iCal4j @ Calconnect

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iCal4j – About Me

- Bsc. CS (Honours) – Graduated 1996

- Software Consultant (Java)

- Singapore, London, Sydney and Melbourne

- Multiple email / calendaring archives in proprietary formats

- In search of a better way

iCal4j – Open Standards

- Lock-in associated with proprietary file formats

- Long-term archival (> 1 year) requires open standards

- In the Java world:

  - Email => JavaMail

  - Calendar => ???

- iCal4j born, April 2004

iCal4j – Open Source

- Increasing acceptance in enterprise projects
- Support via online communities
- Access to source code provides improved debugging
- A greater pool of expertise
- A chance to give something back

iCal4j – Goals

- An object model representation of iCalendar

- Parse and generate ICS files

- Validation, recurrences, timezones, iTIP, …

- Maintain a "soft touch" approach to object models

iCal4j – Goals (Cont.)

- An online community to assist with testing, patches, etc.

- Open Leadership

  - "Good leaders do not make decisions - they simply help the community to make better decisions." - Factory City (http://factoryjoe.com/blog)

iCal4j – Achievements

- Wide-spread adoption

- Bedework, Zimbra, Chandler Server, …

- Increasing community support

- Members include Bedework (RPI), OSAF, Sun, ...

iCal4j – Challenges

- Time (or lack thereof)
- Ambiguous specifications (RFC2445, 2446, ..)
- Not all iCalendar implementations created equal
- Strict implementation leads to interoperability issues

iCal4j – Compatibility Hints

Hints enabled in three ways:

- Programmatically (Application-specific)
- File-based configuration (Application-specific)
- System properties (JVM-specific)

iCal4j – Compatibility Hints

Relaxed Unfolding

- <CR>+<LF>+<SPACE> - default fold
- <LF>+<SPACE> - Mozilla Calendar/Sunbird, KOrganizer
- <CR>+<LF>+<TAB> - Outlook 2007
- <LF>+<TAB> - Outlook 2007 (Unconfirmed)

iCal4j – Compatibility Hints

Relaxed Parsing

- TZID parameters specified where not applicable
- Extended components/properties/parameters not starting with the required "X-"
- Invalid URI format
- Invalid DATE/DATE-TIME formats
  - "20090204" => "20090204T000000"
- Global TZIDs without a corresponding VTIMEZONE definition
  - "/mozilla.org/20080911/America/New_York"

iCal4j – Compatibility Hints

Relaxed Validation

- Allow VTODO Components to be published alongside VEVENTs

- Allow publishing VEVENTs that do not specify an ATTENDEE, ORGANIZER and/or SUMMARY property

- Allow VEVENT request that does not specify an ATTENDEE property

- Allow publishing VTODOs that do not specify an ORGANIZER and/or PRIORITY property

iCal4j – Compatibility Hints

Relaxed Validation (Cont.)

- Allow components that do not specify a UID and/or DTSTAMP property

- Allow experimental components/properties with names not beginning with "X-"

iCal4j – Compatibility Hints

Outlook Compatibility

- Default fold length is 73 characters
- Enforce a fold of 75 characters when hint enabled
- RECUR: Strip whitespace from week day lists

iCal4j – Compatibility Hints

Notes Compatibility

- Transform invalid Content ID URIs
- RFC2392: Use angle brackets in MIME headers
- Example:

  CID:<FFFF__=0ABBE548DFE147488f9e8a93d@coffeebean.com>

- Strip angle brackets from URI

iCal4j – Timezones

- iCalendar timezones are complex

  - Multiple recurrence / exclusion rules

- Simple Java timezones support a single offset for standard and daylight savings time

- JodaTime??

- Custom timezone backed by VTIMEZONE

- Timezone Registry (includes default definitions)

- Support for loading VTIMEZONE objects

iCal4j – Timezones (Cont.)

- Globally unique identifiers ("/")
- Treat "well-known" identifier as globally unique
  - e.g. "Australia/Melbourne"
  - Associated issues (daylight savings)
- Alternate definitions available
  - True globally unique identifiers
    - e.g. "/ical4j_1_0_rc1/Australia/Melbourne"
  - Outlook compatible definitions
- Timezone Aliases
  - e.g. "US/Pacific=America/Los_Angeles"

iCal4j – Recurrences

Applying VTIMEZONE definitions

- Iterate STANDARD / DAYLIGHT observances
- Calculate latest applicable Onset period
- Expand recurrences up to date instance
- Cache expanded Onsets

iCal4j – Recurrences (Cont.)

Calculating Recurrence Sets

- Expand recurrence / exception rules for a period
- Check for intersection with entire component duration
- Anniversary-style events treated as zero-length periods
- May be normalised

iCal4j – Other Features

- Parsing
    - Extensible architecture
    - Separation of parser and content handler
    - XML, microFormats, etc.
- Output
    - Deferred validation of object model
    - Enforce validation on output by default
    - Fold long lines

iCal4j – Other Features

Filters

- Alternative to VFREEBUSY
- Rule-based filtering:
    - Components with a specific Property
    - Components intersecting a specified Period

iCal4j – Other Features

Indexed Lists

- Useful for fast lookups

- Without indexing means repeatedly iterating over an object tree

- e.g. VEVENTs with a specified UID

- Not useful for smaller object models that change frequently

iCal4j – Other Features

Extension Objects

- Names starting with "X-"
- Currently only string values supported
- Improved integration with custom extension objects in future releases

iCal4j – Other Features

iTIP Validation

- Applied where METHOD property is present
- Mutual exclusion of components
- Additional component validation

iCal4j – Future Directions

Java 5 Features

- iCal4j 2.0
- Generics, Enums, etc.
- Improved typing, less casting
- Improved extension object support

iCal4j – Future Directions

iTIP / iMIP

- RFC2446 / 2447
- Object model transformations
    - Increment SEQUENCE, etc.
- JavaMail-based envelopes (??)

iCal4j – Future Directions

vCard

- Based on draft revision of vCard 4.0
- Integration with iCal4j
- Status: Parsing, output, some validation
- Additional Features:
  - Regular expressions for parsing
  - Enums for object identifiers
  - Registries for extension properties, parameters and groups
  - More robust object model

iCal4j – Future Directions

Connector

- Object Store access
- Support for CalDAV, CardDAV
- JCR (Indexed attachments, etc.)
- Higher-level than caldav4j

iCal4j – Future Directions

- Synchronisation

  - Device calendar synchronisation

  - Open Mobile Alliance (SyncML) ??

- Android / J2ME

iCal4j – Conclusion

http://ical4j.sourceforge.net