Scrypto Business Requirements Document (BRD)

Here is a breakdown of the requirements and features for the Scrypt-O application:

**1. Introduction**

The Scrypt-O / Scrypto app is a mobile application and platform designed to revolutionise the management of medical prescriptions. Its core purpose is to **simplify the process of obtaining medication for patients**, **improve adherence to prescribed treatments**, and **optimise the workflow for pharmacies and medical practitioners**. The app aims to achieve seamless, reliable, and accessible digital solutions within the healthcare value chain. Initially, Scrypt-O is focused on the South African retail Pharmacy market scaling later globally.

**2. Scope**

The scope of the Scrypt-O / Scrypto platform includes:

* **Patient Mobile Application:** Enables users to manage prescriptions, find pharmacies, get multiple quotations from network pharmacies, order medication, access exclusive special offers and track their medication schedule.
* **Pharmacy Portal:** Provides a system for pharmacies to receive, process, and fulfil digital prescriptions from Scrypto verified patients in the proximity of the pharmacy. Furthermore, it promotes revenue and profitability improvements through targeted marketing capabilities and managed target customer reach,
* **Doctor Interface/Process:** While a full doctor app isn't detailed in the same way, the system includes processes for doctors to scan or send electronic scripts and features for verifying doctor identity. Provides a system for doctors to scan or send prescriptions (electronic, printed or handwritten) to patients and network pharmacies. It features telehealth capabilities, the ability to receive requests from patients for repeat prescriptions or appointments and diary integration.
* **Underlying Platform:** Secure (fully POPIA and HIPAA compliant) infrastructure supporting communication, data storage, payment processing, and integrations.

Features explicitly mentioned as potential future roadmap items and potentially outside the initial scope may include advanced AI/ML features like predictive analytics or enhanced image recognition, full blockchain integration for all medical records, and international expansion.

**3. Stakeholders**

The primary stakeholders for the Scrypt-O platform are:

* **Patients/Consumers:** General patients, chronic patients, the aged, children, dependent adults, healthy adults, and potentially pet owners for veterinary prescriptions.
* **Pharmacies:** Independent pharmacies, chain pharmacies, and headline partners (large chains).
* **Medical Practitioners:** Doctors, vets, and other registered medical service providers who issue prescriptions.
* **Registered healthcare professionals:** Physiotherapists (allied health professionals), Nurses and Nurse Practitioners, Chiropractors.
* **Medical Aids/Insurance Providers:** Entities responsible for covering medication costs.
* **Regulatory Bodies:** Entities like the South African Pharmacy Council (SAPC) and the Department of Health that govern healthcare and electronic transactions.
* **Scrypt-O Team:** Including developers, business management, and support staff.
* **Third-Party Providers:** Companies offering services like identity verification, payment gateways, and cloud infrastructure (like AWS).

**4. Business Objectives**

Scrypt-O aims to achieve the following business objectives:

* A platform ecosystem with verified users and service providers.
* Revolutionise prescription orchestration.
* Boost medication adherence for patients.
* Empower patient choice in where they get their medication.
* Support independent pharmacies and help them compete.
* Increase pharmacy reach and revenue.
* Improve pharmacy efficiency and reduce administrative burdens.
* Simplify the patient's customer journey for prescription fulfilment.
* Optimise pharmacy fulfilment processes.
* Improve patient health outcomes through better adherence and potentially contraindication checking.
* Address security and privacy concerns in prescription management.
* Provide a more cost-effective solution for pharmacies compared to existing systems.
* Streamline workflow for both patients and pharmacies.
* Reduce prescription fraud and abuse.
* Enable quicker prescription fulfilment.

**5. User Stories / Requirements**

Below are detailed requirements broken down by key user types:

**5.1 Patient/Consumer Requirements**

* **Onboarding & Profile Management:**
  + Ability to sign up using social login (e.g., Google) or email and password. Support IDAM and SSO if needed for something like a GEMS login or corporate logins if we are dealing with a corporate agreement down the line.
  + Requirement to complete identity verification, including uploading ID documents and a live selfie for biometric verification.
  + Ability to sign in securely using Face ID, Fingerprint, password, or passcode.
  + Ability to create and manage a profile including personal details, contact information, and addresses (residential and delivery).
  + Ability to add and manage known allergies.
  + Ability to add and manage known pre-existing medical conditions.
  + Ability to specify a preference for generic vs. original medication.
  + Ability to add family members or link to a carer profile.
  + Ability to scan in medical aid card (also link to digital credential if issued by another organisation
  + Ability to auto-populate profile with medical aid card information
  + Ability to record medical aid details manually
  + Receive real-time status updates during onboarding.
  + Access fallback options like manual signup if automated verification fails.
  + Access Help Centre with chatbot, FAQ, guides, email/chat support for assistance.
  + All future app interactions require secure sign-in.
* **Prescription Ingestion & Management:**
  + Ability to scan a paper prescription using the phone's camera within the app.
  + Ability to upload a scan or picture from a camera roll.
  + Ability to scan multiple pages of the same script.
  + Where multiple profiles exist, the ability to select the profile prior to scanning the script.
  + Ability to scan scripts for more than one profile
    - Select Main member – scan script for that person
    - Do you want to scan another scrip?
    - Select second profile – scan script for that person
  + The app shall use OCR or Vision AI to capture details from the scanned paper script.
  + Ability to assess the level of confidence of the digitalisation of each medication on the scanned script – back-end and pharmacist view.
  + The scanned prescription shall be converted into a secure, immutable digital format (potentially PDF) with a unique ID.
  + Ability to receive electronic prescriptions directly from a doctor (e-script integration).
  + Ability to view details of received digital prescriptions (both digitised and digitalised).
  + Ability to view doctor's details associated with the prescription.
  + Ability to view a list of all current and past medications ("My Medications" / Prescription History).
  + For each medication, view details like name, strength, dosage form, active ingredient, quantity, and cost.
* **Medication Adherence & Reminders:**
  + Ability to track medication on a visually with easy-to-read graphics
  + Access a Medication Calendar to view scheduled doses.
  + Receive push and in-app notifications as reminders for taking medication.
  + Receive reminders for script renewal.
  + Receive reminders for medication refills.
  + The refill button should become active/clickable based on rules (e.g., 25 days after last dispense).
  + Ability to request repeat scripts directly through the app.
  + View information about medication (precautions, side effects, info at a glance). Will an AI summary which can be beneficial to the patient (e.g. 100 words) create risk for us.
  + Potential MVPX value add: check for contra-indications based on known allergies/conditions and prescribed medication.
* **Prescription Fulfilment Process:**
  + Ability to select a profile (if managing multiple family members).
  + View a list of available partner pharmacies, potentially filtered by location or preference or send to multiple geolocated partner pharmacies.
  + Ability to receive and view quotations from pharmacies for the prescribed medication.
  + Ability to choose between collection at the pharmacy or delivery.
  + Ability to confirm the order based on the chosen quotation.
  + Ability to select or un-select items.
  + Ability to view special offers from the pharmacy and adjust quantities.
  + Ability to make secure in-app payment, with potential splitting between medical aid and patient portion.
  + Review the final invoice within the app.
  + Receive notification when medication is ready for collection or dispatched for delivery.
  + For collection, present a QR code or verification code at the pharmacy.
  + For delivery, receive the order in a secure, sealed parcel.
  + Ability to collect medication on behalf of someone else, potentially using an OTP.
  + Ability to rate the fulfilment experience.
* **Communication & Support:**
  + Ability to communicate with the pharmacy and potentially doctors/pharmacists via an in-app message centre.
  + Access the Help Centre and Contact Support channels.
* **Additional Features:**
  + Access Scrypt-O loyalty partner offers.
  + Access services even with poor internet connectivity (Offline functionality - value add).
  + Potential for Telemedicine consultations integration.
  + Potential for Appointment scheduling.
  + Consent management for interactions.

**5.2 Pharmacy Requirements**

* **Onboarding:**
  + Ability to apply for a Scrypt-O partnership through an online application form.
  + Completion of pharmacist and business verification processes (including legal requirements, business license, 3rd party checks like ID verification, CIPC, SAPC, GMC, bank account, business details, credit check).
  + Granting of full Admin access to a nominated official.
  + Ability to onboard dispensing staff (pharmacists/assistants).
  + Linking the business to the pharmacist's profile.
  + Ability to update details and re-apply if necessary.
  + Ability to set operating hours.
  + Ability to advertise extended operation hours.
  + Ability to adjust delivery radii and delivery fees. E.g. 0-5km free, 5-10km R20,00 etc
  + Pharmacist can only be actively logged in on one device at a time.
  + Pharmacist Opt-in for the Brand Ambassador Incentive Program, requiring banking details and SARS tax number.
* **Prescription Processing & Fulfilment:**
  + Access to the Scrypt-O Pharmacy Portal.
  + Ability to receive digital scripts (digitised paper scripts from patients or e-scripts from doctors).
  + Access patient details and Minimally-Viable Record (MVR), including known allergies and pre-existing conditions, appended to the digital script.
  + Ability to view the digital PDF script.
  + Ability to view and override the digital script e.g. override a brand name medication with the equivalent generic medication.
  + Ability to view the level of confidence for every conversion the AI Vision/OCR made.
  + Pharmacist acceptance and approval of every line item prior to dispensing.
  + Ability to process orders based on the digital script details, applying their professional judgement.
  + Ability to generate quotations for the patient, including collection or delivery timeframes.
  + Ability to add up-sell products to the order.
  + Ability to add special offers/promotions in batch with start and expiry dates.
  + Ability to manually add discounts to items.
  + Management of repeat prescriptions by generating vouchers for each repeat on the script.
  + Vouchers must be linked to the patient and unique script, have an activation date (based on dispense date), and become inactive once invoiced/paid.
  + Receive payment notification from the app.
  + Manage fulfilment for both collection (via QR/verification code) and delivery.
  + Update the patient record to indicate when the original paper script (if applicable) was received.
  + Notify unsuccessful pharmacies after a patient accepts a quote (system function).
  + Integrate with existing Pharmacy Dispensing systems or use the Scrypt-O Portal if no POS integration.
* **Communication & Management:**
  + Access the Message centre for communication.
  + Ability to view quotations and invoices within the portal.
  + Access features for targeted advertising and customer offers.
  + Potential access to data insights about medication usage, trends, opportunities, and lost opportunities.
  + Potential integration with promotions management.
  + Access to monthly analytics reports (savings, time saved, etc.) for themselves and the ecosystem.
  + Access to a Support centre and a dedicated pharmacist hot line.
  + Participation in the Brand Ambassador Incentive Program based on new patient introductions via scanned paper scripts.

**5.3 Doctor Requirements (Based on System Interactions)**

* Doctors shall be verified upon onboarding, including ID and practice number verification.
* Access to the Doctor's app shall be secured via PIN, password, or biometrics.
* The system records a digital footprint of the doctor's activity.
* Ability for doctors to scan prescriptions (implied by process diagrams and AES context).
* The system facilitates the creation of an immutable digitised script once the doctor scans/submits.
* The system should apply Advanced Electronic Signatures (AES) to digital prescriptions created by doctors.

**6. Functional Requirements**

* **Scanning and Digitisation:** Implement AI Vision/OCR technology for accurate text extraction from paper scripts.
* **Digital Script Generation:** Create secure PDF documents with a unique ID and timestamp, ensuring immutability.
* **Advanced Electronic Signatures (AES):** Implement AES mechanisms for doctors' prescriptions, including hashing, encryption with a private key, attachment of signature/public key/certificate, timestamping, and validation/verification processes. Support relevant signature formats (PAdES, XAdES, CAdES).
* **Secure Storage & Transmission:** Encrypt signed e-prescriptions using AES-256 or end-to-end encryption. Store sensitive data using secure storage options like keychain, keystore, or encrypted databases.
* **Interoperability:** Implement standards like FHIR (Fast Healthcare Interoperability Resources) and HL7 (Health Level 7) for potential integration with EHR and pharmacy systems.
* **Payment Gateway:** Integrate with a secure payment gateway to handle patient and medical aid payments.
* **Geolocation:** Use geolocation services to identify and list available pharmacies near the user.
* **Notifications:** Implement push notifications and in-app notifications for reminders, order status updates, and messages.
* **QR Code/Barcode:** Generate and scan QR codes or barcodes for prescription collection and potentially pharmacist incentives.
* **Data Insights:** Implement data analysis capabilities (e.g., node analysis) to generate insights on patient behaviour, medication usage, and market trends for partners.

**7. Non-Functional Requirements**

* **Security:**
  + Implement multi-factor authentication for user access.
  + Ensure tamper-evident seals and audit trails for digital prescriptions.
  + Secure key management using industry standards (e.g., AWS KMS, Secure Enclave, HSM).
  + Protect Inter-Process Communication (IPC) mechanisms.
  + Hide sensitive data in the user interface.
  + Disable keyboard caching for sensitive data entry fields.
  + Exclude sensitive data from operating system backups.
  + Employ biometric verification for identity and sign-in.
  + Processes to decrease fraud are essential.
* **Compliance:** Adhere to relevant data protection regulations such as South Africa's PoPIA, and potentially GDPR/HIPAA for broader applicability or higher standards. Comply with the South African Electronic Communications and Transactions Act (ECTA) for AES. Consider and align with the developing regulatory landscape for telehealth and online pharmacy services in South Africa.
* **Performance:** Optimise application loading times, database queries, and frontend rendering. Ensure the platform is scalable to handle increasing user numbers and transaction volumes.
* **Usability & User Experience:** Provide a user-friendly interface. Enhance accessibility, streamline common workflows, implement responsive design, support keyboard navigation and screen readers, improve form validation, error messaging, loading states, and transitions. Support offline functionality for critical features (value add).
* **Reliability:** Implement disaster recovery and redundancy measures to prevent data loss and ensure continuous service availability.
* **Maintainability:** Maintain clean code with documentation, conduct code quality checks, and use feature flags for safer deployments.

**8. Constraints**

* Initial focus is on the South African market and its specific regulatory environment.
* Regulatory uncertainty exists regarding e-prescribing and medication delivery in South Africa, requiring careful navigation.
* Engaging with large pharmacy chains may require warm introductions and potentially protracted onboarding or exclusivity agreements.
* Independent pharmacies lack centralised training mechanisms, requiring individual support or scalable training resources.
* The system design places total reliance on the pharmacist's professional judgement and interpretation of the script during dispensing.

**9. Assumptions**

* Patients will have access to smartphones and credit/debit cards for payment.
* A third-party ID verification SDK will be utilised for patient onboarding.
* Existing pharmacy systems can integrate via API, or pharmacies will use the Scrypt-O Portal.
* Chain pharmacies will provide pre-vetted lists of personnel.
* Support and help centre functions will leverage AI agents and/or existing third-party services.
* The platform will leverage cloud infrastructure, potentially AWS, for scalability and security.
* Rules and parameters for medication reminders (e.g., twice daily = 12 hours apart) are defined.
* Rules for voucher creation and activation dates are defined.

**10. Success Metrics**

Success will be measured using a combination of B2B and B2C metrics:

* **B2B Metrics:** Cost Per Lead, Sales Cycle length, Conversion Rate, Customer Lifetime Value (LTV). Partnership acquisitions and onboarding rate. Revenue uplift and efficiency gains for partner pharmacies. Medication adherence improvement data from the platform. Reduction in fraud reports.
* **B2C Metrics:** Customer Acquisition Cost (CAC), Activation Rate, Monthly Retention Rate, Customer LTV. App downloads and user adoption. Website visitor growth. Patient satisfaction with the service. Reduction in queues and time saved for patients.
* **Overall Platform Metrics:** Prescription volume processed, number of pharmacies on the platform, successful order fulfilment rate. Regulatory compliance achievement.

This comprehensive outline provides a foundation for the Scrypt-O app's development, detailing the necessary features, requirements, and considerations based on the provided source materials.