

## Change ID: 5.1-36

# Timesheet revision

## Summary

It is proposed to change some of the attributes and list of values of the Timesheet class, in order to better model schedules. This includes the time reference system, daylight saving and the possibility to include/exclude specified times.

## Background

The [Timesheet](#) class is used to model an individual component of a Timetable. It can represent:

- a single repetitive time period, such as "each Monday from 10:00 to 16:00";
- a single time block spreading over several days, such as "From each Monday 10:00 till Thursday at sunset"
- a date range, such as "every year from 15 OCT to 15 MAY";
- etc.

## Rationale for the change

### Time reference - UTCW

The current model allows only the values:

- UTC = " *Coordinated Universal Time*"
- UTCW = " *UTC adjustable for summer time*"

This list of values mixes two concepts that should be modelled separately. The value UTCW is used to indicate that a time is expressed in UTC, but it needs to be adjusted for summer time. It is proposed to remove UTCW from the list of values and replace it with a dedicated attribute " **daylightSavingAdjust** " of type CodeYesNoType.

### Time reference - UTC+1, UTC+2, ...

Certain schedules refer, for example, to "the day preceding a legal holiday". The list of values CodeDayType includes values for legal holiday (LH), the day preceding a legal holiday (PLH) and the day after a legal holiday (ALH). However, because the only time reference allowed for Timesheets is UTC, the "day preceding a legal holiday" can occur two days preceding a legal holiday, when translated into UTC for a large time difference. Not to mention that "legal holidays" really refer to the local calendar and times. It does not make much sense to translate them into UTC.

The solution proposed to this problem is to introduce in the model the local times, but expressed as difference from UTC: **UTC+1, UTC+2, ..., UTC+12, UTC-12, UTC-11, ...UTC-1** . This would also simplify the encoding of local times in general while also preserving the UTC reference.

### Included/excluded Timesheets

In the current Timesheet model, it is only possible to express "included" times. It was however possible to combine a coded working hours values, such as H24, with a series of Timesheets. That would be interpreted in AIXM 4.5 as "H24 minus the times in the Timesheet". These kinds of combinations were quite confusing sometimes. Even more, as Change Proposal no. 35 mentions, with the removal of the coded working hours (H24, HJ, etc.) from the model, these combinations are no longer possible.

However, there exist examples of schedules that are very hard or even impossible to express using only "positive" timesheets. For this purpose, some special "excluded day" values have been introduced in AIXM 5.0 in the [CodeDayType](#) :

- MON\_XHOL = Monday, excluding legal holidays
- TUE\_XHOL = Tuesday, excluding legal holidays
- ...
- SUN\_XHOL = Sunday, excluding legal holidays

But these values only cover some specific exclusions and increase the complexity of the CodeDayType list. Therefore, it is proposed to add an "excluded" attribute in the Timesheet, indicating that the time interval contained in the Timesheet is specifically excluded from the schedule. The values "...\_XHOL" could then be removed from the CodeDayType list of values.

### **Special dates**

Timesheet can refer to special dates, such as Legal Holidays, which can also be specific per organisation (see [Timetable diagram](#) ). The concept of "Busy Fridays" is supported by the [SpecialDate](#) list, but is not allowed in a Timesheet. In order to improve the coherence of the model and to support the encoding of schedules that depend on the so-called "Busy Fridays", it is proposed to introduce BUSY\_FRI in the CodeDayType list of values.

### **Change proposal details**

In the Timesheet class

- add a new attribute "daylightSavingAdjust", definition = " *Indicates that the startTime and endTime values have to be decreased by one hour when Daylight Saving is in force (summer time)*", data type = CodeYesNoType;
- add a new attribute "excluded", definition = " *Indicates that the time block indicated by the current Timesheet is excluded (subtracted) from the total schedule*", data type = CodeYesNoType;

Modify the CodeTimeReferenceType data type:

- changed definition = " *A coded indication of a time reference system - UTC or local*"
- remove the value UTCW from the list of values
- add the following values:
  - UTC-12 = " *UTC minus 12 hours*"
  - UTC-11 = " *UTC minus 11 hours*"
  - ...
  - UTC-2 = " *UTC minus 2 hours*"
  - UTC-1 = " *UTC minus 1 hour*"
  - UTC+1 = " *UTC plus 1 hour*"
  - UTC+2 = " *UTC plus 2 hours*"
  - ...
  - UTC+11 = " *UTC plus 11 hour*"
  - UTC+12 = " *UTC plus 12 hours*"

Modify the CodeDayType data type:

- remove the following values: MON\_XHOL, TUE\_XHOL, WED\_XHOL, THU\_XHOL, FRI\_XHOL, SAT\_XHOL, SUN\_XHOL;
- add the value BUSY\_FRI = " *Formally declared as 'Busy Friday' by the authority responsible for aeronautical information provision in the area concerned, in order to activate special traffic management arrangements.*"