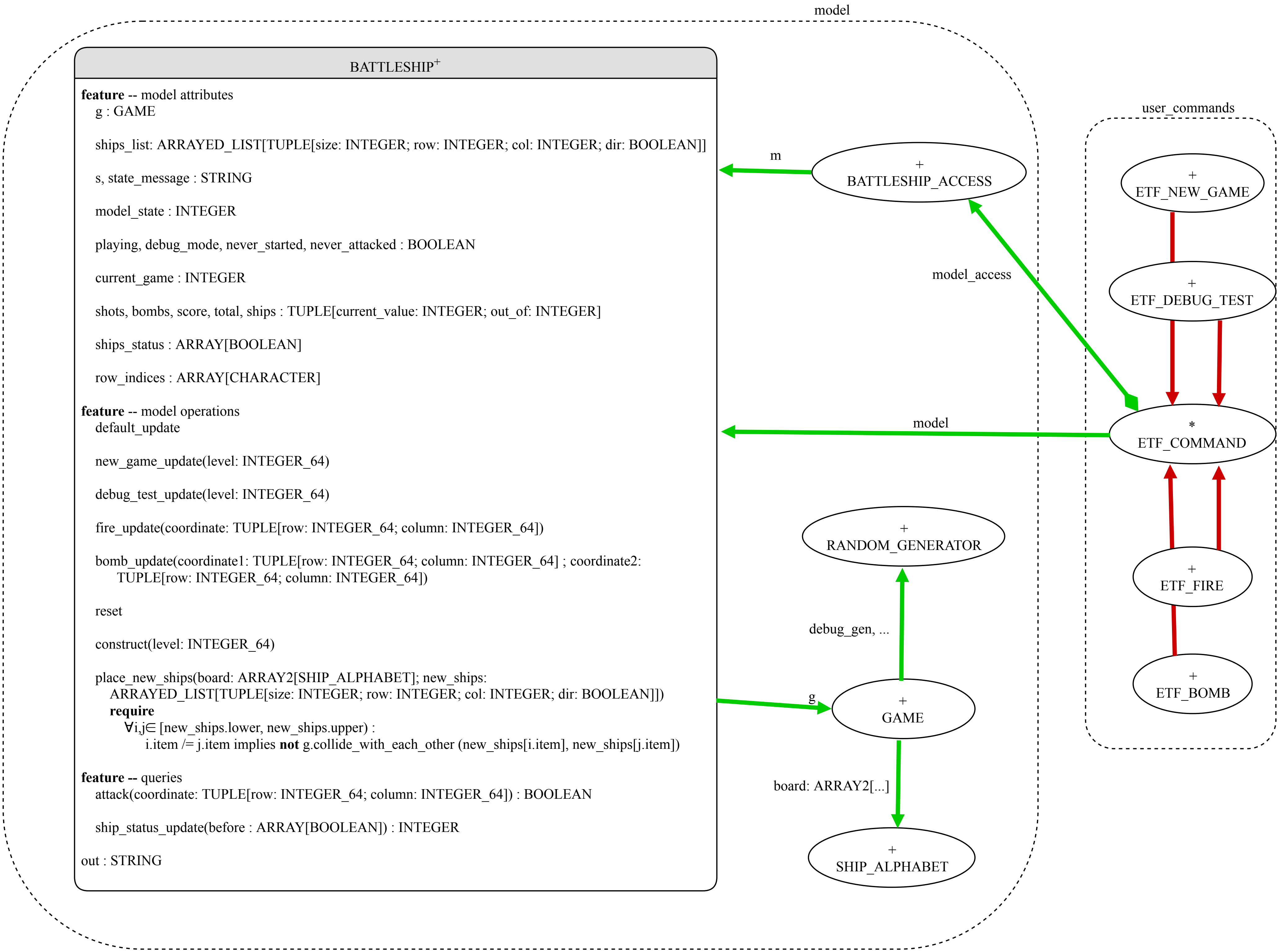

BATTLESHIP$^{+}$

**feature** -- model attributes
  g : GAME

  ships_list: ARRAYED_LIST[TUPLE[size: INTEGER; row: INTEGER; col: INTEGER; dir: BOOLEAN]]

  s, state_message : STRING

  model_state : INTEGER

  playing, debug_mode, never_started, never_attacked : BOOLEAN

  current_game : INTEGER

  shots, bombs, score, total, ships : TUPLE[current_value: INTEGER; out_of: INTEGER]

  ships_status : ARRAY[BOOLEAN]

  row_indices : ARRAY[CHARACTER]

**feature** -- model operations
  default_update

  new_game_update(level: INTEGER_64)

  debug_test_update(level: INTEGER_64)

  fire_update(coordinate: TUPLE[row: INTEGER_64; column: INTEGER_64])

  bomb_update(coordinate1: TUPLE[row: INTEGER_64; column: INTEGER_64] ; coordinate2:
    TUPLE[row: INTEGER_64; column: INTEGER_64])

  reset

  construct(level: INTEGER_64)

  place_new_ships(board: ARRAY2[SHIP_ALPHABET]; new_ships:
    ARRAYED_LIST[TUPLE[size: INTEGER; row: INTEGER; col: INTEGER; dir: BOOLEAN]])
    **require**
      ∀i,j∈ [new_ships.lower, new_ships.upper) :
        i.item /= j.item implies **not** g.collide_with_each_other (new_ships[i.item], new_ships[j.item])

**feature --** queries
  attack(coordinate: TUPLE[row: INTEGER_64; column: INTEGER_64]) : BOOLEAN

  ship_status_update(before : ARRAY[BOOLEAN]) : INTEGER

out : STRING