

## Schedule vs Operation

- This model caters for both
- hours of operation, which is an Instant \& Interval
- task or other schedule, which is an Instant only (Interval is task duration, and optional)
A Schedule can be fully configured. Thus the concept is, the referencing table (either Operation or Task Schedule) will use just one Schedule, not more. However, it is not restricted to one Schedule
- The Function must check for valid range within the context of the table.


## Escalation

- Applies to Daily \& Weekly only
- Escalations are for operations (*_Operation only), it does not apply to Tasks
(* Schedule)
- Allows more than one Escalation Interval per Schedule.

Suppression
Applies to *_Operation only (and by that route, to Tasks), it does not apply to asks (via Schedule)
The frequency the Schedule, and the frequency of a Suppression, are independent. Eg. a Daily Schedule may be Suppressed Annually.
"Temporal" Data

- Although the Schedule is not "temporal" in the usual sense, because it is a generic Definition, and used by unnumbered referencing tables, it is "temporal".
- Rather than extending the "temporal" Functions for this generic use, which would
- add complexity, a separate set of Functions are recommended.
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- There are two units for handling all "temporal" data, in a generic standardised
- There are two units for handing all "tempora) data, in a generic standardised
manner, along with two Functions (Get, Put), and a Function for validation (used as CHECK Constraint).
Datum
DataTyp

Interval [SMALL]DATETIME Stored as offset from 1 Jan 1970 00:00
- Interval (Duration, Period) is often perceived as a StartDtm to EndDtm, but that is
grossly incorrect (Date \& Darwen are freaks), and very limiting. Perceive it for what
it is: the result, the view, and not the storage.
Interval is stored as two units.
an Instant, the StartDtm, an ordinary [SMALL ]DATETIME.
This may be available in another form (Eg. Month, Day, DayOfWeek, etc).
an Interval, an elapsed amount of time, stored as an offset from the start of the [SMALL ]DATETIME range.

C Schedule_IsValid_ck:
Check Instant is valid for Subtype Check Start is valid Time/Day Check Interval End is valid per <table> Check Start $>=$ parent Start
Check Interval End $<=$ parent Interval End Check that Suppression intersects Operation

Range
$0 \leq \begin{aligned} & \text { Minute }\end{aligned} \leq 59$
$0 \leq$ Minur
$0 \leq$ Hour $\leq 23$
$1 \leq$ Day
$<\leq 2$
$1 \leq$ Day $\ll 27$
$1 \leq$ DayOfweek $\ll$
$1 \leq 2$
$1 \leq$ DayOfWeek $\ll \quad 7<12$
$1 \leq$ Month
$1 \leq$ Monthofouarter $<\leq 12$


R MonthRecurrenceType
is independent
is identified by ( RecurrenceType )
is described by ( Description )
is described as Reference, enumerates month recurrence types
discriminates 0 -to-n Schedule_Months
discriminates 0 -to-n ScheduleSuppression_Months

## R Recurrencetype

is identified by ( RecurrenceType )
is described by ( Description )
is described as Reference, enumerates schedule recurrence types
discriminates 0-to-n Schedules
H Schedule
is independent
is discriminated by 1 RecurrenceType
is identified by ( Schedule )
is described by (Description )
is described as Fully defined single Schedule, applicable to any table that requires one Operation: has Duration (Interval) and optional Escalation
Task: has Instant, optional Duration, Escalation (if any) does not apply
is an exclusive basetype, one of \{ IntraDay | Day | Week | Month | Quarter | Year \}
is constrained by Schedule_IsValid_ck
is suppressed during $0-$ to-n ScheduleSuppressions
(S) Schedule_Day
is an exclusive subtype of Schedule
is identified by (Schedule )
is described by ( Hour, Minute, Interval )
is described as Schedule is once per day, recurring every day
is constrained by Schedule_IsValid_ck
escalates at 0-to-n Schedule_DayHours
(H) Schedule_DayHour
is dependent on, and an escalation of, 1 Schedule_Day
is identified by ( Schedule, Hour )
is described by ( Minute, Interval )
is described as Single escalation entry
is constrained by Schedule_IsValid_ck
(S) Schedule_IntraDay
is an exclusive subtype of Schedule
is identified by ( Schedule )
is described as Schedule is multiple times per day
is constrained by Schedule_IsValid_ck
consists of 1-to-n Schedule_IntraDay
(H) Schedule_IntraDay ${ }^{\text {HM }}$
is dependent on, and a component of, 1 Schedule_IntraDay
is identified by ( Schedule, Hour, Minute )
is described by ( Interval )
is described as Single intra-day entry
is constrained by Schedule_IsValid_ck
(S) Schedule_Month
is an exclusive subtype of Schedule
is discriminated by 1 MonthRecurrenceType
is described as Schedule is once a month, recurring every Month
is constrained by Schedule_IsValid_ck
an exclusive basetype, one of \{ Day | Week \}
(S) Schedule_MonthDay
is an exclusive subtype of Schedule_Month
is identified by (Schedule)
is described by ( Day, Hour, Minute, Interval )
is described as Single monthly day entry
is constrained by Schedule_IsValid_ck
(S) Schedule_MonthWeek
is an exclusive subtype of Schedule_Month
is identified by (Schedule )
is described by ( WeekOfMonth, DayOfWeek, Hour, Minute, Interval )
is described as Single month week entry
is constrained by Schedule_IsValid_ck
(S) Schedule_Quarter
is an exclusive subtype of Schedule
is identified by ( Schedule)
is described by ( MonthofQuarter, Day, Interval )
is described as Schedule is once per quarter, recurring every quarter
is constrained by Schedule_IsValid_ck
(S) Schedule_Week
is an exclusive subtype of Schedule
is identified by (Schedule )
scribed as Schedule is once per week, recurring every week.
If multiple Days are entered, it is effectively multiple times per week
is constrained by Schedule_IsValid_ck
consists of 1-to-n Schedule_WeekDays
(H) Schedule_WeekDay
is dependent on, and a component of, 1 Schedule week
is identified by (Schedule, DayOfWeek )
is described by ( Hour, Minute, Interval )
is constrained by Schedule IsValid ck
escalates at 0-to-n Schedule_WeekDayHours
(H) Schedule_WeekDayHour
is dependent on, and an escalation of, 1 Schedule_WeekDay
is identified by (Schedule, DayOfWeek, Hour )
is described by ( Minute, Interval )
is described as Single escalation entry
(S) schedule_year
is an exclusive subtype of Schedule
is identified by (Schedule )
is described by ( Month, Day, Interval )
is described as Schedule is once per year, recurring every year
is constrained by Schedule_IsValid_ck
(H) ScheduleSuppression
is dependent on, and a suppression of, 1 Schedule
is discriminated by 1 SuppressionRecurrenceType
is identified by (Schedule, Suppression )
is described by ( Description)
is described as Allows multiple suppression intervals within a Schedule is constrained by Schedule_IsValid_ck
is an exclusive basetype, one of \{ Day | Week | Month | Quarter | Year \}
(S) ScheduleSuppression_Day
is an exclusive subtype of ScheduleSuppression
is identified by ( Schedule, Suppression )
is described by ( Hour, Minute, Interval )
is described as Suppression is once per day, recurring every day
is constrained by Schedule_IsValid_ck
S ScheduleSuppression_Month
is an exclusive subtype of ScheduleSuppression
s discriminated by 1 MonthRecurrenceType
s described as Suppression is once a month, recurring every Month
is constrained by Schedule_IsValid_ck
is an exclusive basetype, one of \{ Day | Week \}
(S) ScheduleSuppression_MonthDay
is an exclusive subtype of ScheduleSuppression_Month
is identified by (Schedule, Suppression )
is described by ( Day, Hour, Minute, Interval )
is described as Single monthly Day entry
is constrained by Schedule_IsValid_ck
S ScheduleSuppression_Monthweek
is an exclusive subtype of ScheduleSuppression Month
is identified by (Schedule, Suppression )
is described by ( WeekOfMonth, DayOfWeek, Hour, Minute, Interval )
is described as Single monthly Week entry
is constrained by Schedule_IsValid_ck
S ScheduleSuppression_Quarter
is an exclusive subtype of ScheduleSuppression
is identified by (Schedule, Suppression )
is described by ( MonthofQuarter, Day, Interval )
is described as Suppression is once per quarter, recurring every quarter is constrained by Schedule_IsValid_ck
(S) ScheduleSuppression_Week
is an exclusive subtype of ScheduleSuppression
is an exclusive subtype of Schedulesuppress
is described as Suppression is once per week, recurring every week
If multiple Days are entered, it is effectively multiple times per week
is constrained by Schedule_IsValid_ck
consists of 1-to-n ScheduleSuppression_WeekDays
(H) ScheduleSuppression_WeekDay
is dependent on, and a component of 1 ScheduleSuppression week
is identified by ( Schedule, Suppression, DayOfWeek )
s described by ( Hour, Minute, Interval )
is constrained by Schedule_IsValid_ck
(S) ScheduleSuppression_Year
is an exclusive subtype of ScheduleSuppression
s identified by ( Schedule, Suppression
is described by ( Month, Day, Interval )
is described as Suppression is once per year, recurring every year
is constrained by Schedule_IsValid_ck
R SuppressionRecurrenceType
is independent
is identified by ( SuppressionType )
is described by ( Description )
is described as Reference, enumerates suppression recurrence types discriminates 0-to-n ScheduleSuppressions

