Virtual Model Column

Introduction

- Replace the physical MODEL_DATA in most cases
  - MODEL_DATA can be created optionally
- Only code that depends on synthesis module can use it
  - Uses FTMachine mechanism to serve it
  - E.g Base Table classes cannot use it
  - Existing API require a VisBuffer

Requirement/Design

- No reduction in features in most cases
  - Most users should transparently be able to go from scratch to scratchless
- Most users tend to select data, write model, then process with that model (calibrate or display residual etc)
  - This lead to the simple model of field base model writing
  - Appending many micro selections can be replaced by do micro selection → process → go to next micro selectction
    - Avoid complexity of managing overlap/priorities of micro selections
- State of the machinery saved just before writing the MODEL_DATA
  - Faster implementation
    - Achieved by serializing FTMachine/CompFTMachine at the state it is ready to fill MODEL_DATA column
  - Little overhead when users want to access only a few rows of MODEL_DATA ..many times
    - e.g model image saved is the FFT rather than the image itself (size v/s overhead)

Mechanics of it all

- TableRecord is the format used to serialize the model
- Model is keyed by Field_id primarily
  - Some redundancy is avoided for mosaic model for example multiple fields points to same model
- Subsequent spw model for same key is appended/replaced to model Record
  - Only one set of channel selection is stored/respected for a given SPWID (i.e the last written)
- Written in SOURCE table if exists else it is written in the Main Table keywordset

Caveat

- May not be faster than reading from disk if model is large and data set is small
- Many outlier fields may be slower than componentlists (DFTs)
- Large images => large overheads

To Do

- Unnecessary to do data selection for storing MODEL.
  - Most of the time is in that now
- Provide some extra selection if necessary
- Support returning model for (uvw, chanFreq, FIELD_ID/Direction) combination rather than just vb ..if necessary