

**Project Status Report**



**Project Name:** Forecasting Module for Revenue Management Using Artificial Intelligence Techniques

**Department:** SoCIT



**Prepared By:**

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**Project Status Report Version Control**

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| **Version** | **Date** | **Author** | **Change Description** |
| 1.0 | 06/08/17 | Katelyn Anne S. Calma | Document created |
| 2.0 | 06/12/17 | Katelyn Anne S. Calma | * Revision of Research Paper * Weekly Consultation with Adviser |
| 3.0 | 06/19/17 | Katelyn Anne S. Calma | * Backward Propagation * Optimization Model * Genetic Algorithm |
| 4.0 | 06/26/17 | Katelyn Anne S. Calma | * Event Table * Use Case Diagram * Further Research |
| 5.0 | 07/03/17 | Katelyn Anne S. Calma | * Event Table * Use Case Definition * Use Case Diagram * Further Research * Comparative Study * Deployment Diagram * Object Diagram * Activity Diagram |

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# PROJECT STATUS REPORT PURPOSE

The Project Status Report is a document that Project Managers may use as a means of formal regular reporting on the status of a project to key project stakeholders, including the Steering Committee, Project Sponsor, and Senior Manager.



# PROJECT STATUS REPORT TEMPLATE

## Project Status Report Details

The group has focused on completing their UML diagrams. These UML diagrams are an important part of understanding Object Oriented development.

* Apart from their UML diagrams, the group still researches about forecasting and Artificial Intelligence (A.I.) to have a better idea and understanding of their project.
  + The group has added deployment diagram, object diagram and activity diagram to their existing UML diagrams which are their revised event table, use case full definition and use case diagram.
  + The group have completed their further research on *Genetic Algorithms in Seasonal Demand Forecasting, Artificial Intelligence Forecasting of Resort Demand* and *Linear Regression in Machine Learning*. They have also started on their comparative study about these three topics.
  + The group also met with their client, Sir Neil M. Rumbaoa the V.P. of Marketing in SM Hotels and Conventions, last June 28, 2017 (Wednesday). They clarified some things in their project.
  + By accomplishing their some of their UML diagrams ahead of schedule, they are able to focus on their comparative study that is already behind schedule.
* The group is working double time in hope of accomplishing their initial scope by the 9th week of this term. To address the other risk of having incorrect diagrams, the group has referred to their notes from class and UML diagram links from Moodle used in their class discussions. Having correct diagrams the first try would mean that they save time by not having to revise their diagrams anymore.
* The group were not able to accomplish all of their milestones this week. However, they were able to successfully address the issue affecting the communication between client and the group. To address this issue, each class was assigned a representative that would collect all the questions and files needed from Sir Neil. This person would be mediator between Sir Neil (the client) and the class.

## Project Status Report Template

|  |  |  |
| --- | --- | --- |
| Project Name | | |
| Prepared By:  Katelyn Anne S. Calma | Date:  07/03/17 | Reporting Period:  06/26/17 to 07/03/17 |
| Project Overall Status:  The group has focused on completing their UML diagrams. These UML diagrams are an important part of understanding Object Oriented development. They are currently working on their deployment diagram, object diagram and activity diagram. As requested by their project adviser, they are still researching about studies that are related to their project. Lastly, they met with their client last Wednesday (June 28, 2017). | | |
| Project Summary:  During their meeting with Sir Neil, they asked what type of files are stored in Opera and can they be exported. They extract excel files from Opera that they use in creating their reports manually in excel. They also talked about the possibility of expanding their scope. The initial scope of the group presented in their INSTDEV class was to automate their reports and create a forecasting module for revenue management. The client suggested that if they were able to accomplish their initial scope by the 9th week of this term, they could include other revenue management tools needed by the company. | | |
| **Milestone Deliverables performance reporting over last period**   |  |  |  |  | | --- | --- | --- | --- | | **Milestone Deliverables** | **Due Date** | **% Completed** | **Deliverable Status** | | Use Case | | | | | * Event Table | 06/22/17 | 100% | On Schedule | | * Use Case Full Definition | 06/22/17 | 100% | On Schedule | | * Use Case Diagram | 07/05/17 | 100% | Ahead of Schedule | | Diagrams | | | | | * Deployment Diagram | 07/05/17 | 75% | Ahead of Schedule | | * Object Diagram | 07/05/17 | 75% | Ahead of Schedule | | * Activity Diagram | 07/05/17 | 80% | Ahead of Schedule | | Further Research | | | | | * Genetic Algorithms in Seasonal Demand Forecasting | 07/03/17 | 100% | On Schedule | | * Artificial Intelligence Forecasting of Resort Demand | 07/03/17 | 100% | On Schedule | | * Linear Regression in Machine Learning | 07/03/17 | 100% | On Schedule | | Comparative Study | | | | | * Genetic Algorithms in Seasonal Demand Forecasting | 07/03/17 | 50% | Behind Schedule | | * Artificial Intelligence Forecasting of Resort Demand | 07/03/17 | 50% | Behind Schedule | | * Linear Regression in Machine Learning | 07/03/17 | 50% | Behind Schedule | | Meeting with Sir Neil | | | | | * Clarification on data type used in Opera | 06/28/17 | 100% | On Schedule | | * Scope | 06/28/17 | 100% | On Schedule | | | |
| **Milestone Deliverables scheduled for completion over next period**   |  |  |  |  | | --- | --- | --- | --- | | **Milestone Deliverables** | **Due Date** | **% Completed** | **Deliverable Status** | | Use Case | | | | | * Use Case Diagram | 07/05/17 | 100% | Ahead of Schedule | | Diagrams | | | | | * Deployment Diagram | 07/05/17 | 75% | Ahead of Schedule | | * Object Diagram | 07/05/17 | 75% | Ahead of Schedule | | * Activity Diagram | 07/05/17 | 80% | Ahead of Schedule | | Comparative Study | | | | | * Genetic Algorithms in Seasonal Demand Forecasting | 07/03/17 | 50% | Behind Schedule | | * Artificial Intelligence Forecasting of Resort Demand | 07/03/17 | 50% | Behind Schedule | | * Linear Regression in Machine Learning | 07/03/17 | 50% | Behind Schedule | | | |
| **Project impact of milestone success or failure for project remainder**   |  |  | | --- | --- | | The group has finished revising their event table, use case full definition and use case diagram. They have also started on their deployment, activity, and object diagrams. They’ve attended a meeting with their client. They are also researching and conducting a comparative study on forecasting and A.I. as requested by their project adviser. However, their comparative study is already behind schedule. | Following the schedule is very crucial to the group. In order to finish their initial scope by the 9th week, they need to not fall behind schedule. If everything goes as planned, they can add more modules to their project as suggested by their client. However, the group has not committed anything yet. | | | |
| **Project** **Budget/Financial Status**   |  |  |  |  | | --- | --- | --- | --- | | **Budget Item** | **Planned Budget** | **Actual Cost** | **Variance/Explanation** | |  |  |  |  | |  |  |  |  | | | |
| **Project Risk Management Status**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Risk and Description** | **Risk Chance** | **Risk Impact** | **Risk Priority** | **Change from Last Review** | | Initial Scope may not be accomplished by the 9th week of this term   * Automation of reports * Forecasting Module | High | High | High | If the group is able to accomplish their initial scope by the 9th week of this term, the client will ask them to expand their scope to include additional modules needed for revenue management. However, if the group is not able to accomplish it by the deadline, they will stick to their initial scope as presented in their INTSDEV class. | | Accomplished Diagrams may be incorrect   * Deployment Diagram * Object Diagram * Activity Diagrams | Low | Low | Medium | The group has created their deployment, object, and activity diagrams. However, there might be a chance that these diagrams will need revisions such as when the group received corrections for their use case diagrams. To help mitigate this risk, the group has referred to their notes taken in class and the UML diagram links found in moodle while creating their diagrams. | | | |
| **Project Issue Management Status**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Issue and Description** | **Project Impact** | **Target Due Date** | **Issue Status** | **Issue Resolution** | | Group Behind Schedule   * Comparative Study | Medium | 07/10/17 | Open | This week, the group had a lot of milestones and deliverables to complete. There were 5 milestones and sadly, the group was only able to complete 4 of these. They were not able to accomplish the comparative study as requested by their project adviser. Thus, the group is working hard to catch up with the schedule. | | Communication between the group and the client   * Meetings with the client * Email correspondence | High | 06/28/17 | Closed | Previously, our group and the other groups handling SM hotels and conventions had a hard time contacting Sir Neil. To address this issue, each class was assigned a representative that would collect all the questions and files needed from Sir Neil. This person would be mediator between Sir Neil (the client) and the class. | | | |
| **Project Recommendations**   |  | | --- | | The group have accomplished their UML diagrams on schedule. However, because of several milestones being done at the same time, the group was not able to accomplish their comparative study on time. This is behind the issue of the group falling behind schedule. The group is working hard to address this issue. Furthermore, the group aims to finish their initial scope by the 9th week to be able to add more modules to their scope. If the group does not accomplish this, then they have no choice but to stick with their initial scope. | | | |
| **Objectives for Next Project Status Review**   |  | | --- | | The group aims to submit their completed use case diagram, deployment diagram, object diagram and activity diagram by the next project status reporting period. They must also be able to finish their comparative studies on existing systems/studies about forecasting modules that is already behind schedule. | | | |
| **Related Project Information**   |  | | --- | | **Attached in Planner:**   * Event Table * Use Case Full Definition * Use Case Diagram   **Further Research:**   * **Genetic Algorithms in Seasonal Demand Forecasting**   In Chodak and Kwasnicki’s study on *Genetic Algorithms in Seasonal Demand Forecasting,* they defined demand forecasting as one of the most important phase of a firm’s decision making process. Precise estimation of demand would help manage the material flow of a firm. To estimate demand, one can use either of two methods – namely quantitative and qualitative methods. These methods can be supported by advanced computer software that enables data computing and graphic presentation.  The researchers of this study decided to use Artificial Intelligence (A.I.) techniques such as genetic algorithms, fuzzy logic and neural networks in developing their forecasting methods. This would improve the correctness of seasonal demand forecasting. Meanwhile to establish the demand function’s parameters, they use a genetic algorithms (GA) approach.  Chodak and Kwasnicki then explored a situation in which demand function is seasonal and has linear trend. There results show that in some cases of identifying demand function paramters, using GA can be more effective than standard seasonal demand forecasting. However, this method does not work well for all data.  [*http://www.ioz.pwr.wroc.pl/pracownicy/chodak/artykuly/genetic\_algorithms\_in\_seasonal\_demand\_forecasting.pdf*](http://www.ioz.pwr.wroc.pl/pracownicy/chodak/artykuly/genetic_algorithms_in_seasonal_demand_forecasting.pdf)   * **Artificial Intelligence Forecasting of Resort Demand**   In Han-Chen Huang’s *Study on Artificial Intelligece Forecasting of Resort Demand,* he had noticed that in recent years, tourism in Taiwan continued to boost – foreign visitors continued to increase in number. This led to the increase of activity in Taiwan’s domestic tourism industry. This created a higher demand volume in the resort industry.  The resort industry’s consumer demand is subject to many factors. In order to plan in advance the management, allocation, human use, financial management, marketing management, etc. of a resort, the resort industry must be able to master the demand volume. This need to master the demand volume of resorts gave Han-Chen Huang the idea to conduct a study that applies A.I. technology to establish the resort demand forecasting model.  Huang proposed to the model to use Mean Absolute Relative Error (MARE) and correlation coefficient as the assessment criteria for the verification of the forecasting model’s performance. The study aimed to clarify the number of factors affecting accommodations and select the variables that also affect the number of accommodations of the resort. It also aimed to construct a forecasting model for the number of accommodations of the resort. The forecasting model would use back-propagation neural network.  The proposed forecasting model in this study used various factors to influence accommodation demand. The study found that MARE for the model was 0.132 and the correlation coefficient was 0.9408. This meant that the ability of the forecasting model was excellent and can serve as reference for the resort industry and related industries.  *https://www.researchgate.net/publication/289095552\_A\_study\_on\_artificial\_intelligence\_forecasting\_of\_resort\_demand*   * **Linear Regression in Machine Learning**   Linear regression and machine learning are both important in making our forecasting revenue management system. Linear regression is one of the concept we need in predictive analytics and machine learning on the other hand is vital in applying Artificial Intelligence techniques in forecasting.  Now in this study, the author tackles how linear regression applies literally in machine learning. We are given examples such as predicting future sales of a specific product given a historical data. How each component affects real life data versus forecasted data. We are also introduced to the linear regression model, a model that we will use in order to follow the next step in the process of predictive analytics.  He also mentioned that our ‘machine’ can be trained by a process, in this way, the output will vary every time our machine reads different situations. This will result in a lesser margin of error or the vice versa. For the technical part, he introduced several analytical concepts to machine learning such as model/coefficients, cost functions, root mean square error (margin of error). At the end of the article, he gave a sample situation and its corresponding code in python.  *https://medium.com/simple-ai/linear-regression-intro-to-machine-learning-6-6e320dbdaf06* | | | |



# PROJECT STATUS REPORT APPROVALS

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Project Manager

**Approved by** \_Sir Ernesto “Boogie” C. Boydon\_\_\_\_\_\_\_

Project Advisor

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Client Sponsor



# APPENDICES

## Document Guidelines

## Project Status Report Sections Omitted

