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Proposal to Accommodate Alternative World Calendar Systems

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Description: Proposed adoption of a date syntax applicable to multiple world calendars, both historical and modern-day.

Keywords: Dates, World-calendars

Contents

1. Abstract

Proposal to adopt a syntax for representing date values in any number of world calendars; past or present. The syntax would be analogous to the ISO 8601 syntax for Gregorian dates.

2. Proposal

In principle, the instant in time associated with any event can be represented according to the system of measurement in any given calendar system. In practice, though, there are problems with knowing the precise synchronisation between all possible calendars and that can make an algorithmic conversation between them difficult.

For instance, the Hindu calendar is in common usage but its dates do not always have an agreed correspondence in the Gregorian calendar. Government of India documents carry three dates: the Christian date, and two disparate Hindu dates. That has provided an officially recognised synchronisation for the past 50 years only.

As with all items of evidence, we should not change what was written or recorded. Although we strive to make accurate transcriptions of data, including representation in corresponding computer formats, we should not be making a material change. If we're looking at a Chinese date, or a French Republican date, then we should not be forced to convert it to the Gregorian system simply because that's the only format defined for computer systems.

This proposal is to adopt a computer date representation that is a superset of basic ISO 8601 dates, and which follows the same guiding principles of that ISO standard, i.e.

- All-numeric representation of dates. This removes any locale dependency caused by the use of period names.
- Fixed-width zero-padded fields to prevent ambiguous interpretations.
- Ordering of fields from coarse-grained to fine-grained, thus giving a natural sorting capability. NB: This requires all fields to be non-negative.
- Truncation of dates to cope with different granularities.

A calendar ID can be attached to the numeric string in order to uniquely identify it. For instance: #GR#1956-06-09 for the Gregorian date 9-June-1956. That ID should default to the one for the Gregorian calendar so that the representation is effectively an extension of the ISO 8601 one. NB: This is a representational default and should not be confused with defaults offered by software products to help the end-user.

Just as with Gregorian dates, the encoding of the value is independent of how you want to see it formatted later, and that display formatting may be governed by configurable preferences. The evidence version (as originally recorded) and the display version are both distinct from the computer-readable version proposed here.

3. Not Covered or Not Required

The proposal does not define how to convert a date in one calendar system to a date in a different calendar system. The goal of the proposal is to express date values in such a way that they can be exchanged unambiguously. It is left to software products, and ideally a Date Authority on the Internet, to attempt such conversions for, say, the generation of a unified timeline in a report. NB: while some conversions can be performed accurately, some cannot due to a lack of agreement on synchronisation points. Any conversion must therefore be able to return an error margin introduced by the operation.

The proposal does not enumerate all the calendar name encodings, or the list of numeric fields required for each. The proposal is simply for the adoption of a generalised syntax that can accommodate dates in alternative calendars.

The proposal prefixes a calendar ID to a date value but this is only for illustration. The actual juxtaposition and the separating characters are not prescribed here.

The proposal does not cover date ranges or uncertainties. The ISO 8601 standard is already overloaded with features such as ranges. If the Data Model accommodates generic support for ranges and uncertainties then it will automatically support it them for multiple calendars if we adopt a uniform date-value encoding.

4. Illustration

As a small example, let's look at the French Republican Calendar (also called the French Revolutionary Calendar) which was created during the French Revolution. This was partly designed to remove religious and royalist influences, and was one attempt at decimalisation in France.

Years are usually written as Roman numerals, beginning with the year of the Republican Era. As a result, Roman numeral I indicates the first year of the republic, that is, the year before the calendar actually came into use. The first day of each year was that of the autumnal equinox.

There were twelve months, each divided into three ten-day weeks called décades. The tenth day, décadi, replaced Sunday as the day of rest and festivity. The five or six extra days needed to approximate the solar year were placed after the months at the end of each year.

Irrespective of how such dates were written in France, a computer exchange format only need know the individual elements (e.g. days, months, etc), their numeric ranges, and their relative ordering. In this case, that results in a format of "yy-mm-dd", or "yy-mm-ddTh:mm:ss" is we include times too.

Note that the year only has a pair of digits since the calendar was not used for very long. The residual days in each year could be represented against a pseudo-13th month, or a special month value of 99.

An example date and time might therefore be:

#FR#02-09-20T9:99:99

An example of a Julian date might be:

#JU#1666-09-02

5. Use Cases

There are many calendar systems in use today around the world, and also many historical ones that are no longer used. From the point of view of historical data (including both genealogy and family history), it is essential to be able to record their associated dates correctly, and without being forced to try and calculate an equivalent Gregorian date.

Our Data Model should be as applicable to another culture, or to another time period, as it is to our everyday world.

5.1 Dual Dates

Dual dates were used during the changeover from the Julian calendar to the Gregorian calendar and represents dates fields used from both systems in order to avoid ambiguity. For instance, "12/23 Feb 1750/1751" represents 1751-02-23 in the Gregorian calendar and 1750-02-12 in the Julian calendar.

Although covered by a separate proposal, dual dates are essentially a single date string that requires two date values to represent it - one in the Gregorian calendar and one in the Julian calendar. Hence, the solution to representing dual dates (and the necessary world generalisation of them) rests on the ability to handle distinct calendars.

6. Recommendation

Once the encoding has been shown to have validity, it is recommended that FHISO liaise with the ISO TC 154 that handles data standards to have it incorporated into a future international date standard.

7. References

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ISO 8601:2004(E) – Data elements and interchange formats — Information interchange — Representation of dates and times.

FHISO cfps 14, Dual Dates. http://fhiso.org/files/cfp/cfps14.pdf.