# CS 255 Model Application Short Paper

[Chloe Martin AKA Red]

[Chloe.Martin1@snhu.edu]

Southern New Hampshire University

## Process Model Application

The process modeling approach would involve a model that represents the flow of activities and tasks that are involved in the driver training process. As we know, process modeling gives a visualization of the tasks and activities of the system. This model allows analyzation and gives improvement to the workflow.

This approach is what I foresee to be the best course of attach to implement the process modeling for DriverPass:

1. Define roles and Define responsibilities: Roles must be assigned to each activity and tasks Roles must be clearly defined so there is not any confusion of the responsibilities of each role.
2. Task Dependencies: Identification of dependencies between tasks and activities. Making sure that mapping of dependencies occurs which allows for a clear understanding the sequence of tasks.
3. Analyze the Process/ Optimize the Process: Make sure the Process has been optimized and from here it needs to be analyzed. During analysis this is the chance to identify errors, inefficiencies, improvements, and potential bottlenecks in the development of the system.
4. Mapping Process: In this portion identifying the key processes and activities will occur for the driver training systems. This should include a registration process for users, the ability to schedule driving lessons and driving tests, issuing of reports, scheduling on-the-road trainings, and making sure all processes comply with the DMV. Creating a detailed process map that shows accurate visualization must occur.
5. Define Activities / Define tasks: In this portion breaking down of each process in specific activities and tasks. Certain tasks could be done at this point such as creating study material, recording lectures, and possibly the testing interface.

## Object Model Application

For an object modeling approach this focuses on identifying key entities or objects within a system, as well as their attributes, and finally the relationships between them. This representation of the structure shows the structure and behavior of the system through showing the classes, objects, as well as their interactions.

The object modeling approach to the DriverPass project should look like the following steps:

1. Same as the Process Model Identifying Key Objects: Once again identifying key objects must occur in the system. The objects represent the entities in the driver training process. These objects can range from training modules, recorded videos for training, practice tests, instructors needed for classes, study materials, reports, etc.
2. Determine Object Relationships: Here relationships must be identified. These relationships can be represented as one-to-one, many-to-many, or one-to-many.
3. Refine and Iterate: Here you would need to review the object model and refine the model. This is done through the use of feedback and other analysis outside of the original analysis. This model at this stage would accurately represent the entities, relationships, and attributes within the DriverPass system.
4. Object Class Creation: After identifying object classes must be created. These object classes will be the foundation or blueprint of the individual objects. You must ensure that each class accurately shows the attributes and behaviors of those corresponding objects.
5. Interactions of Objects: In this portion you will need to verify how objects interact with one another in order to perform those specific actions and processes. Here methods or functions that are associated with each class will enable said interactions.
6. Lastly, define attributes of objects: As stated you must define each attribute for each object or property or properties for each object. It should be known that each attribute is used to describe the data or characteristics of

## Process and Object Model Comparison

There are advantages and disadvantages to each model. The first model we will focus on is Process Modeling. The advantages of process modeling are clear visualization, optimization of workflow, as well as accountability, and lastly can identify bottlenecks. The clear visualization of the process model represents the sequence of activities, as well dependencies. This makes it easy for stakeholders to understand. Optimization is crucial and an advantage in the process model. During this process identification of the bottlenecks of the workflow occurs as well as finding any inefficiencies. This is a streamlined process and will in fact improve the workflow and increase efficiency. The accountability aspect gives organizations the chance to implement compliance into the workflow. For DriverPass, there will be guidelines that need to be adhered to from the DMV and policies of DriverPass. The process model lays out a solid foundation that ensures that validations are adhered to. However, there are disadvantages to the process model that need to be addressed. The process model may not capture the complex relationships between entities and will focus only on the how versus the what of the system. The complex relationships in a process model are overlooked, due to the focus being on the “high-level” view of the workflow. There is not a detailed view and as mentioned before it helps with identifying sequences of activities, but there is a need to show the additional work needed in the design and development. There will in fact be challenges that will arise due to the non-detailed view. As mentioned before this model only focuses on the how of the system. The lack of representation of the “what” of the system is a disadvantage. It should also be noted that business logic is left out of this model, regarding decision making as well. This model would need to be meshed with a model that shows and manages said logic effectively.

Object Modeling has the advantages of providing a clear understanding of the entities, their attributes, and relationships, reusability, scalability, and is very well suited for static structures and data modeling. The object model provides a clear representation of the structure and organization. Each object focuses on a specific task. Object modeling shows a visual representation of the entities and their attributes and relationships. As mentioned before these relationships can be one-to-one, one-to-many, or many-to-many. This helps in managing the complexity of the structure. The object model enhances the code reusability. This will also allow for easier debugging and testing of individual objects. From those objects they can be tested separately. The system is also able to be flexible and scalable, allowing for adaptation and changes to occur. With object-oriented systems flexibility makes for a more adaptable system and easier integration with other systems or even other components. The disadvantages to Object Modeling can range from increased development time to learning curves. Overall, those who are not familiar with object-based concepts may find this model a bit challenging. The understanding of this model needs to be thorough, especially regarding the object principles and the design patterns. This in turn will unfortunately increase the development time. Once the team grasps the concept and has a strong understanding of the model the development time will level out to a more reasonable time frame, but only after the time has increased. The additional time that is spent on the design will increase the development process. Having to define the objects, relationships and behaviors can be time consuming, especially for a team that is not familiar with this process.

After thorough analysis, it is clear that both models have their benefits and disadvantages as well as target focuses. The DriverPass team needs to make a choice between which model would best suit their needs. They would need to figure out if optimization is a focal point or representing entities is the bigger focal point. Each model is different and has specifications for its use. I do feel however that combining both models for use would be the best approach in the development of this project. This would give a full comprehensive understanding of the system to the whole team, and although there would be a learning curve, the outcome of an efficient and fully functioning system, with non-existent errors, is the overall goal of the project.

## References

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