

SOFTWARE DEVELOPMENT PROPOSAL

PREPARED FOR

Engineering Team, Training and Support Partners

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PROJECT NAME	Online E-Commerce System On Cloud Infrastructure Software		
EST. START DATE	1st Mar 25	EST. FINISH DATE	23 May 25
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PROJECT OVERVIEW

AIVHealth aims to launch a cloud-based e-commerce platform to modernize its retail operations, streamline inventory management, and establish a digital footprint in the wellness market. The system is designed to ensure scalability, high availability, and security. Microsoft Azure as the chosen cloud provider will host the platform. Leveraging on Azure's application services and databases, AIVHealth's shopfront site unites with a well-built back-end system that can efficiently manage sales, optimize logistics and drive long-term business growth.

PURPOSE

AIVHealth is a homegrown brand that aims to transition from a traditional physical operating store to a digitalised platform that can address current challenges of operational inefficiency, limited brand presence, and business inflexibility.

The key objectives of this initiative:

- Widen Customer Reach** – Establish an e-commerce platform to cater to both local and international customers, increasing sales beyond the limitations of a physical storefront.
- Streamline Inventory Management** – Implement a cloud-based inventory system that synchronizes stock levels across multiple sales channels, ensuring real-time tracking, automated restocking, and set-up expiry date alerts.
- Ensure Scalability** – Leverage cloud technology capable of supporting high traffic volumes and facilitating future international growth.
- Operational Optimization** – Imposing cloud-based solutions to reduce reliance on physical infrastructure, automate key processes, and streamline logistics, ensuring long-term cost-effectiveness.

AIVHealth will benefit by adopting the digital transformation with Microsoft Azure's cloud ecosystem and enhancing overall business agility in the e-commerce landscape.

OBSTACLES

In the implementation of a cloud-based e-commerce platform for AIVHealth, several challenges and unexpected variables may arise which may impact project timelines and deliverables, these include:

Technical barriers:

1. **System compatibility** - The legacy order and inventory systems in place may not be compatible with modern cloud solutions.
2. **Performance Updates** - Inventory database and backend operations need to be optimized for high-speed queries to prevent slow page loads and checkout failures.
3. **Third-Party Service Dependencies** - Interacting third-party services like payment gateway, logistics, and marketplace platforms could require additional customization and different API systems may have latency issues affecting instant updates.

Data Management:

1. **Data Privacy Risks** - Protective measures implemented to defend sensitive personal information of both customers and AIVHealth's stakeholders (such as suppliers) from malicious threats.
2. **User Privilege** - Establishing a clear scope of role-based access control (RBAC) for secure multi-user access to different system components.
3. **Legal Considerations** - Compliance with international e-commerce regulations (e.g., GDPR, PDPA) when expanding globally, necessitating strict data privacy protocols.

INDUSTRY RISK FACTORS

Understanding industry & market risks allows for proactive planning and risk mitigation strategies to ensure a successful digital transformation.

Established competitors - AIVHealth will compete with well-established e-commerce platforms like Shopee, Amazon, iherb.com which already dominate the online wellness market.

Operational & Supply Chain - High demand may strain inventory management, leading to stock shortages or overstocking issues. Order fulfillment delays or shipping inefficiencies can lead to customer dissatisfaction.

OVERALL SYSTEMS ARCHITECTURE

1. Customer-facing e-commerce site : **AIVHealth.com**

Key features for the features include:

- **Admin Dashboard:** Enable owner to manage product portfolio.
- **Online Business:** Customer log-in, Products, Carts, Wishlist, Contact, etc.

2. **Azure Web-app** for managing server-side of AIVHealth

Key features for the features in Azure cloud include:

- **Admin Dashboard:** Enable owner to manage Azure cloud services.
- **Inventory & Product Management:** Sync with stock levels and notifications for restocking requests.
- **Sales & Order Management:** Streamline order processing, fulfillment, and returns.
- **User Management & Security:** Enhance RBAC allowing for differentiated access levels for staff.
- **Marketing & Analytics:** Enhance online visibility, track sales and buyers' behavior.

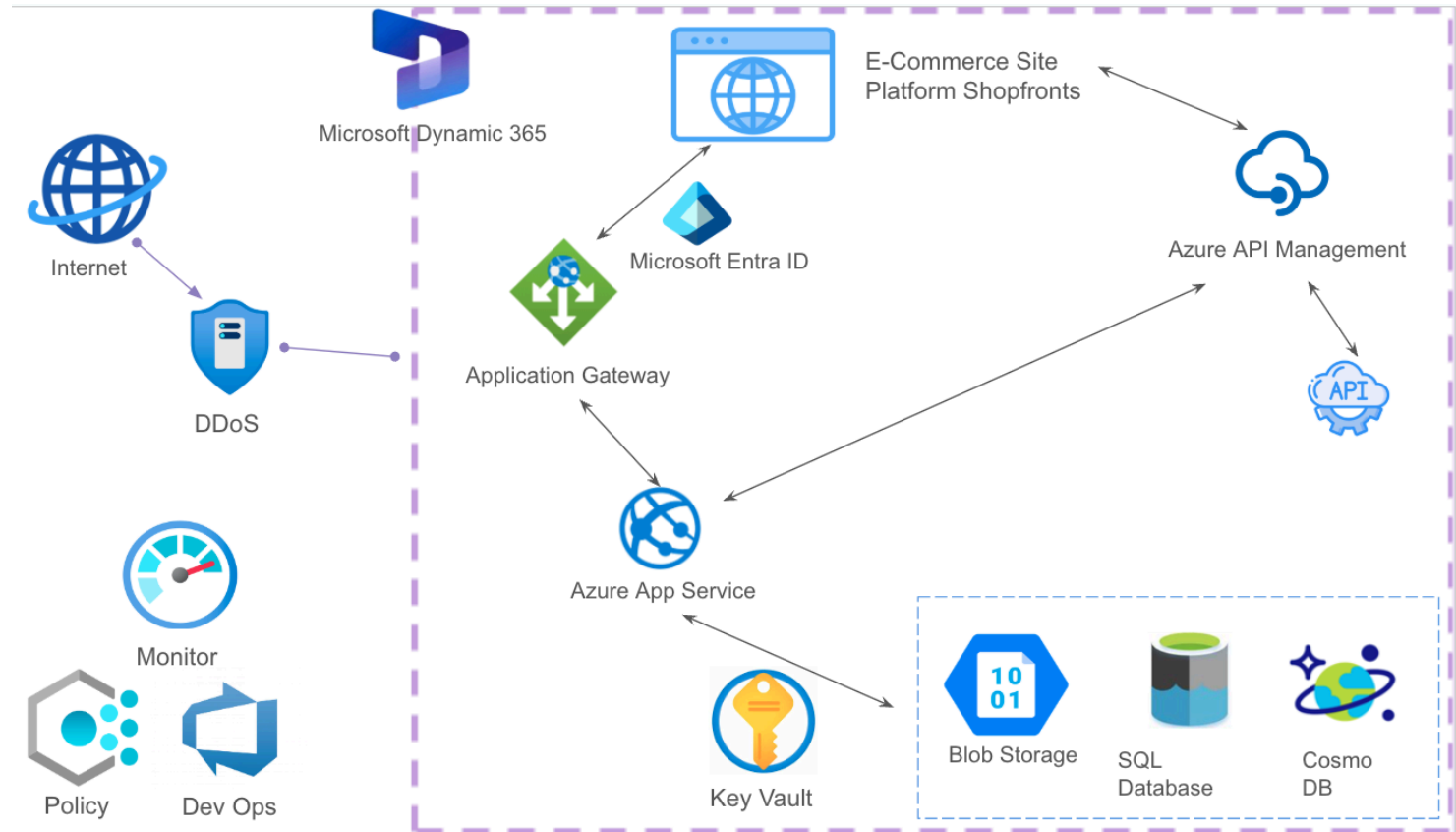
Key features for technical features:

- **Cloud Hosting & Scalability:** Ensures uptime and high availability with auto-scaling capabilities.
- **Security & Compliance:** Protect customer data, adhering to local and international data privacy regulations.

3. Online Shopfronts on Shopee & Lazada E-Commerce Platforms

APIs help connect inventory management, shipping and payment to databases.

System Architecture for Data Flow



1. **Azure DDoS Protection** continuously monitors AIVHealth's IP, monitoring application traffic and mitigating network attacks, protecting underlying network from vulnerabilities.
2. E-Commerce sites and platform shopfronts interact with customers. **Microsoft Entra ID** provides centralized identity and access protection and management for users and administrators.
3. **Azure API Management** manages APIs for external integrations and 3rd-party services, providing API throttling, rate limiting and monitoring for efficient API consumption.
4. **Application Gateway** acts as a load balancer and traffic manager, distributing incoming traffic to **Azure App Services**. Secure connections are provided through **SSL termination** and included **Web Application Firewall (WAF)**.
5. **Azure App Service** hosts e-commerce application logic and APIs. This fully managed service ensure scalability and availability of the application.
6. **Key Vault** securely stores sensitive data such as APIs, connections strings and secrets ensuring encryption and access control for enhanced security.
7. **Storage Accounts** through **Blob** (unstructured), **SQL Database** (structured) and **CosmosDB** (semi-structured). **Locally Redundant Storage (LRS)* ensures data availability and disaster recovery.
8. **Microsoft Dynamics 365** is integrated from front-end to back-end to enhance inventory management. Additionally, it provides business analytics, customer support, marketing insights, Human Resource & Finance resources.
9. **Azure Monitor** watches over platform performances & generating alerts for anomalies while enabling deep applications insights to ensure uptime and optimize resource utilization.
10. **Devops** integration enables continuous integrations and delivery (CI/CD) pipelines ensuring automated code deployment, testing, quick updates and feature rollouts.
11. **Azure Policy** enforces governance and compliance across the platform.

Data Flow and Communication:

1. End users access the **DDoS**-protected E-Commerce site through the internet.
2. Identity authentication is handled via **Microsoft Entra ID**.
3. **API Management** handles external data from third-party **API interactions**
4. Data through these sources flows through the protected **Application Gateway** to **Azure App Service**, which handles core business logic.
5. Data is stored in **Blob Storage**, **SQL Database**, or **Cosmos DB**, where it can be ingested for insights.
6. Data and insights from databases fed back to **Azure Web Apps** for owners to implement through **Microsoft Dynamics 365**.
7. Data is retrieved from databases based on request types. .

SOFTWARE STACK

The proposed stack balances the AIVHealth's immediate needs and positions them for sustainable growth and technological advancement.

Website: HTML, CSS, JavaScript(Node.js with Express.js), React.js or Angular for an interactive user experience

Storefronts: Third - party APIs connected to databases

Back-end Operations:

- **Operating Systems:** Azure App service (Webapps) for performance, scalability, security, support and compatibility
- **3rd-party integration:** Handling API requests (payment, shipping and order) and server-side operations via Azure API Management
- **Cloud Hosting:** Azure Subscription
- **Database & Storage:** Azure SQL, Azure Cosmos DB and Azure Blob Storage
- **Inventory Management:** Dynamics 365 Supply Chain Management
- **System availability:** Azure Monitor
- **Security & Regulatory Compliance:** Azure security suite (Application Gateway, DDoS Protection, Key Vault) for robust application, data protection. Adherence to data privacy laws with Azure Compliance Manager.

HARDWARE

AIVHealth does not require any on-premises hardware for its e-commerce operations, as all infrastructure, storage, security, and backup solutions are fully managed within Microsoft Azure's cloud environment. Azure's robust ecosystem provides scalable computing resources, high availability, built-in redundancy, and automated backups, eliminating the need for physical servers, storage devices, or network appliances. This cloud-first approach ensures optimal performance, security, and business continuity while allowing seamless expansion into international markets without the constraints of traditional hardware dependencies.

TESTING

By integrating unit testing, load testing, and security testing into the development lifecycle, AIVHealth Sports can ensure a highly reliable, scalable, and secure e-commerce platform. These proactive measures minimize operational risks, enhance customer trust, and support long-term business growth.

1. **Unit Testing:** Ensuring individual components function as expected.
2. **Load Testing:** Evaluating system performance under peak traffic to ensure it does not crash.
3. **Security Testing:** Identifying vulnerabilities and implementing protections to prevent cyber attacks or security breaches.

DOCUMENTATION

1. **Initial Planning**
 - a. A draft proposal outlining the project scope, objectives, technical requirements, benefits, drawbacks, and risks involved.
2. **Website Development & Configuration**
 - a. Details on the use of Wix for website creation, including template selection, customization, and third-party integrations (e.g., payment gateways, and shipping solutions).
 - b. Implementation of product listings, user accounts, and checkout process using Wix's built-in tools.
3. **Testing Reports**
 - a. Functional testing of website features (e.g., product browsing, cart functionality, checkout process).
 - b. Usability testing to ensure smooth navigation and user experience.
 - c. Performance testing to check site responsiveness and loading times.
4. **Deployment & Maintenance Guidelines**
 - a. Steps for publishing the Wix website and configuring domain settings.
 - b. Ongoing maintenance, including product updates, security settings, and performance monitoring

ENABLEMENT

1. **E-commerce Technical Support:** Dedicated customer service team to ensure smooth online operations and rapid resolution of technical issues, enabling seamless transition from in-store to digital shopping experience.
2. **Customized Training Solutions:** Flexible training modules tailored to the client's specific business needs, with additional specialized sessions available upon request to address unique requirements or new feature implementations.

COST STRUCTURE (PRELIMINARY)		
OVERVIEW	<p>The cost structure for developing AIVHealthhealth’s cloud-based e-commerce platform includes key components to ensure a scalable, secure, and high-performance online store.</p>	
	<p>Capital Expenditure - Website Storefront</p> <ul style="list-style-type: none">● Platform Design● Project Logistics Management● Quality testing● Maintenance & Support● Contingency Fund	
	<p>Operation Expenditure - Azure cloud system subscription</p> <ul style="list-style-type: none">● Cloud Hosting & Databases● Load Balancer & Autoscaling● Security & Policy● Inventory Management● Monitor & Support	
NEEDS / INVESTMENT (Cap Ex)		COST (\$G)
Platform Design: <ul style="list-style-type: none">● Front-End Development - HTML, CSS, custom development using React.js/Angular, Node.js with Express.jsn		\$1,000.00
Project Logistics Management: <ul style="list-style-type: none">● Overseeing timelines, resources, and risk mitigation strategies		\$2,000.00
Quality testing: <ul style="list-style-type: none">● Back-end quality testing for initial deployment - Conducting unit, performance testing, and security testing for a seamless user experience		\$3,000.00
Maintenance & Support <ul style="list-style-type: none">● Providing administrator and staff training for platform management● Continuous bug fixes, updates, and system enhancements		\$1,500.00
Contingency Funds		\$5,000.00
NEEDS / INVESTMENT (Op Ex)		COST (USD)
Cloud Hosting & Databases : <ul style="list-style-type: none">● App Service (\$316.40/month)● Azure Cosmo DB (\$12.79/month)● Azure SQL Database (\$17.72/month)● Storage Accounts (\$21.04/month)		\$2,289.24/monthly
Load Balancer & Autoscaling: <ul style="list-style-type: none">● Application Gateway (\$815.15/month)● Azure API Management (\$686.71/month)		
Security & policy: <ul style="list-style-type: none">● Microsoft Entra ID (formerly Azure AD) (\$109.50/month)● Azure Policy(\$6.00/month)		

<ul style="list-style-type: none"> Azure Key Vault (\$3.03/month) Azure DDoS Protection (\$199.00/month) <p>Inventory Management:</p> <ul style="list-style-type: none"> Dynamics 365 Supply Chain Management (\$210.00/month) <p>Monitoring & Support:</p> <ul style="list-style-type: none"> Azure Monitor (\$1.90/month) Azure DevOps (\$0.00/month) Azure Standard Support (\$100.00/month) 	
ESTIMATE TOTAL	SGD \$12,500 (One-time) USD \$2,289.24/monthly

PAYMENT TERMS
<p>Payment Phase</p> <ul style="list-style-type: none"> 1st Payment: 30% of the total project cost as an advance to start the project 2nd Payment: 20% of the total project cost after completion of the website front-end design 3rd Payment: 30% of the total project cost after completion of the Development stage 4th Payment: 20% of the total project cost at the time of project sign-off

TERMS & CONDITIONS	
<ul style="list-style-type: none">• Payment is due 30 days upon receipt of invoice.• Please make payment to Cloudia Pte Ltd Pte Ltd (UEN: 111555999A)	
PROPOSAL MAY BE WITHDRAWN IF NOT ACCEPTED BY DATE OF	

ACCEPTANCE OF PROPOSAL			
AUTHORIZED CLIENT SIGNATURE		DATE OF ACCEPTANCE	