Notes of the: **Meeting of Ecma TC39 ad hoc on Internationalization**

held on: **15 November 2011**

Location: Google, Mountain View, CA, USA

Attendees: Nebojša Ćirić, Jungshik Shin, Roozbeh Pournader, Mark Davis (Google), Steven Loomis (IBM), Eric Albright (Microsoft), Richard Gillam, Addison Philipps (Amazon), Allen Wirfs-Brock (Mozilla), Norbert Lindenberg (invited expert).

Minute taker: Norbert Lindenberg

Materials: Current specification draft; older draft with comments; feedback on es-discuss; Norbert's guide

1 Report from editorial team meetings

Norbert reports on some changes made in two editorial meetings (attendees: Nebojša, Jungshik, Eric, Norbert):

- Removed the filter functions which had been introduced in the August meeting, because application negotiation needs are too hard to solve. Replaced them with supportedLocalesOf.
- Decided not to have a language independent locale because of concerns that it would be abused for the implementation of protocols.

2 Issues with current draft

2.1 Pseudocode vs. ECMAScript

The team doesn't like the use of pseudocode in the specification because it is hard to read and not testable. However, it seems we have to stick with it because that's the way ECMAScript standards are written.

2.2 Implementation dependencies

Norbert sees implementation dependencies as falling into three buckets:

- From moving underlying standards – uncontroversial:
  - Unicode
  - BCP 47, Unicode extension
- From modeling the real world – unavoidable in internationalization:
  - Supported locales and features per locale
  - Collation rules, number formats, date and time formats
  - Calendar and time zone rules
- From capability differences – need to be scrutinized:
  - Collation features
  - Supported combinations of date/time format components
  - Era and time zone display
  - Enhanced language negotiation
  - Time zone selection

- Orthogonality of calendars and locales

Allen reminds team that the point of standardization is interoperability and identical behavior across implementations.

A long discussion follows. When a user runs a JS application simultaneously on an Android phone, a Mac, and a TV, is it acceptable that dates are displayed in three different formats? On the other hand, is it acceptable that a JS application and a native application running at the same time on the same platform display dates in three different formats? Most team members think that the criterion shouldn't be identical behavior, but behavior that makes sense to the user.

2.3 Language negotiation

Mark raises the issue that language negotiation is "overspecified". The handling of Unicode extension sequences is fine, but the BCP 47 Lookup algorithm used for the remaining language tag doesn't let implementations use information they have about reasonable fallbacks. For example, for es-GT it may be better to fall back to es-MX rather than es (=es-ES). The current spec, which recommends the handling of such fallbacks by adding entries to [[availableLocales]], can lead applications to think that es-GT is actually backed by data rather than just a fallback.

Addison points out that BCP 47 Lookup is now used in a W3C standard, so it has to be supported.
Rich proposes to give applications the means to implement their own locale negotiation; this requires a way to get the list of available locales, and the guarantee that if an available locale is requested that it is actually used.

Mark proposes to offer two algorithms: BCP 47 Lookup, fully specified, and "best fit", which is implementation dependent. In either case, if there's a direct match between a request and an available locale, it wins. Selection is through a localeMatcher property of options; default is "best fit". supportedLocalesOf needs to offer the same option.

No objections are raised against Mark's proposal; so it is accepted.

2.4 Date and time format selection

Mark raises the same issue for date and time format selection: the ToBestMatch algorithm is "overspecified". As above, he proposes to offer two algorithms: The existing one (fully specified, called "basic"), and an implementation dependent "best fit" algorithm. Implementations should only offer a different "best fit" algorithm if they can significantly improve on "basic"; otherwise the two are the same. Selection is through a formatMatcher property of options; default is "best fit".

No objections are raised against this proposal; so it is accepted.

2.5 Respecification of *Locale* functions in Language Specification

Norbert showed his strawman for a respecification of the *Locale* functions in the ECMAScript Language Specification; Allen had suggested that the Globalization API Specification could respecify these functions since the Language Specification leaves them largely unspecified.

The team welcomed this proposal; so it is accepted.

2.6 Other items

To help implementors who might start from scratch, CLDR should be non-normatively recommended as the source for locale data (there is a recommendation for the Unicode collation algorithm already).
Roozbeh points out that the Hebrew calendar doesn't have numeric month names; this should be mentioned as an example why not all formats can be supported.

3 Project plan

Dates provided by John Neumann and Allen to get approval at Ecma General Assembly in June 2012:

- 2012-02-28: Submission of final specification draft to TC 39
- 2012-03-28: Approval of final specification by TC 39
- 2012-04-13: Completion of compliance test suite, 2-3 working implementations

Google and Amazon are ready to start implementing as soon as the spec is frozen.