

SUMMARY OF MASTER'S DISSERTATION

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<p>Title</p> <p style="text-align: center;">A Study on Improving Flight Rate of Flying Car under the Windy and Poor Visibility Conditions</p>			
<p>Abstract</p> <p>The major factors that inhibit the flight are windy and poor visibility conditions for flying car. Instrument flight rule is instructed by air traffic control and enables the flight under the poor visibility condition. However, instrument flight rule is not suitable for air transportation that moves flexible between any points.</p> <p>The purpose of this study is to propose the tool for discussion about the new visual flight rule that uses instruments. The author proposes the reference model as a tool for discussion. The purpose of reference model is to facilitate discussion and present development goals to the company trying to enter a new field of business.</p> <p>As first, the author specializes the probability of gust and poor visibility conditions in the use cases flying cars are assumed to operate. Conventional research is limited to detailed analysis of the wind conditions at specific locations, so the author derives a calculation formula for the probability of wind speed at any point and altitude using exponential rule. The analysis clarified the wind speed to be considered in the airframe design cases and the use case are unlikely to allow VFR flights. Subsequently, the author creates a reference model. First, the author created prototype and assessed in a meeting with relevant people, where the requirements for the reference model were clarified, which are to narrow the subject and specify the requirement figures. Based on the result, the author improved reference model, which contains system architecture that follow the rule of Object Process Methodology, concept diagram, numerical specification, constraint and prerequisite. The improved reference model promoted the discussion about the detail of system. The author used the reference model to propose the target of development about LiDAR since a LiDAR sensor manufacturer had an interest in the reference model. The discussion through using reference model clarified that there two types of requirements, one is that could be development target, the other is that cannot be. The proposed reference model would make it possible to promote discussion about system to develop, and development activities of manufacturer.</p>			
<p>Key Word(5 words)</p> <p>Flying Car、Flight rate、Reference Model、LiDAR、Model Based Systems Engineering</p>			