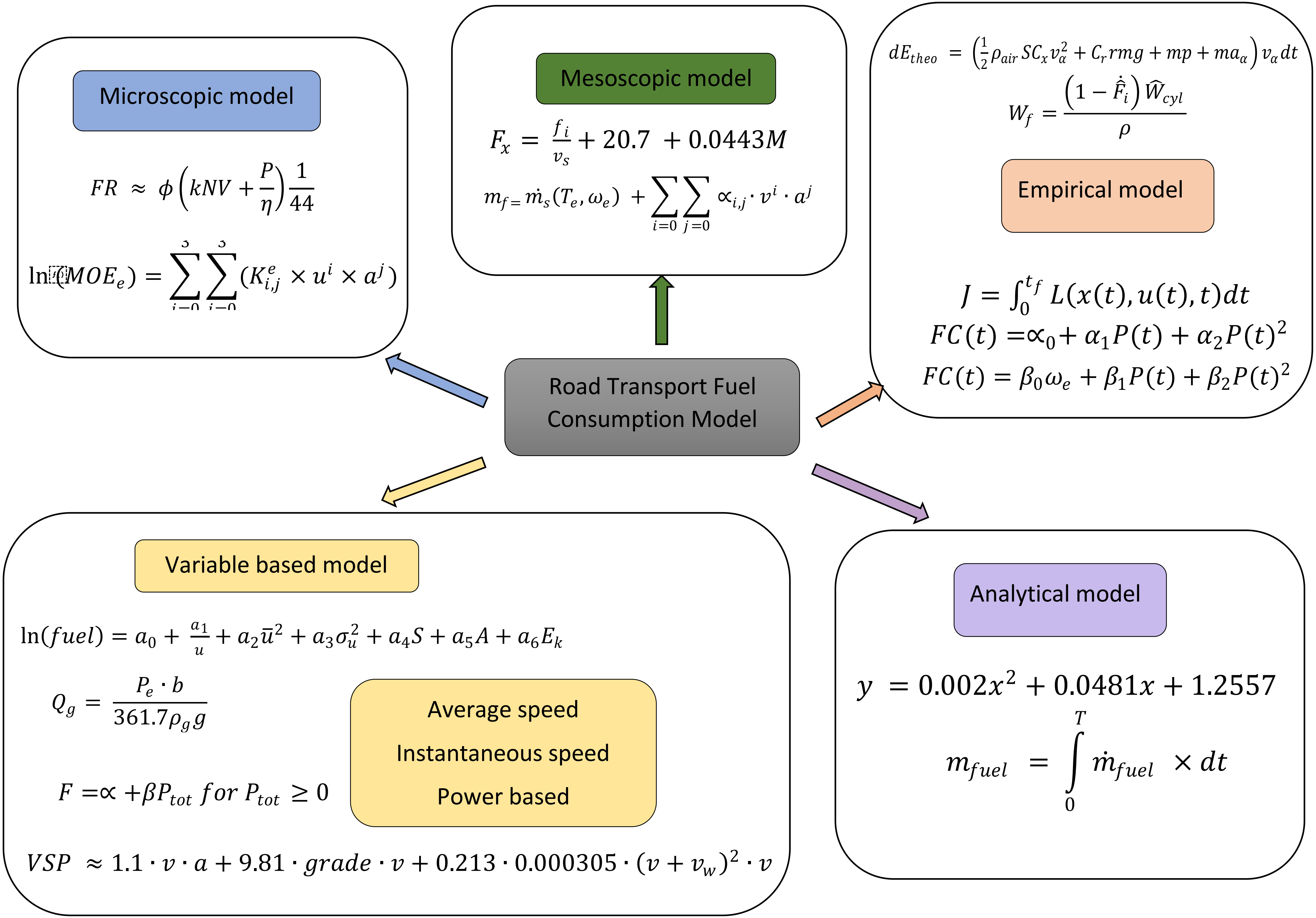
Road Transport Fuel Consumption Model
Microscopic model
$FR \approx \phi\left(kNV + \frac{P}{\eta}\right)\frac{1}{44}$
$\ln(MOE_e) = \sum\sum (K_{i,j}^{e} \times u^{i} \times a^{j})$
Mesoscopic model
$F_x = \frac{f_i}{v_s} + 20.7 + 0.0443M$
$m_{f=} \dot{m}_s(T_e, \omega_e) + \sum_{i=0}\sum_{j=0} \propto_{i,j} \cdot v^{i} \cdot a^{j}$
$dE_{theo} = \left(\frac{1}{2}\rho_{air} SC_x v_\alpha^2 + C_r rmg + mp + ma_\alpha\right) v_\alpha dt$
$W_f = \frac{\left(1 - \dot{\hat{F}}_i\right)\hat{W}_{cyl}}{\rho}$
Empirical model
$J = \int_0^{t_f} L(x(t), u(t), t)dt$
$FC(t) = \propto_0 + \alpha_1 P(t) + \alpha_2 P(t)^2$
$FC(t) = \beta_0\omega_e + \beta_1 P(t) + \beta_2 P(t)^2$
Variable based model
$\ln(fuel) = a_0 + \frac{a_1}{u} + a_2\bar{u}^2 + a_3\sigma_u^2 + a_4 S + a_5 A + a_6 E_k$
$Q_g = \frac{P_e \cdot b}{361.7\rho_g g}$
$F = \propto + \beta P_{tot}\ for\ P_{tot} \geq 0$
Average speed
Instantaneous speed
Power based
$VSP \approx 1.1 \cdot v \cdot a + 9.81 \cdot grade \cdot v + 0.213 \cdot 0.000305 \cdot (v + v_w)^2 \cdot v$
Analytical model
$y = 0.002x^2 + 0.0481x + 1.2557$
$m_{fuel} = \int_0^T \dot{m}_{fuel} \times dt$