The power of BIM for structuring Big Data

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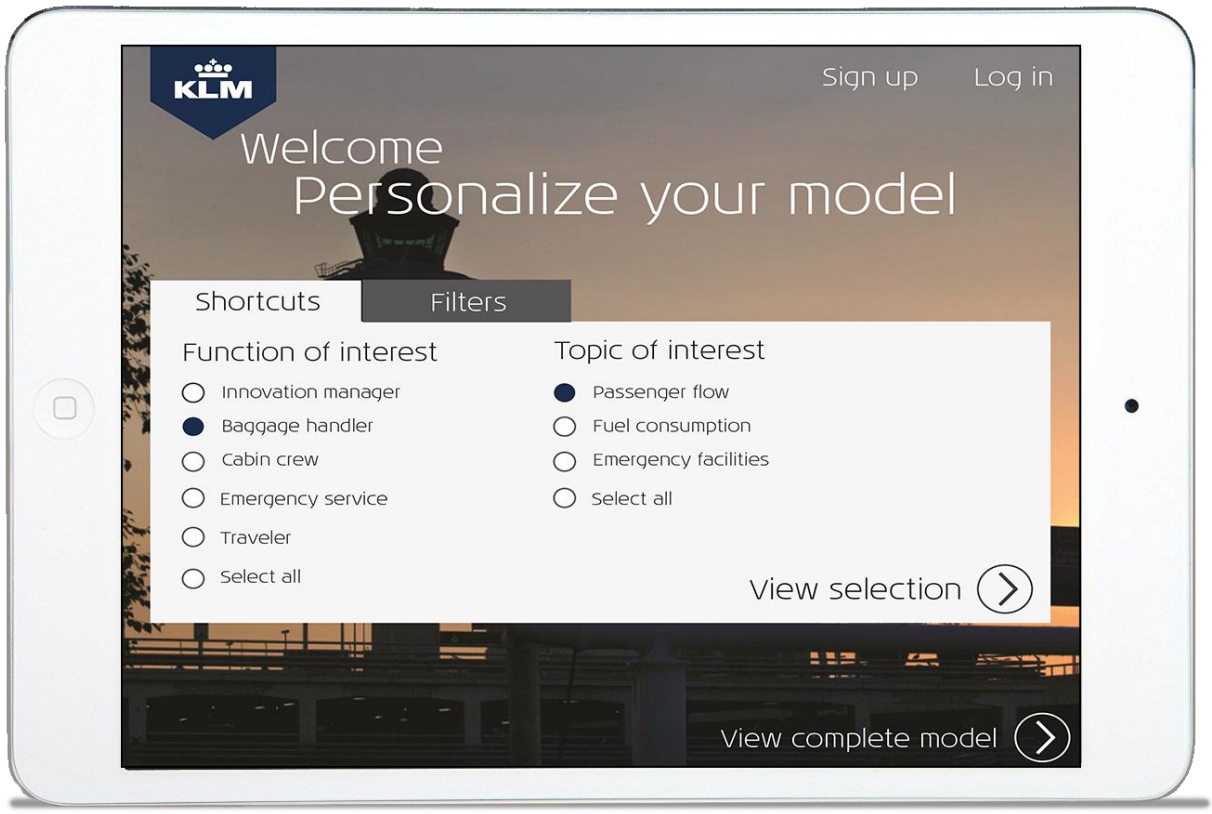

Getting detailed insight into all the different activities is an important but complex problem for airlines. At the moment the flow of information is not always transparent for all employees, which reduces efficiency. A tool that is able to give a fast but clear overview would be a very valuable asset. Recent developments in data visualisation like the BIM-model create an opportunity to create such a tool. This 'Building Information Model' is a digital representation of physical and other functional characteristics of a facility. It aims to streamline the flow of information from different relevant sources to form a reliable basis for decisions during the life-cycle of the facility it models.

Airline KLM is considering to apply the BIM modelling technique to their already existing Digital Twin model of Schiphol airport, but is unsure if this is a valuable use of their resources. This thesis aims to give insight into this choice through the research question: 'Is a BIM-model of added value on top of the already existing Digital Twin model for the airline KLM?'

The research has been conducted as taught during the bachelor Industrial Design at the University of Twente. First an analysis phase consisting of 4 chapters that respectively analyse the airline KLM, 3D modelling, application of BIM on airports and lastly the role of Internet of Things.

Research has been done on the history of the airline and current innovative projects. From this can be concluded the revenue of KLM stems from three core activities: passenger transport, air freight and plane maintenance.

From the large amount of active projects can be concluded that KLM heavily invests in innovation to improve these core activities. One of the projects is developing Virtual Reality applications to be used in KLMs training programmes, reducing their monetary and time budget.
After reviewing multiple different models. Research has been done to the application of the BIM model on airlines and airports. It can be concluded that although a lot of 3D models exist, only very few are comparable to the BIM model. This is because the BIM model is very recent. Still a lot of airports already employ BIM models for a variety of reasons, revealing the opportunities a BIM model can offer.

Research is done into the ways a model can be operable by its users. This is done by exploring the interests of different interest groups. This shows each user has different interests and finds different information relevant. An attempt has been made to subdivide this information into relevant categories.

A concept model has been designed. This concept model creates a better overview for employees. First a successful way to incorporate all the available information, or big data, into the model has been constructed. This speeds up the model and increases its flexibility in case new functionality is desired. An example of datamanagement is linking objects with labels containing information. This allows the model to link information and objects. The most efficient way to link information with the users of the model is the use of a User Interface. This allows users to visualise data in an understandable manner.