**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 forecasts data from 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 entered into the system | Historical data is entered | Opera | Enter Historical Data | System receives historical data | System |
| 7. Combined Historical Actual Forecast data is created by the system. | Creation of Combined Historical Actual Forecast | System | Create Combined Historical Actual Forecast | System transfers Combined Historical Actual Forecast 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 :** | Enter Historical Data | |
| **Scenario :** | The Historical Data is entered in the System. | |
| **Triggering Event :** | Historical data is entered | |
| **Brief Description :** | The system receives the historical data entered by Opera | |
| **Actor :** | Opera | |
| **Related Use Case :** | Enter Actual 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 enters relevant historical data into the system. | | 1.1 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 :** | Enter Historical 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 Combined Historical Actual Forecast | |
| **Scenario :** | The combined historical actual forecast data is being created | |
| **Triggering Event :** | Creation of Combined Historical Actual Forecast | |
| **Brief Description :** | The system creates combined historical actual forecast data | |
| **Actor :** | System | |
| **Related Use Case :** | Generate Daily Revenue Report, Enter Actual Data, Enter Historical Data | |
| **Stakeholders :** | System, Opera | |
| **Precondition :** | There must be a historical data and actual forecast data | |
| **Post-Condition :** | The combined historical actual forecast data is transferred by the system to Opera for storage. | |
| **Flow of Activities** | | |
| **Actor** | | **System** |
| 1. System needs combined historical actual data | | 1.1 System retrieves needed historical data.  1.2 System retrieves needed actual data.  1.3 System generates combined historical actual data |
| 2. System generated combined historical actual data | | 2.1 System transfers combined historical actual 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 Combined Historical Actual Forecast | |
| **Stakeholders :** | Sales Department, Opera | |
| **Precondition :** | There must be a record of both the budget and the historical actual forecast 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 combined historical actual forecast 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. |