Section 1

Osmos ?

Osmos (/ˈɒzmoʊs/)
Etymology: Derived from the Greek word "ὤσμος" (ōsmos) meaning "push" or "impulse," related to osmosis, the process of gradual absorption and adaptation.

-symbolizing personalized diabetes management.

OSMOS

The Need for a Smarter Diabetes Management Solution

Diabetes management is a daily challenge for both patients and clinicians. Patients struggle with tracking glucose levels, maintaining a healthy lifestyle, and staying motivated, while clinicians face difficulties in monitoring multiple patients, identifying risk patterns, and providing timely interventions. Traditional diabetes apps often require manual data entry, leading to low engagement and inconsistent tracking. Our solution is a risk-based mobile app that leverages voice-first interactions, AI-powered insights, and AR-driven engagement to transform diabetes care. Patients will experience a hands-free, gamified approach to tracking their health, while clinicians will gain access to real-time data, predictive analytics, and direct patient communication tools. This app aims to bridge the gap between self-care and clinical oversight, making diabetes management more intuitive, proactive, and engaging for everyone involved.

User Flow Breakdown

Patient Journey

1. Onboarding & Account Creation
   - Sign-up via Google or Apple.
   - Select role: Patient or Clinician.
   - Provide basic health details (age, type of diabetes, insulin usage).
2. Daily Usage
   - Voice Logging: "Log glucose 110 after breakfast."
   - AI-Generated Insights: "You've had 3 high glucose readings in the past week."
   - Mood Check-in: "I feel stressed." → AI suggests stress-reduction tips.
   - AR Fitness Challenges: "Exercise slightly high, start a 10-minute walk challenge!"
   - Medication Reminders: "Time for your insulin shot."
   - Community Support: "Ask peers: What helps lower post-meal spikes?"
3. Periodic Doctor Check-Ups
   - AI detects concerning glucose risks.
   - Schedule a virtual consultation with a clinician.
   - Clinician sends recommendations via the app.

To brainstorm how to add nutrition based functionalities...

Clinician Journey

1. Onboarding
   - Sign-up & verify medical credentials.
   - Access a dashboard to view patients.
2. Monitoring Patients
   - Monitor Glucose & Mood Trends (real-time data visualization).
   - Set AI Alerts for critical glucose spikes.
   - Send Recommendations based on patient trends.
3. Engagement & Consultation
   - Schedule Virtual Check-Ups via in-app video call.
   - Adjust Medication Plans (with patient consent).
   - Track Adherence to Lifestyle Changes (activity, diet).

Core Functionalities by Role

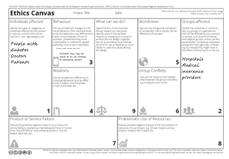
Feature	Patients	Clinicians
Voice based logging	Log glucose, mood	Analyze logs
AI powered insights	Personalized health tips	Auto-detected patterns
AR Gamification	Fitness Challenges	Not needed
Medication & Insulin Reminders	Smart notifications	Adjust dosages
Community Engagement	Peer support	❌ Not needed
Clinician Dashboard	❌ Not needed	View patient data
Virtual Consultations	Schedule with a doctor	Provide telehealth support
AI Trend Analysis	See personal trends	Monitor multiple patients
Emergency Alerts	Warns user of risks	Gets notified for critical cases

Unique Features to Differentiate the App

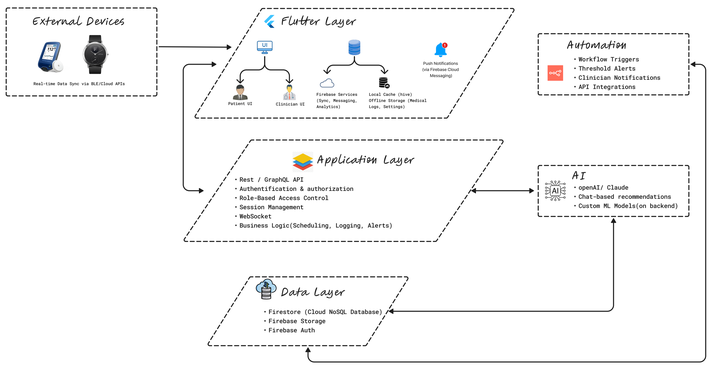
- Voice-First Interface : Patients don't need to type; hands-free interaction.
- AI-Driven Smart Recommendations : Automatically suggests lifestyle changes.
- AR-Based Gamification : Encourages physical activity based on glucose levels.
- Clinician Dashboard with Predictive Analytics: Helps doctors intervene early.
- Community-Powered Support : Patients can discuss and share progress.

Which features should go into Phase 1?
How will patient data sync with clinicians?
Should we design the Patient & Clinician flows separately?

BMC



System Architecture



Personas & user stories

Chapter 2: User Personas for Targeted Diabetes Management

Understanding Our Users:
In this chapter, we present carefully constructed user personas representing diverse individuals who will benefit from the Osmos diabetes management app. These personas serve as illustrative examples of our target user—ranging from children and young professionals to senior citizens and healthcare providers. Understanding their backgrounds, motivations, challenges, and expectations is essential in designing a user-centric app experience tailored precisely to their distinct needs.

Persona 1: Tech-Savvy Young Professional
Name: Alex Turner
Age: 29
Occupation: UX Designer
Location: Geneva

Background:
Alex has had Type 1 diabetes since adolescence. They're tech-savvy, health-conscious, and comfortable using technology to simplify daily tasks. Alex actively monitors their glucose levels with a continuous glucose monitor (CGM) and frequently experiments with lifestyle habits to manage their diabetes effectively.

Goals & Motivations:
- Maintain optimal blood glucose control to avoid long-term complications.
- Seamlessly integrate glucose and activity data into their busy, active lifestyle.
- Access to predictive insights that help anticipate glucose fluctuations based on routines and habits.

Challenges & Frustrations:
- Difficulty consolidating data from various devices and apps.
- Inability to receive actionable insights tailored specifically to their daily habits.
- Lack of engaging, visually intuitive dashboards for quick glucose-level insights.

Technology Usage:
- Smartphone (latest iPhone), Apple Watch, CGM, and insulin pump.
- Familiar with wearables, fitness trackers, and health-tracking apps.

Persona 2: Senior User Seeking Simplicity and Support
Name: Maria Lopez
Age: 68
Occupation: Retired Elementary School Teacher
Location: Geneva

Background:
Maria was diagnosed with Type 2 diabetes five years ago. She's motivated to manage her diabetes well but often feels overwhelmed by complex technologies. Maria relies on medication, dietary changes, and regular physical activity to manage her diabetes, assisted by her family and healthcare providers. She seeks simple, straightforward tools to help her stay healthy and independent.

Goals & Motivations:
- Simplify daily diabetes management through intuitive, easy-to-use tools.
- Share data easily with family and caregivers to feel supported and secure.
- Better understand the impact of lifestyle choices on her diabetes.

Challenges & Frustrations:
- Struggles with complicated apps and technologies; prefers simple, intuitive interfaces.
- Needs reminders and nudges for medication, exercise, and dietary tracking.
- Wants reassurance and simple explanations for trends and medical terms.

Technology Usage:
- Basic Android smartphone, Withings Steel HR smartwatch.
- Limited experience with technology; prefers minimalistic, user-friendly apps.

Persona 3: Young Child with Parental Assistance
Name: Liam singe
Age: 9
Occupation: Student
Location: Geneva

Background:
Liam was diagnosed with Type 1 diabetes two years ago. He's energetic, loves soccer, video games, and playing outdoors with friends. Liam's parents primarily handle his diabetes management, but they're gradually teaching Liam how to manage his condition independently, aiming for him to build lifelong healthy habits and confidence.

Goals & Motivations:
- Liam wants to participate fully in school, sports, and social activities without diabetes limiting his experiences.
- Liam's parents aim to simplify glucose tracking and insulin management to reduce their stress and empower Liam.
- Liam desires a friendly, engaging way to understand diabetes better, which would encourage him to take initiative and feel in control.

Challenges & Frustrations:
- Frequent glucose fluctuations due to unpredictable physical activity and varied eating habits.
- Difficulty recognizing and communicating low glucose levels or inform adults when feeling symptoms.
- Parents struggle to track and anticipate Liam's glucose changes, especially when he's away at school or at friends' homes.

Technology Usage:
- Liam uses a child-friendly smartwatch (Fitbit Ace or Garmin Vivofit Jr.) and an easy-to-use CGM.
- Familiar with smartphones (iPad) for gaming, schoolwork, and simple health tasks.
- Parents actively monitor his health using their smartphones and are comfortable with standard consumer tech.

Persona 4: DoctorHealth Assistant
Name: Dr. Kate kapoor
Age: 43
Occupation: Endocrinologist (Diabetes Specialist)
Location: Geneva

Background:
Dr. Kapoor is an experienced endocrinologist specializing in diabetes care at a busy urban hospital. She manages a large number of patients with diverse backgrounds, treatment plans, and technology comfort levels. She frequently integrates digital health tools into her practice to improve patient outcomes, streamline her workflow, and offer personalized care.

Goals & Motivations:
- Monitor patients remotely to deliver timely interventions, improving patient outcomes and reducing complications.
- Use accurate, structured patient data to make informed decisions efficiently, especially given the limited consultation time.
- Enhance patient education and compliance by providing clear, personalized feedback directly from the app-generated reports.

Challenges & Frustrations:
- Difficulty managing fragmented data sources, which complicates comprehensive evaluations.
- Challenges interpreting raw data that lack context or actionable insights.
- Concerned about maintaining patient privacy and data security while accessing remote patient data.

Technology Usage:
- Uses professional electronic health records (EHR) software daily.
- Familiar with telemedicine platforms, clinical apps, and remote patient monitoring systems.
- Prefers digital tools that seamlessly integrate into existing healthcare workflows and clinical software.

User Stories :

Persona 1: Alex Turner

- Story 1:
  As a young professional with a busy lifestyle,
  I want a unified dashboard integrating glucose data, fitness activity, and meal tracking,
  so I can quickly understand my health patterns without switching between multiple apps.
- Story 2:
  As an active person with Type 1 diabetes,
  I want predictive glucose insights and personalized recommendations based on my lifestyle habits,
  so I can proactively manage my blood sugar during workouts, meetings, and social activities.
- Story 3:
  As a data-oriented user,
  I want customizable alerts that inform me of critical blood sugar events without unnecessary disruptions,
  so I remain productive while maintaining tight glucose control.

Persona 2: Maria Lopez

- Story 1:
  As a senior managing Type 2 diabetes,
  I want a straightforward, intuitive app interface that clearly shows my blood sugar trends,
  so I can easily track my health without feeling overwhelmed.
- Story 2:
  As someone who sometimes forgets to take medication or perform blood sugar checks,
  I want friendly and reliable reminders,
  so I stay consistent and feel secure in my daily diabetes management.
- Story 3:
  As someone who values support from my family and healthcare team,
  I want easy ways to share my health data directly from the app,
  so my caregivers can help me stay healthy and connected.

Persona 3: Liam Bonnaff

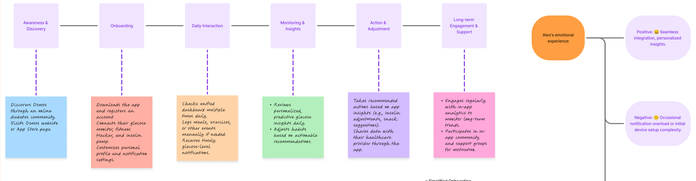
- Story 1:
  As a child who enjoys playful interactions,
  I want the app to include fun and interactive elements (like badges or rewards),
  to encouraging my diabetes this engaging and motivating.
- Story 2:
  As a parent managing my child's diabetes,
  I want real-time glucose alerts and actionable recommendations for adjustments based on my child's activities,
  so I can confidently allow my child to participate fully in daily life.
- Story 3:
  As a family taking softer diabetes education,
  we want child-friendly educational content within the app,
  to Liam can independently understand diabetes basics and develop good self-management habits.

Persona 4:

- Story 1:
  As a busy endocrinologist managing many patients,
  I want structured and concise patient reports clearly highlighting glucose trends and anomalies,
  so I can quickly assess patient status and make informed clinical decisions efficiently.
- Story 2:
  As a healthcare professional,
  I want seamless integration of patient-generated data into our hospital's existing EHR system,
  so I can efficiently document, track, and coordinate patient care.
- Story 3:
  As a clinician aiming to improve patient compliance,
  I want a secure messaging feature to easily communicate insights or recommendations directly to my patients,
  so they feel supported and encouraged in their diabetes management.

USER JOURNEY

🚀 Alex's Journey: Empowering a Tech-Savvy Lifestyle with Osmos



App Expectations:

PERSONA 1	PERSONA 2	PERSONA 3	PERSONA 4
• Unified Data Dashboard: Expects an intuitive, visually appealing dashboard that integrates data seamlessly from CGMs, insulin pumps, wearables, and nutritional apps into one cohesive view. • Predictive Insights: Anticipates personalized, AI-driven insights and forecasts to proactively manage blood glucose fluctuations, particularly related to stress, exercise, meals, and sleep patterns. • Customization & Flexibility: Wants highly customizable notifications and alerts (e.g., critical glucose events, medication reminders) that fit their active, unpredictable lifestyle without being intrusive. • Deep Analytics: Seeks in-depth analytics and trends, enabling experimentation and understanding of how specific behaviors influence glucose control, ideally presented clearly and intuitively. • Convenience & Connectivity: Requires reliable syncing across devices, quick access to historical data, and easy sharing options for healthcare providers or personal use.	• User-Friendly Interface: Expects an extremely simple, clean interface with clear, readable text and intuitive navigation. The app must avoid unnecessary complexity or jargon. • Simplified Reminders & Notifications: Prefers gentle yet consistent reminders to track blood sugar, take medications, hydrate, and engage in physical activity, presented in an easily digestible and reassuring format. • Support & Community Features: Values integrated communication options to connect with family members, caregivers, and friends, and clinicians. A community support feature could also be beneficial for emotional support and motivation. • Visual Simplicity: Wants straightforward visuals (color-coded indicators, intuitive graphs, or simple emoji-based feedback) to easily understand glucose trends without confusion. • Educational Content: Appreciates brief, engaging educational content, clearly explaining diabetes management strategies, medication instructions, and lifestyle tips, tailored specifically to seniors.	• Fun, Interactive Interface with gamified elements (badges, rewards) to encourage Liam's active participation. • Easy-to-Understand Visuals: Trends and reminders. • Parent-facing dashboard with actionable insights, real-time notifications, and predictive alerts to keep Liam safe and engaged in life without unnecessary limitations.	• Clear, Structured Reports: Expects concise, visual, and easy-to-interpret patient reports that highlight glucose trends, medications, medication adherence, and lifestyle insights. • Actionable Insights: Wants app-generated insights and recommendations that enable timely clinical interventions or patient follow-ups. • Integration with Clinical Workflow: Prefers seamless integration with existing EHR systems, minimal disruption, ensuring smooth patient data management and effortless documentation. • Security and Compliance: Requires robust privacy, security, and compliance measures (HIPAA, GDPR), ensuring secure and ethical handling of sensitive patient data. • Patient Communication Tools: Appreciates built-in communication or feedback mechanisms that allow easy interaction with patients, supporting personalized care and quick follow-ups.