

## Section 1: Datawarehouse Design

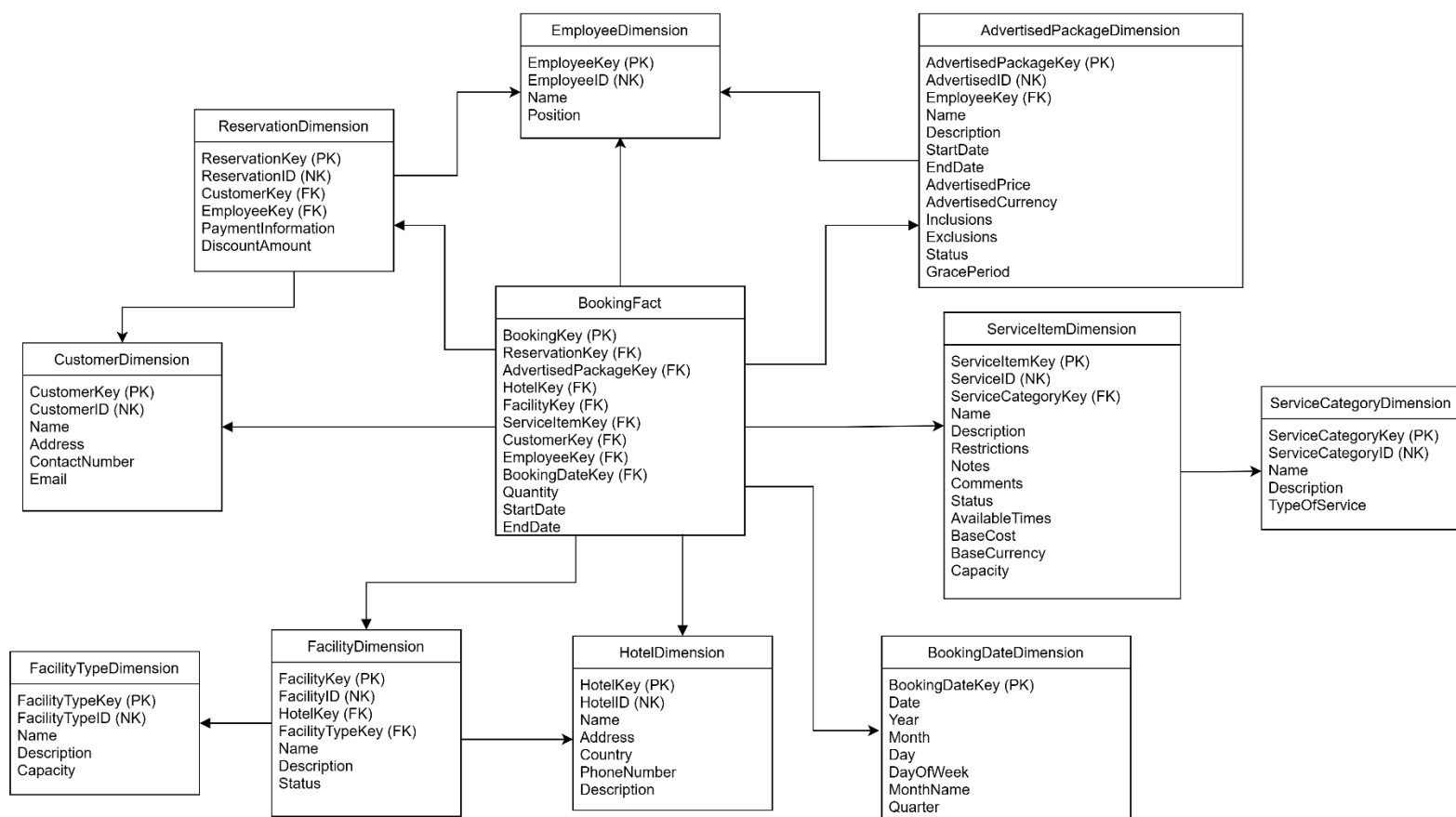
This report outlines a data warehouse schema designed to support the decision-making information needs of LeisureAustralasia. The schema focuses on enabling the analysis of bookings, reservations, and service utilization within their hotel and facility network.

### Subject Area:

The primary subject area covered by this data warehouse is **Bookings and Reservations**. This encompasses understanding customer booking patterns, service and facility utilization, and the performance of advertised service packages. Secondary subject areas include **Hotel and Facility Performance** and **Customer Behavior**.

### Data Warehouse Schema:

The proposed data warehouse schema is a **star schema**, centered around a `BookingFact` table. This structure simplifies querying and analysis by organizing data into a central fact table containing key business metrics, surrounded by dimension tables that provide context for these metrics.



PK: Primary Key

FK: Foreign Key

NK: Natural Key

## How the Data Warehouse Satisfies Information Analysis Needs:

This data warehouse design enables LeisureAustralasia's decision-makers to perform various types of analysis, including:

- **Booking Analysis:**
  - Track the number of bookings over time (using `BookingDateDimension`).
  - Analyze booking quantities for different advertised packages (`AdvertisedPackageDimension`).
  - Understand booking trends by hotel and facility type (`HotelDimension`, `FacilityDimension`, `FacilityTypeDimension`).
  - Identify popular service items and categories (`ServiceItemDimension`, `ServiceCategoryDimension`).
  - Analyze booking patterns by customer demographics (`CustomerDimension`).
- **Reservation Analysis:**
  - Analyze reservation trends over time.
  - Understand the impact of discount amounts on reservations.
  - Track which employees are handling the most reservations (`EmployeeDimension`).
- **Hotel and Facility Performance:**
  - Determine the utilization rates of different facilities within each hotel.
  - Compare booking volumes across different hotels and countries.
- **Advertised Package Performance:**
  - Evaluate the success of different advertised service packages based on booking numbers.
  - Analyze the timeframes during which specific packages are most popular.
- **Customer Behavior:**
  - Identify repeat customers.
  - Analyze which services or packages are most frequently booked by different customer segments.

## Examples of Analysis Queries:

1. What is the total number of bookings for each hotel in the year 2024?

SQL

```
SELECT
    hd.Name AS HotelName,
    COUNT(bf.BookingKey) AS TotalBookings
FROM BookingFact bf
JOIN HotelDimension hd ON bf.HotelKey = hd.HotelKey
JOIN BookingDateDimension bdd ON bf.BookingDateKey =
    bdd.BookingDateKey
WHERE bdd.Year = 2024
GROUP BY hd.Name;
```

**2. What are the top 5 most booked service items in the last quarter?**

SQL

```
SELECT TOP 5
    sid.Name AS ServiceItemName,
    COUNT(bf.BookingKey) AS NumberOfBookings
FROM BookingFact bf
JOIN ServiceItemDimension sid ON bf.ServiceItemKey =
    sid.ServiceItemKey
JOIN BookingDateDimension bdd ON bf.BookingDateKey =
    bdd.BookingDateKey
WHERE bdd.Year = YEAR(GETDATE()) AND bdd.Quarter = DATEPART(quarter,
    GETDATE())
GROUP BY sid.Name
ORDER BY NumberOfBookings DESC;
```

**3. What is the average discount amount for reservations made in each month of 2024?**

SQL

```
SELECT
    bdd.MonthName,
    AVG(rd.DiscountAmount) AS AverageDiscount
FROM BookingFact bf
JOIN ReservationDimension rd ON bf.ReservationKey = rd.ReservationKey
JOIN BookingDateDimension bdd ON bf.BookingDateKey =
    bdd.BookingDateKey
WHERE bdd.Year = 2024
GROUP BY bdd.MonthName
ORDER BY bdd.Month;
```

**4. How many bookings were made for the 'Luxury Spa Retreat' package in each month of 2024?**

SQL

```
SELECT
    bdd.MonthName,
    COUNT(bf.BookingKey) AS NumberOfBookings
FROM BookingFact bf
JOIN AdvertisedPackageDimension apd ON bf.AdvertisedPackageKey =
    apd.AdvertisedPackageKey
JOIN BookingDateDimension bdd ON bf.BookingDateKey =
    bdd.BookingDateKey
WHERE apd.Name = 'Luxury Spa Retreat' AND bdd.Year = 2024
GROUP BY bdd.MonthName
ORDER BY bdd.Month;
```

This data warehouse design provides a solid foundation for LeisureAustralasia to analyze their business operations and gain valuable insights for strategic decision-making.