Monolithic To Microservices Architecture

HOW MANTRA LABS MADE PROPERTYSHARE HIGHLY SCALABLE

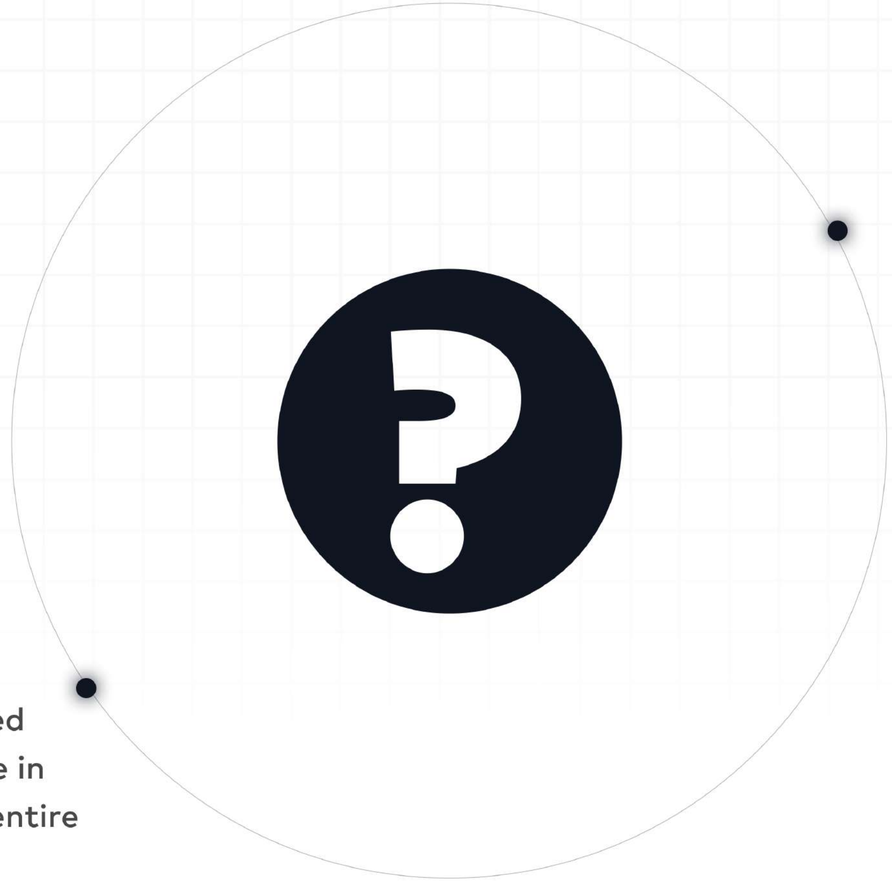
MANTRA LABS

CLIENT

Property Share is a leader in making real estate investment accessible and manageable. They facilitate easy investment in real estate for retail/small investors and also allow them to manage their investments easily.

The company initially operated with an investment portal built on monolithic architecture. This setup, while straightforward, began to limit the company's potential as it grew.

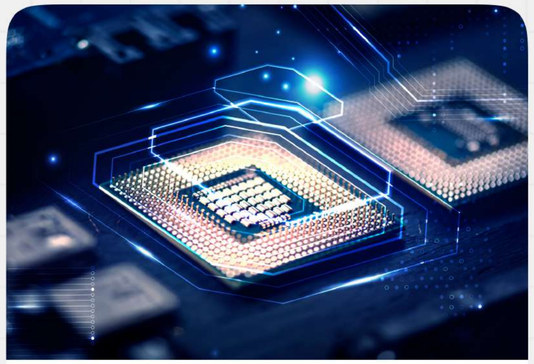
CHALLENGES



To maintain their growth trajectory and improve services, they recognized the need for a significant technological overhaul.

The monolithic architecture hindered scalability as development/upgrade in any module requires access to the entire code base.

OBJECTIVES OF
THE MODERNIZATION



MIGRATION FROM MONOLITHIC TO A MICROSERVICES ARCHITECTURE

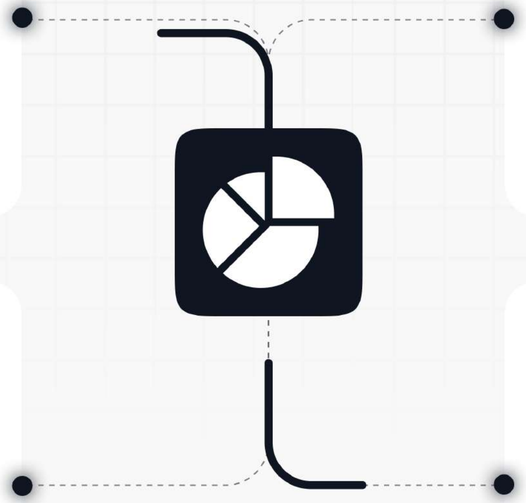
IMPROVING THE SYSTEM'S ABILITY TO MANAGE INCREASED USER TRAFFIC

OPTIMIZING COST AND SECURITY

ORIGINAL SYSTEM
ANALYSIS

Assessing system for its capability to handle increasing user traffic

Ability to efficiently handle growing user numbers and data volumes.



Examination of the codebase for high complexity and interdependencies

Identifying inefficiencies in handling large-scale data

ORIGINAL TECHNICAL
STACKS AND LIMITATIONS

Web Application

(PHP-based Platform)

Challenges in scaling and integrating modern, dynamic features.

Database

(Relational Database like MySQL)

Low flexibility and scalability to accommodate rapidly growing data needs.

Frontend

(HTML/CSS, Basic JavaScript)

Falling short of modern web application standards.

ARCHITECTURAL TRANSFORMATION

BREAKING DOWN THE MONOLITH

- Deconstructed the PHP-based monolithic application.
- This process involved carefully segmenting the existing codebase into more manageable and isolated parts.

DEVELOPING MICROSERVICES

- Over 20 different services, including vital communication services, were identified and reconstructed as independent microservices.

ENSURING SEAMLESS INTEGRATION

- Each microservice was developed to function independently yet seamlessly integrate with others.

TESTING AND DEPLOYMENT

- We also oversaw rigorous testing of each microservice to ensure stability and performance.

TECHNICAL INNOVATIONS INTRODUCED

CONTAINERIZATION AND ORCHESTRATION

Technologies like Docker for containerization and Kubernetes for orchestration are used to ensure that each microservice can be deployed, scaled, and managed efficiently.

CLOUD INTEGRATION

The team leveraged cloud technologies to enhance scalability and reliability. This integration allowed Property Share to manage resource allocation better and handle varying loads.

SYSTEM-WIDE IMPACT

- Upgrading a module like user authentication **module typically requires 1-2 weeks**
- coding, integrating the changes with other parts of the system, and extensive testing.

- Post migration **1-2 days**.
- The isolated nature of the module allows for quicker development and testing

1 week

Updates in monolithic architecture system

1 day

After microservices based architecture was implemented

AGILITY AND ROBUSTNESS

The microservices architecture allowed for updates in individual modules without affecting the entire platform, significantly increasing system agility and robustness.

FUTURE-PROOFING

This approach laid a foundation for easy adaptation to future technological changes and user demands.

NEW ADDITIONS
AND UPGRADES

A new dashboard for investors was introduced, both a web and mobile application, developed using Flutter

Flutter

A new web application for distributors, built using React, was rolled out, featuring API integration for enhanced functionality.

React

The investor web portal was transitioned from HTML/CSS to React, significantly improving the user interface and overall experience.

HTML CSS React

LESSONS LEARNED
AND FUTURE SCOPE

- The project underscored the importance of agility and robustness in software architecture.
- There's potential for further breaking down the application into more micro-services, paving the way for continuous improvement and adaptation.

TECH STACK

New Microservices Oriented Architecture

CONTAINERIZATION

Docker for individual microservices.

ORCHESTRATION

Kubernetes for managing containers.

MICROSERVICES DEVELOPMENT

Combination of PHP, Node.js, or Python.

API MANAGEMENT

REST or GraphQL for efficient data handling

TECH STACK

Cloud Integration and Deployment

- **CLOUD SERVICES**

  Leveraged for scalability and resource management.

- **DEPLOYMENT**

  Managed by **Mantra Labs**, ensuring smooth transition and minimal operational disruption.

This tech stack was pivotal in transforming Property Share's architecture, enhancing scalability, operational efficiency, and system robustness.

CONCLUSION

The journey of **Property Share** from a monolithic system to a microservices architecture was a pivotal step in their growth. It not only improved their technical capabilities but also positioned them for future innovation and success in the real estate investment sector.

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