**Business Objective**

To predict customer segments (of East-West Airlines) for the purpose of targeting eligible customers for different types of mileage offers via clustering.

**Business Constraint**

Customer Flying patterns, earning and use of frequent flyer rewards, and use of the airline credit card.

**Data Dictionary**

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| Name of the feature | Description | Type | Relevance |
| ID# | Unique Id | Nominal; Numeric | Irrelevant,  not useful for analysis |
| Balance | Number of miles eligible for award travel | Numeric | Relevant,  useful for analysis |
| Qual\_miles | number of miles qualifying for Top Flight status | Numeric | Relevant,  useful for analysis |
| cc1\_miles | Has member earned miles with airline frequent flyer credit card in the past 12 months. Values in mile bins(explained below) | Numeric | Relevant,  useful for analysis |
| cc2\_miles | Has member earned miles with Rewards credit card in the past 12 months. Values in mile bins(explained below) | Numeric | Relevant,  useful for analysis |
| cc3\_miles | Has member earned miles with Small Business credit card in the past 12 months Values in mile bins(explained below) | Numeric | Relevant,  useful for analysis |
| Bonus\_miles | number of miles earned from non-flight bonus transactions in the past 12 months | Numeric | Relevant,  useful for analysis |
| Bonus\_trans | number of non-flight bonus transactions in the past 12 months | Numeric | Relevant,  useful for analysis |
| Flight\_miles\_12mo | number of flight miles in the past 12 months | Numeric | Relevant,  useful for analysis |
| Flight\_trans\_12 | number of flight transactions in the past 12 months | Numeric | Relevant,  useful for analysis |
| Days\_since\_enroll | number of days since enrolled in the frequent flyer program | Numeric | Relevant,  useful for analysis |
| Award? | Indicates whether flyer has attained elite "Topflight" status, 1 = yes, 0 = no | Binary | Relevant,  useful for analysis |

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| **Note : Mile Bins explanation**  1 = under 5,000. 2 = 5,000 - 10,000. 3 = 10,001 - 25,000. 4 = 25,001 - 50,000. 5 = over 50,000 |
| We can make 5 clusters for this dataset.  **Inferences:** Cluster 3 has the customers who have travelled most and have highest flight transactions in past 12 months and are the ones who are newly enrolled for the Rewards Program as compared to other clusters of customers. These customers have earned second most bonus miles as well as have done highest non-flight transactions too.  But, the Cluster 1 customers are the loyal customers with highest balance and Bonus transactions, and have 2nd highest flights in last 12 months. Airlines should try not to loose cluster 1 and 3 customers as they are consistent revenue generators.  Cluster 0 and 4 are the ones who are giving insignificant business.  Cluster 2 customers are the ones who can be focussed upon as they are with the airlines since longer period and have good balance, qualify for top flight status, their flight transactions in last 12 months is also good. |