System Analysis and design

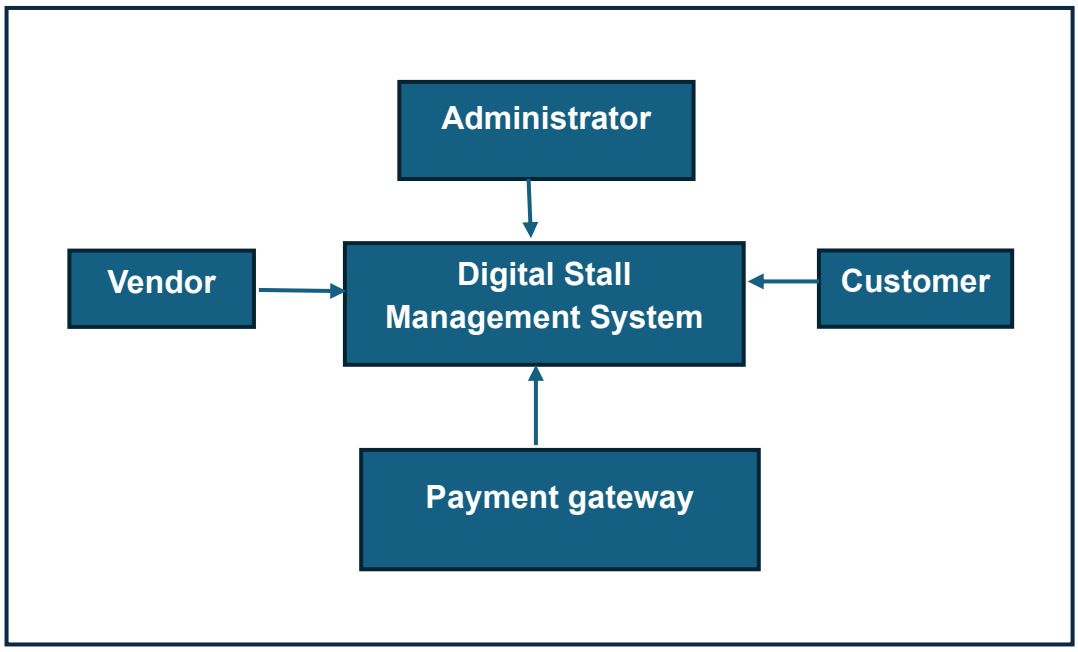
The **Mindil Beach Sunset Market**, a Darwin cultural icon, features food vendors, artisans, and performers that bring together a multicultural and diverse community. Currently, stall management systems that might include registration, booking, and feedback are largely manual or disjointed and non-interconnected. The proposed **Digital Stall Management System (DSMS)** aims to streamline operations by automating vendor registration, stall booking, payment, and feedback processes via a cloud-based platform, which allows the market to process everything in an effective way.

The **Digital Stall Management System (DSMS)** is proposed to point these issues, and it will provide a centralized online platform for vendors, administrators, and customers to interact actively. The system will support vendor registration, stall booking, payment processing, and customer feedback. This section presents a structured **System Analysis and Design (SAD)** which use modelling techniques to ensure the solution is both functional and sustainable.

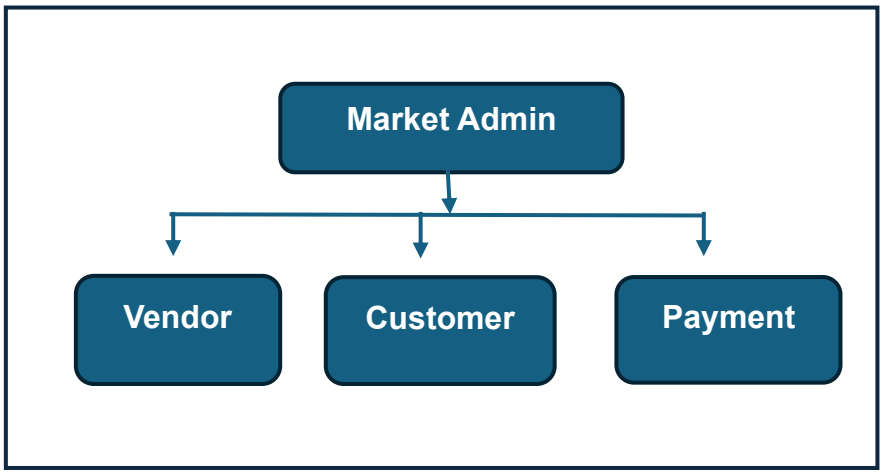
System analysis identifies the system goals, actors, and their interactions. It defines what the system needs to do rather than how it should be built.

Objectives of Analysis

- Understand stakeholder needs (vendors, administrators, customers).
- Define system boundaries and scope.
- Represent interactions through use cases.
- Model data and workflows using diagrams.



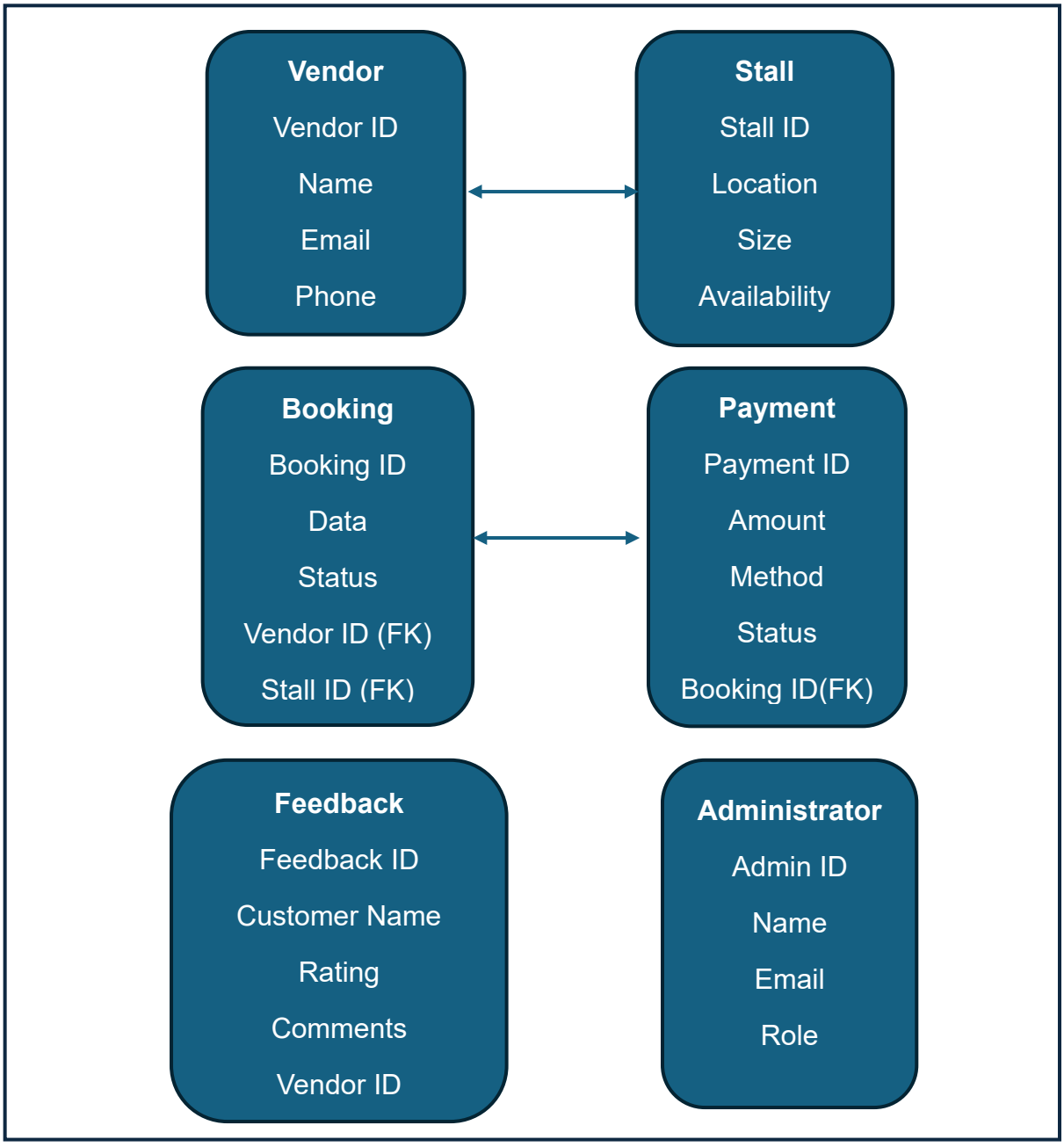
User Case diagram and description



❖ **Use Case Descriptions (Key Examples)**

Use Case 1: Vendor Registration • **Actors:** Vendor, Admin • **Description:** Vendor creates an account, submits documents; Admin approves. • **Precondition:** Vendor has valid details. • **Postcondition:** Vendor is added to the system.	**Use Case 2: Stall Booking** • **Actors:** Vendor, Payment System • **Description:** Vendor logs in, selects stall, pays online. • **Precondition:** Vendor must be approved. • **Postcondition:** Stall reserved, confirmation sent.
Use Case 3: Feedback Submission • **Actors:** Customer • **Description:** Customers submit reviews after visiting stalls. • **Precondition:** Customer has access to the platform. • **Postcondition:** Feedback stored in database.	**Use Case 4: Approval & Stall Allocation** • **Actors:** Admin • **Description:** Admin reviews registrations and assigns stalls. • **Precondition:** Vendor request submitted. • **Postcondition:** Vendor approved, stall allocated.

Domain Model Class Diagram:



Explanation

- A **Vendor** can book multiple stalls.
- A **Stall** may be associated with multiple bookings over time.
- Each **Booking** is linked to a **Payment**.
- **Feedback** is linked to a Vendor.
- **Administrator** manages Vendors and Stalls.

Sequence Diagram and Description

Vendor → System → Payment Gateway → System → Admin → System → Vendor

Actors involved:

- Vendor
- System
- Payment Gateway
- Admin

Steps:

- Vendor logs in → System verifies login.
- Vendor chooses stall → System checks availability.
- If available, Vendor confirms booking.
- System sends payment request → Payment Gateway confirms payment.
- System shows booking confirmation to Vendor.
- System notifies Admin.
- Admin approves booking → System updates records.
- Vendor receives final confirmation.

References

Ablanedo-Rosas, J. H., Gao, H., Alidaee, B., & Teng, W. G. (2019). Using information systems to improve market management: A case study in vendor stall allocation. *Journal of Information Systems and Technology Management, 16*(3), 1–15. https://doi.org/10.4301/S1807-1775201916003

Dennis, A., Wixom, B. H., & Roth, R. M. (2021). *Systems analysis and design* (7th ed.). Wiley.

Kendall, K. E., & Kendall, J. E. (2019). *Systems analysis and design* (10th ed.). Pearson.

Mindil Beach Sunset Market. (2023). *About the market*. Retrieved from https://mindil.com.au/

Satzinger, J. W., Jackson, R. B., & Burd, S. D. (2020). *Systems analysis and design in a changing world* (8th ed.). Cengage Learning.

Stair, R., & Reynolds, G. (2020). *Principles of information systems* (14th ed.). Cengage Learning.