**Forecasting Module for Revenue Management Using Artificial Intelligence Techniques for SM Hotels and Conventions**

1. **Event Table**

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| Event | Trigger | Source | Use Case | Response | Destination |
| 1. The company budget is created for the coming year. | Budget was created | General Management | Budget Created | System distributes the budget. | Opera, Sales |
| 2. General Management requests system to generate Annual Flash Report. | Request Annual Flash Report | General Management | Generate Annual Flash Report | System generates Annual Flash Report. System then transfers Annual Flash Report to Opera for Storage and gives General Management a copy. | System, Opera, General Management |
| 3. Actual data enters the system. | Actual data entered | Sales | Enter Actual Data | System receives actual data. | System |
| 4. Sales requests system to generate Daily Revenue Report | Request Daily Revenue Report | Sales | Generate Daily Revenue Report | System retrieves forecasted data and creates Room Revenue Report and Daily Flash Report in order to generate Daily Revenue Report. System then transfers Daily Revenue Report to Opera for Storage and gives Sales a copy of the report. | System, Opera, Sales |
| 5. Sales requests system to generate room segmentation. | Request Room Segmentation | Sales | Generate Room Segmentation | System generates total rooms sold to calculate Occupancy Rate, RevPAR, and Average Daily Rate in order to generate Room Segmentation. System then transfers Room Segmentation to Opera for Storage and gives Sales a copy. | System, Opera, Sales |
| 6. Historical data is retrieved from Opera into the system | Historical data is retrieved | Opera | Retrieve Historical Data | System receives historical data from Opera | System |
| 7. Create Forecasted Data | Creation of Forecasted Data | System | Create Forecasted Data | System transfers Forecasted Data to Opera for Storage. | Opera |

1. **Use Case Definition**

**1.**

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| **Use Case Name :** | Budget Created | |
| **Scenario :** | The budget is being created for the coming year. | |
| **Triggering Event :** | Budget was created | |
| **Brief Description :** | The company budget is created by the General management | |
| **Actor :** | General Management | |
| **Related Use Case :** | Generate Annual Flash Report, Generate Room Segmentation, Generate Daily Revenue Report | |
| **Stakeholders :** | Opera , Sales Department, General Management | |
| **Precondition :** | The budget must be received by the system | |
| **Post-Condition :** | The system distributes the budget | |
| **Flow of Activities** | | |
| **Actor** | | **System** |
| 1. General Management creates budget for the year. | |  |
| 2. General Management inputs the budget into the system. | | 2.1 System receives budget.  2.2 System distributes the budget to Opera and Sales Department. |

**2.**

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| **Use Case Name :** | Retrieve Historical Data | |
| **Scenario :** | The Historical Data is retrieved from Opera. | |
| **Triggering Event :** | Historical data is retrieved. | |
| **Brief Description :** | The system receives the historical data retrieved from Opera | |
| **Actor :** | Opera | |
| **Related Use Case :** | Create Forecasted Data | |
| **Stakeholders :** | Opera, System | |
| **Precondition :** | There must be a record of historical data | |
| **Post-Condition :** | The system receives historical data. | |
| **Flow of Activities** | | |
| **Actor** | | **System** |
| 1. Opera retrieves needed historical data. | | 1.1 System accesses Opera  1.2 System receives historical data |

**3.**

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| **Use Case Name :** | Enter Actual Data | |
| **Scenario :** | The actual data is entered | |
| **Triggering Event :** | Actual data entered | |
| **Brief Description :** | The actual data is entered in the system | |
| **Actor :** | Sales Department | |
| **Related Use Case :** | Create Forecasted Data | |
| **Stakeholders :** | System, Sales Department | |
| **Precondition :** | There must be a record of the actual data of the day | |
| **Post-Condition :** | The system receives the actual data of the day | |
| **Flow of Activities** | | |
| **Actor** | | **System** |
| 1. Sales Department collects all actual data for the day. | |  |
| 2. Sales Department enters actual data into the system. | | 2.1 System receives actual data |

**4.**

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| **Use Case Name :** | Create Forecasted Data | |
| **Scenario :** | The forecasted data is being created | |
| **Triggering Event :** | Creation of forecasted data | |
| **Brief Description :** | The system creates forecasted data from actual data and historical data | |
| **Actor :** | System | |
| **Related Use Case :** | Generate Daily Revenue Report, Enter Actual Data, Retrieve Historical Data | |
| **Stakeholders :** | System, Opera | |
| **Precondition :** | There must be a historical data and actual data | |
| **Post-Condition :** | The forecasted data is transferred by the system to Opera for storage. | |
| **Flow of Activities** | | |
| **Actor** | | **System** |
| 1. System needs forecasted data | | 1.1 System retrieves needed historical data.  1.2 System retrieves needed actual data.  1.3 System generates forecasted data |
| 2. System generated forecasted data | | 2.1 System transfers forecasted data to Opera for storage. |

**5.**

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| **Use Case Name :** | Generate Daily Revenue Report | |
| **Scenario :** | The Daily Revenue Report is being generated by the system | |
| **Triggering Event :** | Request Daily Revenue Report | |
| **Brief Description :** | The sales department requests the system to generate Daily Revenue Report | |
| **Actor :** | Sales Department | |
| **Related Use Case :** | Generate Annual Flash Report, Create Forecasted Data | |
| **Stakeholders :** | Sales Department, Opera | |
| **Precondition :** | There must be a record of both the budget and the forecasted data | |
| **Post-Condition :** | A copy of the Daily Revenue Report is sent to the Sales Management and a copy is also transferred into Opera for storage. | |
| **Flow of Activities** | | |
| **Actor** | | **System** |
| 1. Sales Department requests for Daily Revenue Report | | 1.1 System retrieves forecasted data needed for the day  1.2 System retrieves budget for the day  1.3 System generates Room Revenue Report containing budget and combined historical actual forecast data.  1.4 System generates Daily Flash Report containing combined historical actual forecast data and budget.  1.5 System generates Daily Revenue Report through combining the Room Revenue Report and Daily Flash Report.  1.6 System sends a copy of Daily Revenue Report to the Sales Department. |
| 2. Sales Department receives Daily Revenue Report | | 2.1 System transfers Daily Revenue Report to Opera for storage. |

**6.**

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| **Use Case Name :** | Generate Room Segmentation | |
| **Scenario :** | The Room Segmentation is being generated by the system | |
| **Triggering Event :** | Request room segmentation | |
| **Brief Description :** | The sales department requests the system to generate the room segmentation | |
| **Actor :** | Sales Department | |
| **Related Use Case :** | GenerateAnnualFlash Report | |
| **Stakeholders :** | Sales Department, Opera | |
| **Precondition :** | There must be a record of the occupancy rate and average daily rate to calculate for the RevPAR (revenue per available room) | |
| **Post-Condition :** | A copy of the Room Segmentation is sent to the Sales Department System and a copy is also transferred to Opera for storage | |
| **Flow of Activities** | | |
| **Actor** | | **System** |
| 1. Sales Department keeps track of hotel rooms sold. | | 1.1System generates total rooms sold.  5.2) System uses total rooms sold to calculate for Occupancy Rate (OR).  5.3) System calculates for average daily rate (ADR).  5.4) System uses Average Daily Rate (ADR) and Occupancy Rate (OR) to compute for RevPAR.  5.5) System generates Room Segmentation containing ADR, OR, and RevPAR.  5.6) System sends a copy of Room Segmentation to the Sales Department.  5.7) System transfers Room Segmentation to Opera for storage. |
| 2. Sales Department requests system for Room Segmentation | | 2.1 System uses total rooms sold to calculate for Occupancy Rate (OR).  2.2 System calculates for average daily rate (ADR).  2.3 System uses Average Daily Rate (ADR) and Occupancy Rate (OR) to compute for RevPAR.  2.4 System generates Room Segmentation containing ADR, OR, and RevPAR.  2.5 System sends a copy of Room Segmentation to the Sales Department. |
| 3. Sales Department receives Room Segmentation. | | 3.1 System transfers a copy of the generated Room Segmentation to Opera for storage. |

**7.**

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| **Use Case Name :** | Generate Annual Flash Report | |
| **Scenario :** | Annual Flash Report is being generated by the system | |
| **Triggering Event :** | Request Annual Flash Report | |
| **Brief Description :** | The General Management requests the system to generate an Annual Flash Report. | |
| **Actor :** | General Management | |
| **Related Use Case :** | Generate Daily Revenue Report and Generate Room Segmentation | |
| **Stakeholders :** | Opera , General Management | |
| **Precondition :** | There must be a record of generated Daily Revenue Reports and Room Segmentations for the whole year. | |
| **Post-Condition :** | A copy of the Annual Flash Report is given to the General Management and a copy is also transferred into Opera for storage. | |
| **Flow of Activities** | | |
| **Actor** | | **System** |
| 1. General Management requests for Annual Flash Report | | 1.1 System retrieves all Daily Revenue Reports from Opera for the year.  1.2 System retrieves all Room Segmentations from Opera for the year.  1.3 System collects all necessary data from all the retrieved reports then combines these data in order to generate the Annual Flash Report.  1.4 System sends a copy of Annual Flash Report to General Management. |
| 2. General Management receives Annual Flash Report | | 2.1 System transfers a copy of the generated Annual Flash Report to Opera for storage. |