```
context Ctx_PartProc_Manage

 extends Ctx_PartProc_with_Events

sets CRITILITY_LEVELS DEADLINE_TYPE PARTITION_STARTCONDITIONS PROCESS_WAIT_TYPES

constants Period_of_Partition
          Duration_of_Partition
          SystemPartFlag_of_Partition
          NORMAL_START PARTITION_RESTART HM_MODULE_RESTART
          HM_PARTITION_RESTART
          DEADLINE_HARD
          DEADLINE_SOFT
          PROC_WAIT_DELAY PROC_WAIT_TIMEOUT PROC_WAIT_PERIOD PROC_WAIT_OBJ
          PROC_WAIT_PARTITIONNORMAL
          partitionTimeWindows timeWindowsofPartition
          periodicprocstart_timeWindow_of_Partition
          firstperiodicprocstart_timeWindow_of_Partition
          majorFrame
          MAX_LOCK_LEVEL
          MIN_PRIORITY_VALUE MAX_PRIORITY_VALUE INFINITE_TIME_VALUE ONE_TICK_TIME
```

axioms

@axm_periodofpart **Period_of_Partition** ∈ **PARTITIONS** → ℕ

@axm_durationofpart **Duration_of_Partition** ∈ **PARTITIONS** → ℕ

@axm_syspart_flag **SystemPartFlag_of_Partition** ∈ **PARTITIONS** → BOOL

@axm_partition_deadlinetype partition(**DEADLINE_TYPE**,{**DEADLINE_HARD**}, {**DEADLINE_SOFT**})

@axm_partition_startcondition partition(**PARTITION_STARTCONDITIONS**,{**NORMAL_START**}, {**PARTITION_RESTART**}, {**HM_MODULE_RESTART**}, {**HM_PARTITION_RESTART**})

@axm_partition_procwaittype partition(**PROCESS_WAIT_TYPES**,{**PROC_WAIT_DELAY**}, {**PROC_WAIT_TIMEOUT**}, {**PROC_WAIT_PERIOD**}, {**PROC_WAIT_OBJ**},{**PROC_WAIT_PARTITIONNORMAL**})

@axm_parttimewin **partitionTimeWindows** ∈ (ℕ×ℕ)⇸BOOL

@axm_timewindowsofpar **timeWindowsofPartition** ∈ **partitionTimeWindows** ⤀ **PARTITIONS**

@axm_majorframe **majorFrame** ∈ ℕ1

@axm_perprocstart_tmwin **periodicprocstart_timeWindow_of_Partition** ∈ **partitionTimeWindows** ⇻ **PARTITIONS**

@axm_fstperprocstart_tmwin **firstperiodicprocstart_timeWindow_of_Partition** ∈ **PARTITIONS**⤔ **partitionTimeWindows**

@axm_majorframe_value (∃x,y·(x ↦ y ∈ dom(**partitionTimeWindows**) ⇒ x+y=**majorFrame**)) ∧ (∀x,y·(x ↦ y ∈ dom(**partitionTimeWindows**) ⇒ x+y≤**majorFrame**))

@axm_min_partwindow_eque_zero ∃x,y·(x ↦ y ∈ dom(**partitionTimeWindows**) ⇒ x=0)

@axm_atleast_oneperiodicprocstart_for_eachpartition ∀p·(p∈**PARTITIONS** ⇒ (∃x,y·(((x↦y)↦TRUE)∈

timeWindowsofPartition~[{p}]))))

@axm_perprocstart_with_partwin (∀x,y,b,p·((x↦y↦b↦p)∈**periodicprocstart_timeWindow_of_Partition** ⇒ b=TRUE ∧ **timeWindowsofPartition**(x↦y↦b)=p))∧

(∀x,y,b,p·((x↦y↦b↦p)∈**timeWindowsofPartition** ∧ b=TRUE ⇒ (x↦y↦b↦p)∈ **periodicprocstart_timeWindow_of_Partition**)) *//each*

@axm_fstperprocstart_tmwin2 ∀x,y,b,p·((p↦(x↦y↦b))∈**firstperiodicprocstart_timeWindow_of_Partition**⇒((x ↦y↦b)↦p)∈ **periodicprocstart_timeWindow_of_Partition**)

@axm_fstperprocstart_tmwin3 ∀x,y,b,p·((p↦(x↦y↦b))∈**firstperiodicprocstart_timeWindow_of_Partition** ⇒¬(∃x1,y1,b1,p1·(((x1↦y1↦b1)↦p1)∈**periodicprocstart_timeWindow_of_Partition** ∧ p=p1 ∧x1<x)))

@axm_majorframe2 ∀x·(x∈ran(**Period_of_Partition**)⇒∃y·(y∈ℕ1 ∧ x ∗ y = **majorFrame**))

@axm_maxvalue_locklevel **MAX_LOCK_LEVEL** = 32

@axm_minpriorityvalue **MIN_PRIORITY_VALUE** = 0

@axm_maxpriorityvalue **MAX_PRIORITY_VALUE** = 249

@axm_inf_timevalue **INFINITE_TIME_VALUE** = 0

@axm_oneticktime **ONE_TICK_TIME** = 20

end