Boolean, default: False)

\* `source`: Origin of the photo (Enum: 'user\_uploaded', 'owner\_uploaded', 'admin\_uploaded', 'scraped', default: 'user\_uploaded')

\* `status`: Photo status (Enum: 'pending', 'approved', 'rejected', required, default: 'pending')

\* `created\_at`: Timestamp (DateTime)

\* `updated\_at`: Timestamp (DateTime)

\* \*\*Relationship:\*\* ManyToMany with `Tag` (via `Photo\_Tag`) for tagging photos.

\*\*10. Bookmark / Favorite (Join Table)\*\*

\* \*\*Purpose:\*\* Allows users to save listings.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `user\_id`: Link to the user (ForeignKey to User, required)

\* `business\_id`: Link to the business (ForeignKey to Business, required)

\* `created\_at`: Timestamp (DateTime)

\* \*\*Constraint:\*\* Unique (`user\_id`, `business\_id`)

## Extended Models for Enhanced Functionality

\*\*11. Service (for Service-Based Businesses)\*\*

\* \*\*Purpose:\*\* Details specific services offered (e.g., by plumbers, consultants).

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `business\_id`: Link to the business (ForeignKey to Business, required)

\* `name`: Name of the service (String, required)

\* `description`: Details about the service (Text, optional)

\* `price`: Price or price range (String or Decimal, optional)

\* `price\_unit`: Unit for price (e.g., "per hour", "fixed", "per item") (String, optional)

\* `duration\_minutes`: Estimated duration (Integer, optional)

\* `category`: Optional service category (String, e.g., "Repair", "Installation")

\* `created\_at`: Timestamp (DateTime)

\* `updated\_at`: Timestamp (DateTime)

\*\*12. Menu (for Restaurants/Cafes)\*\*

\* \*\*Purpose:\*\* Organizes menu items for a business.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `business\_id`: Link to the business (ForeignKey to Business, required)

\* `name`: Name of the menu (e.g., "Dinner Menu", "Drinks") (String, required)

\* `description`: Optional description (Text)

\* `is\_active`: Flag for current menu (Boolean, default: True)

\* `created\_at`: Timestamp (DateTime)

\* `updated\_at`: Timestamp (DateTime)

\*\*13. MenuItem (for Restaurants/Cafes)\*\*

\* \*\*Purpose:\*\* Represents an individual item on a menu.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `menu\_id`: Link to the menu (ForeignKey to Menu, required)

\* `name`: Name of the item (String, required)

\* `description`: Item description (Text, optional)

\* `price`: Price of the item (Decimal, required)

\* `category`: Item category (e.g., "Appetizer", "Main Course", "Dessert") (String, optional)

\* `photo\_url`: URL to a photo of the item (String, optional)

\* `created\_at`: Timestamp (DateTime)

\* `updated\_at`: Timestamp (DateTime)

\* \*\*Relationship:\*\* ManyToMany with `DietaryFlag` (via `MenuItem\_DietaryFlag`).

\*\*14. DietaryFlag\*\*

\* \*\*Purpose:\*\* Represents dietary information (e.g., Vegetarian, Gluten-Free).

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `name`: Name of the flag (String, required, unique)

\* `icon`: Optional icon (String)

\* \*\*Relationship:\*\* ManyToMany with `MenuItem`.

\*\*15. Event\*\*

\* \*\*Purpose:\*\* Lists events hosted by or related to a business.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `business\_id`: Link to the hosting business (ForeignKey to Business, optional if site-wide event)

\* `user\_id`: Link to the user who created the event (ForeignKey to User, required)

\* `name`: Event name (String, required)

\* `description`: Event details (Text)

\* `start\_datetime`: Start date and time (DateTime, required)

\* `end\_datetime`: End date and time (DateTime, optional)

\* `venue\_name`: Specific venue if different from business address (String, optional)

\* `venue\_location\_id`: Link to Location if different (ForeignKey to Location, optional)

\* `ticket\_url`: Link to buy tickets (URL/String, optional)

\* `price\_info`: Price details (String, e.g., "Free", "$20", "Varies")

\* `category`: Event category (e.g., "Music", "Workshop", "Sale") (String, optional)

\* `status`: Event status (Enum: 'scheduled', 'cancelled', 'past', required, default: 'scheduled')

\* `created\_at`: Timestamp (DateTime)

\* `updated\_at`: Timestamp (DateTime)

\*\*16. Offer / Deal\*\*

\* \*\*Purpose:\*\* Lists special offers or discounts from businesses.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `business\_id`: Link to the business offering the deal (ForeignKey to Business, required)

\* `user\_id`: Link to the user who created the offer (ForeignKey to User, required)

\* `title`: Offer headline (String, required)

\* `description`: Details of the offer (Text)

\* `start\_date`: When the offer becomes valid (Date, required)

\* `end\_date`: When the offer expires (Date, optional)

\* `terms\_conditions`: Fine print (Text, optional)

\* `promo\_code`: Code to redeem (String, optional)

\* `offer\_url`: Link for more info or redemption (URL/String, optional)

\* `discount\_type`: Type of discount (Enum: 'percentage', 'fixed\_amount', 'free\_item', 'bogo', optional)

\* `discount\_value`: Value associated with the type (Decimal or String, optional)

\* `status`: Offer status (Enum: 'active', 'expired', 'scheduled', 'cancelled', required, default: 'scheduled')

\* `created\_at`: Timestamp (DateTime)

\* `updated\_at`: Timestamp (DateTime)

\*\*17. Question\*\*

\* \*\*Purpose:\*\* Allows users to ask questions about a business.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `user\_id`: Link to the user asking (ForeignKey to User, required)

\* `business\_id`: Link to the business in question (ForeignKey to Business, required)

\* `text`: The question text (Text, required)

\* `status`: Question status (Enum: 'pending', 'answered', 'hidden', required, default: 'pending')

\* `created\_at`: Timestamp (DateTime)

\* `updated\_at`: Timestamp (DateTime)

\*\*18. Answer\*\*

\* \*\*Purpose:\*\* Provides answers to user questions, often by the business owner.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `question\_id`: Link to the question being answered (ForeignKey to Question, required)

\* `user\_id`: Link to the user answering (ForeignKey to User, required - could be owner or another user)

\* `text`: The answer text (Text, required)

\* `is\_owner\_answer`: Flag if answered by the claimed business owner (Boolean, default: False)

\* `helpful\_count`: Counter for helpful votes (Integer, default: 0)

\* `status`: Answer status (Enum: 'visible', 'hidden', 'flagged', required, default: 'visible')

\* `created\_at`: Timestamp (DateTime)

\* `updated\_at`: Timestamp (DateTime)

\*\*19. ClaimRequest\*\*

\* \*\*Purpose:\*\* Manages requests from users to claim ownership of a business listing.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `user\_id`: Link to the user making the claim (ForeignKey to User, required)

\* `business\_id`: Link to the business being claimed (ForeignKey to Business, required)

\* `status`: Claim status (Enum: 'pending', 'approved', 'rejected', 'needs\_more\_info', required, default: 'pending')

\* `proof\_documentation\_url`: Link to uploaded proof (String, optional)

\* `notes`: Notes from the user or admin (Text, optional)

\* `created\_at`: Timestamp (DateTime)

\* `reviewed\_at`: Timestamp when reviewed (DateTime, optional)

\* `reviewed\_by\_admin\_id`: Link to the admin who reviewed (ForeignKey to User, optional)

\*\*20. Report / Flag\*\*

\* \*\*Purpose:\*\* Allows users to report inappropriate content or incorrect information.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `user\_id`: Link to the reporting user (ForeignKey to User, required)

\* `content\_type`: Type of content reported (Enum: 'business', 'review', 'photo', 'question', 'answer', 'event', 'offer', required)

\* `content\_id`: ID of the reported item (Integer/UUID, required)

\* `reason\_category`: Predefined reason (Enum: 'spam', 'inaccurate', 'offensive', 'closed', 'other', required)

\* `reason\_details`: Additional text explanation (Text, optional)

\* `status`: Report status (Enum: 'pending', 'resolved\_action\_taken', 'resolved\_no\_action', 'dismissed', required, default: 'pending')

\* `created\_at`: Timestamp (DateTime)

\* `resolved\_at`: Timestamp when resolved (DateTime, optional)

\* `resolved\_by\_admin\_id`: Link to the admin who resolved (ForeignKey to User, optional)

\* `resolution\_notes`: Admin notes on resolution (Text, optional)

\*\*21. PaymentMethod\*\*

\* \*\*Purpose:\*\* Lists acceptable payment methods (e.g., Visa, Cash).

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `name`: Name of the payment method (String, required, unique)

\* `icon`: Optional icon (String)

\* \*\*Relationship:\*\* ManyToMany with `Business` via `Business\_PaymentMethod`.

\*\*22. AccessibilityFeature\*\*

\* \*\*Purpose:\*\* Lists features relevant to accessibility.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `name`: Name of the feature (e.g., "Wheelchair Ramp", "Braille Menu") (String, required, unique)

\* `description`: Optional details (Text)

\* `icon`: Optional icon (String)

\* \*\*Relationship:\*\* ManyToMany with `Business` via `Business\_AccessibilityFeature`.

\*\*23. FeaturedListing (Monetization)\*\*

\* \*\*Purpose:\*\* Tracks paid featured placements for businesses.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `business\_id`: Link to the featured business (ForeignKey to Business, required)

\* `start\_date`: When featuring begins (DateTime, required)

\* `end\_date`: When featuring ends (DateTime, required)

\* `level`: Tier of featuring (e.g., 'gold', 'silver', 'homepage', 'category\_top') (String/Enum, required)

\* `placement\_area`: Where it's featured (e.g., 'search\_results', 'category\_page') (String/Enum)

\* `payment\_id`: Reference to a payment transaction (String, optional)

\* `is\_active`: Calculated field based on dates (Boolean)

\* `created\_at`: Timestamp (DateTime)

\*\*24. SearchLog (Analytics)\*\*

\* \*\*Purpose:\*\* Logs user searches for analysis and improvement.

\* \*\*Fields:\*\*

\* `id`: Unique identifier (Primary Key)

\* `user\_id`: Link to the user (ForeignKey to User, optional)

\* `session\_id`: Anonymous session identifier (String, optional)

\* `query\_text`: What the user searched for (String, optional)

\* `category\_filter\_id`: Category used in filter (ForeignKey to Category, optional)

\* `location\_filter`: Location text used (String, optional)

\* `applied\_filters`: Other filters applied (JSON/HStore, e.g., {"price\_range": "$$", "amenities": ["wifi"]})

\* `latitude`: Latitude of search context (Decimal/Float, optional)

\* `longitude`: Longitude of search context (Decimal/Float, optional)

\* `result\_count`: Number of results returned (Integer)

\* `timestamp`: When the search occurred (DateTime)

## Join Tables (Implicitly defined by ManyToMany relationships)

\* `Business\_Secondary\_Category` (`business\_id`, `category\_id`)

\* `Business\_Tag` (`business\_id`, `tag\_id`)

\* `Business\_Amenity` (`business\_id`, `amenity\_id`)

\* `Business\_PaymentMethod` (`business\_id`, `payment\_method\_id`)

\* `Business\_AccessibilityFeature` (`business\_id`, `accessibility\_feature\_id`)

\* `Review\_Photo` (`review\_id`, `photo\_id`)

\* `Photo\_Tag` (`photo\_id`, `tag\_id`)

\* `MenuItem\_DietaryFlag` (`menu\_item\_id`, `dietary\_flag\_id`)

This expanded structure provides a solid foundation for a feature-rich directory website, covering core listings, user interactions, business-specific details, events, offers, and administrative needs. Remember to define appropriate indexes (especially on foreign keys, slugs, geo-coordinates, and frequently filtered fields) for performance.