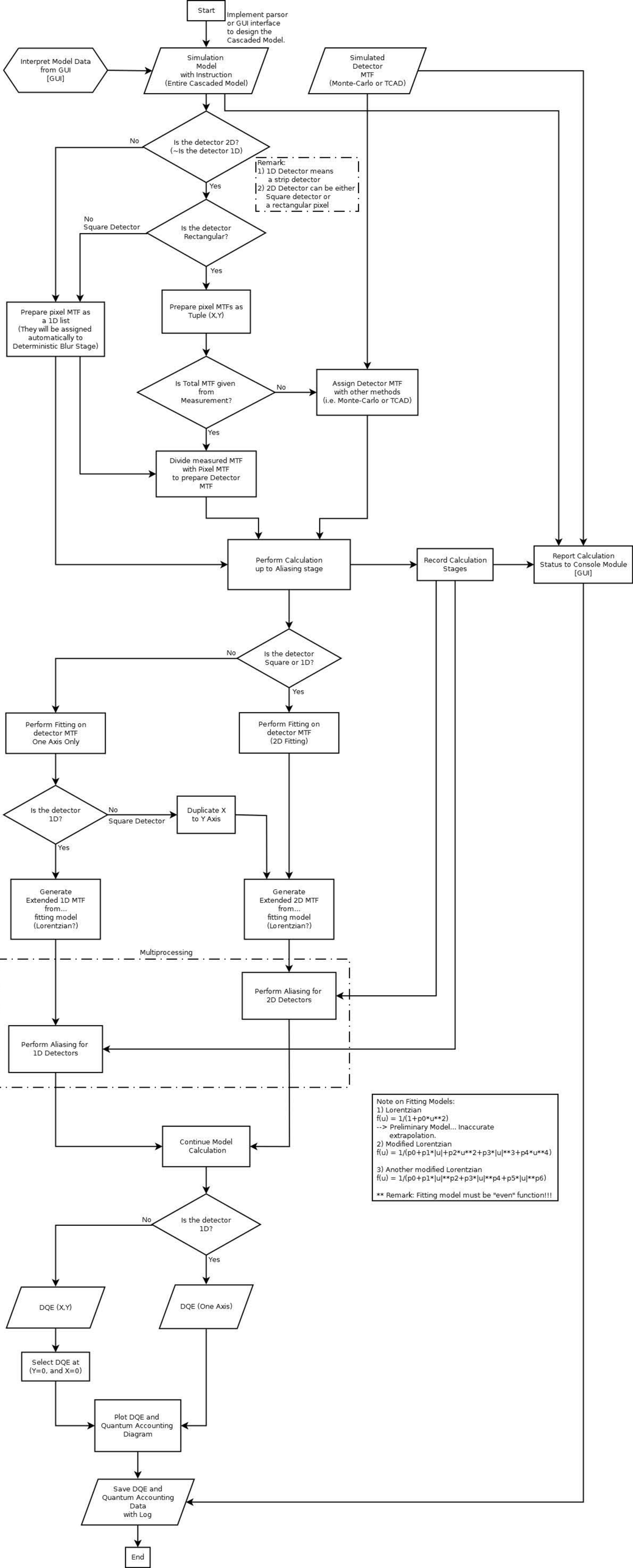
Start
Implement parsor or GUI interface to design the Cascaded Model.
Interpret Model Data from GUI [GUI]
Simulation Model with Instruction (Entire Cascaded Model)
Simulated Detector MTF (Monte-Carlo or TCAD)
Is the detector 2D? (~Is the detector 1D)
No
Yes
Remark:
1) 1D Detector means a strip detector
2) 2D Detector can be either Square detector or a rectangular pixel
Is the detector Rectangular?
No Square Detector
Yes
Prepare pixel MTF as a 1D list (They will be assigned automatically to Deterministic Blur Stage)
Prepare pixel MTFs as Tuple (X,Y)
Is Total MTF given from Measurement?
No
Assign Detector MTF with other methods (i.e. Monte-Carlo or TCAD)
Yes
Divide measured MTF with Pixel MTF to prepare Detector MTF
Perform Calculation up to Aliasing stage
Record Calculation Stages
Report Calculation Status to Console Module [GUI]
Is the detector Square or 1D?
No
Yes
Perform Fitting on detector MTF One Axis Only
Perform Fitting on detector MTF (2D Fitting)
Is the detector 1D?
No Square Detector
Duplicate X to Y Axis
Yes
Generate Extended 1D MTF from... fitting model (Lorentzian?)
Generate Extended 2D MTF from... fitting model (Lorentzian?)
Multiprocessing
Perform Aliasing for 2D Detectors
Perform Aliasing for 1D Detectors
Note on Fitting Models:
1) Lorentzian
f(u) = 1/(1+p0*u**2)
--> Preliminary Model... Inaccurate extrapolation.
2) Modified Lorentzian
f(u) = 1/(p0+p1*|u|+p2*u**2+p3*|u|**3+p4*u**4)
3) Another modified Lorentzian
f(u) = 1/(p0+p1*|u|**p2+p3*|u|**p4+p5*|u|**p6)
** Remark: Fitting model must be "even" function!!!
Continue Model Calculation
Is the detector 1D?
No
Yes
DQE (X,Y)
DQE (One Axis)
Select DQE at (Y=0, and X=0)
Plot DQE and Quantum Accounting Diagram
Save DQE and Quantum Accounting Data with Log
End