A Combined Multidimensional Scaling and Hierarchical Clustering View for the Exploratory Analysis of Multidimensional Data

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- **Multidimensional scaling (MDS).**
  - Used to position items as points in the two dimensional display space.
  - More flexible allowing us to observe general patterns, partial clusters and outliers
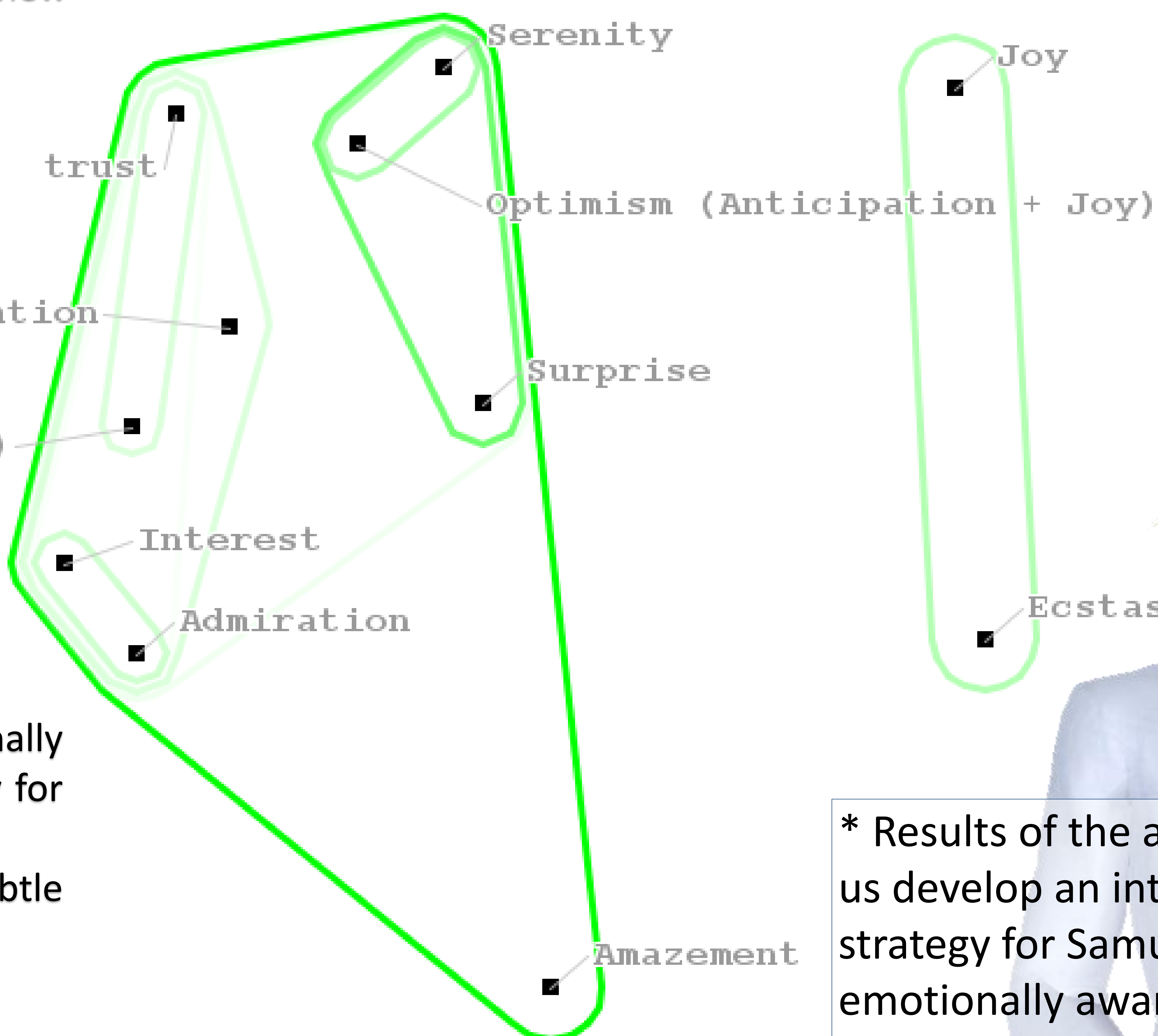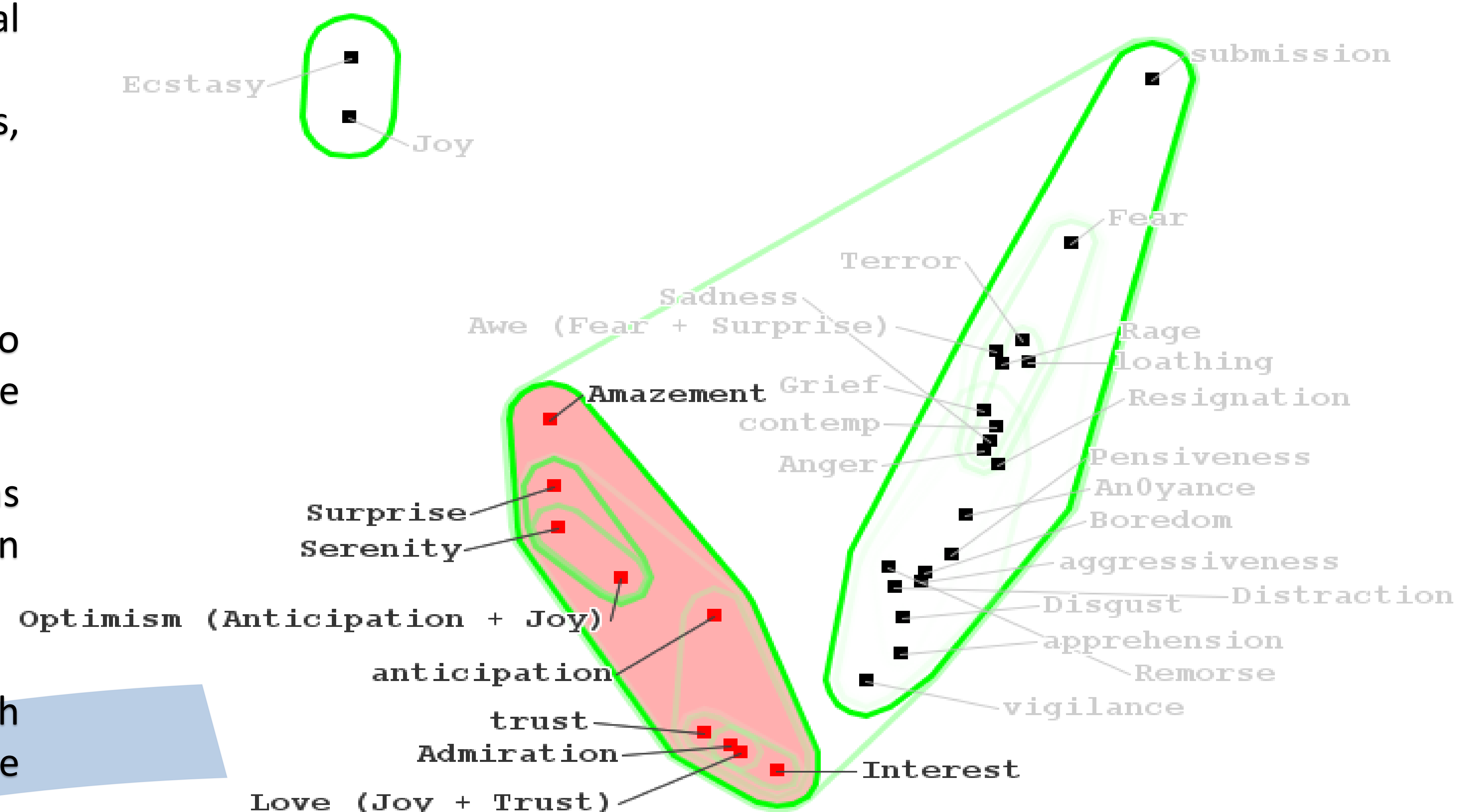
- **Hierarchical clustering**
  - Used to outline natural groupings
  - Outlines are also color coded (from white to green) so stronger clusters appear more predominant in the display.
  - This method makes it easier for us to draw conclusions since the clusters are derived algorithmically rather than being products of (fallible) human perception.
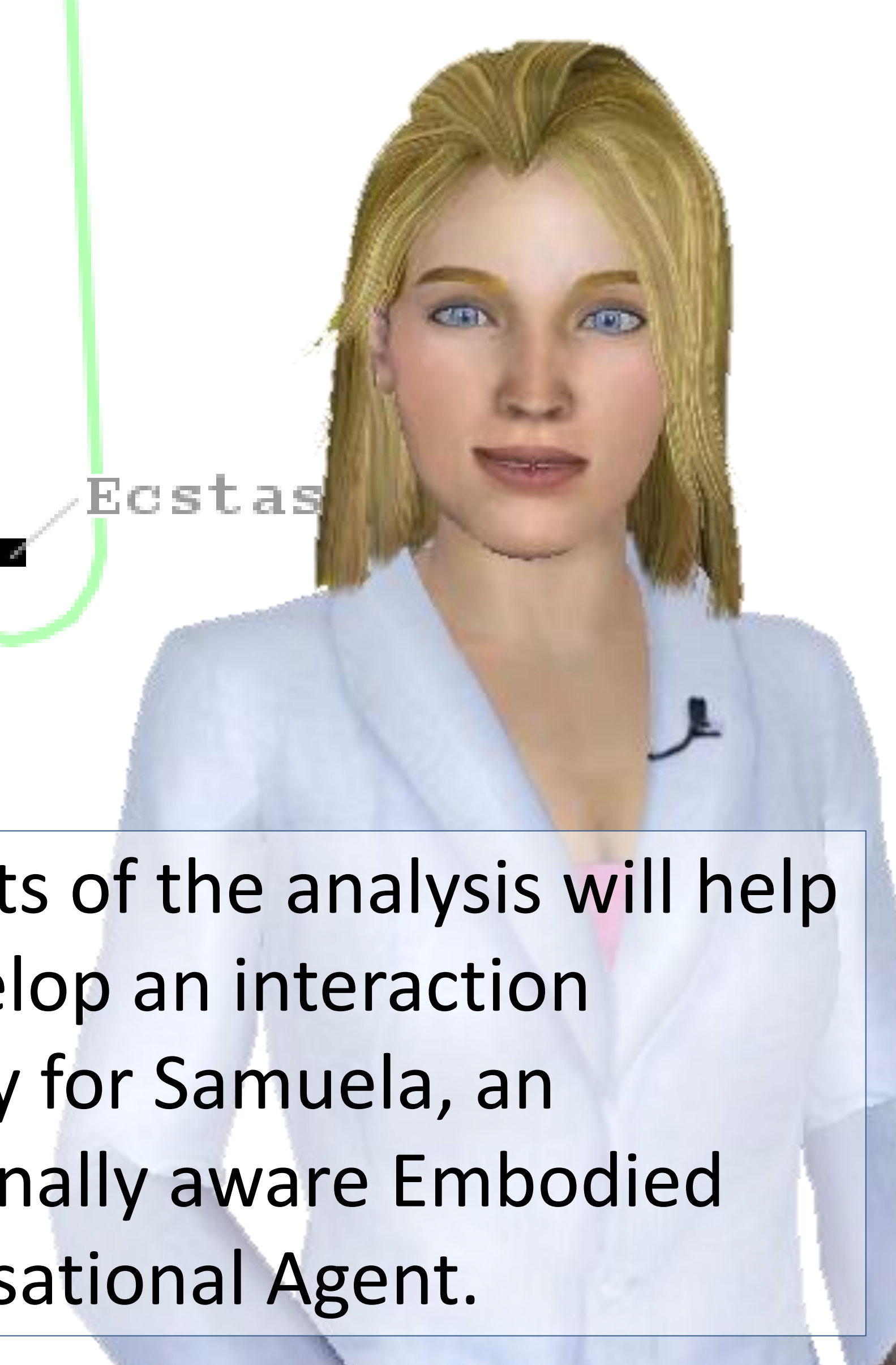
- **Interaction**
  - Once a subgroup of items are selected, both multidimensional scaling and hierarchical clustering are re-applied for the filtered data set.
  - Animation is used to smooth the transition with newly selected items fading in, de-selected items fading out and all other items moving gradually to their new positions.

The user selects a cluster of positive emotions to reapply clustering and MDS for a filtered data subset.

- **Case study**
  - Analysis of phase appropriateness for emotionally charges situations to develop an interaction strategy for an Embodied Conversational Agent*.
  - Users could find general trends as well as more subtle patterns in the data.

* Results of the analysis will help us develop an interaction strategy for Samuela, an emotionally aware Embodied Conversational Agent.