##### 8.4.2.1.6 Derivation process for luma motion vector prediction

Inputs to this process are

* a luma location ( xP, yP ) specifying the top-left luma sample of the current prediction unit relative to the top-left sample of the current picture,
* variables specifying the width and the height of the prediction unit for luma, nPSW and nPSH.
* the reference index of the current prediction unit partition refIdxLX (with X being 0 or 1).

Output of this process is

* the prediction mvpLX of the motion vector mvLX (with X being 0 or 1).

The motion vector predictor mvpLX is derived in the following ordered steps.

1. The derivation process for motion vector predictor candidates from neighboring prediction unit partitions in subclause is invoked with luma location ( xP, yP ), the width and the height of the prediction unit nPSW and nPSH, and refIdxLX (with X being 0 or 1, respectively) as inputs and the availability flags availableFlagLXN and the motion vectors mvLXN with N being replaced by A, B as the output.
2. The derivation process for temporal luma motion vector prediction in subclause is invoked with luma location ( xP, yP ) , the width and the height of the prediction unit nPSW and nPSH, and refIdxLX (with X being 0 or 1, respectively) as the inputs and with the output being the availability flag availableFlagLXCol and the temporal motion vector predictor mvLXCol.
3. The motion vector predictor candidate list, mvpListLX, is constructed as follows.
4. mvLXA, if availableFlagLXA is equal to 1
5. mvLXB, if availableFlagLXB is equal to 1
6. mvLXCol, if availableFlagLXCol is equal to 1
7. ~~When motion vectors have the same value, the motion vectors are removed from the list except the motion vector which has the smallest order in the mvpListLX.~~ When mvLXA and mvLXB have the same value, mvLXB is removed from the list.
8. ~~When mvpListLX is empty, a zero motion vector is added as follows.~~

~~mvpListLX[ 0 ][0] = 0 (8‑128)~~

~~mvpListLX[ 0 ][1] = 0 (8‑129)~~

1. The variable numMVPCandLX is set to the number of elements within the mvpListLX and maxNumMVPCand is set to 2.
2. The motion vector predictor list is modifed to contain exactly maxNumMVPCand motion vector predictor candidates as follows.
   * + If numMVPCandLX is less than maxNumMVPCand, the derivation process for zero motion vector predictor candidates specified in subclause is invoked with mvpListLX and numMVPCandLX given as input and the output is assigned to mvpListLX and numMVPCandLX.
     + Otherwise (numMVPCandLX is equal to or greater than maxNumMVPCand), all motion vector predictor candidates mvpListLX[ idx ] with idx greater than maxNumMVPCand − 1 are removed from the list.
3. The motion vector of mvpListLX[ mvp\_idx\_lX[ xP, yP ] ] is assigned to mvpLX.

##### 8.4.2.1.9 Derivation process for zero motion vector predictor candidates

Inputs of this process are

* a motion vector predictor list mvpListLX,
* the number of elements numMVPCandLX within mvpListLX.

Outputs of this process are

* the motion vector predictor list mvpListLX,
* the number of elements numMVPCandLX within mvpListLX.

~~When no motion vector in mvpListLX is equal to (0,0),~~ the zero motion vector predictor candidate is directly added at the end of mvpListLX and numMVPCandLX is incremented by 1 as follows.

mvpListLX[ numMVPCandLX ][ 0 ] = 0 (8‑150)

mvpListLX[ numMVPCandLX ][ 1 ] = 0 (8‑151)

numMVPCandLX = numMVPCandLX + 1 (8‑152)