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A Summary of Unicode Consortium Procedures, Policies, Stability, and Public Access

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Abstract

This memo describes various internal workings of the Unicode Consortium for the benefit of participants in the IETF. It is intended solely for informational purposes. Included are discussions of how the decision-making bodies of the Consortium work and their procedures, as well as information on public access to the character encoding & standardization processes.

1. Introduction

This memo describes various internal workings of the Unicode Consortium for the benefit of participants in the IETF. It is intended solely for informational purposes. Included are discussions of how the decision-making bodies of the Consortium work and their procedures, as well as information on public access to the character encoding & standardization processes.

2. About The Unicode Consortium

The Unicode Consortium is a corporation. Legally speaking, it is a "California Nonprofit Mutual Benefit Corporation", organized under section 501 C(6) of the Internal Revenue Service Code of the United States. As such, it is a "business league" not focussed on profiting by sales or production of goods and services, but neither is it formally a "charitable" organization. It is an alliance of member companies whose purpose is to "extend, maintain, and promote the Unicode Standard". To this end, the Consortium keeps a small office, a few editorial and technical staff, World Wide Web presence, and mail list presence.

The corporation is presided over by a Board of Directors who meet annually. The Board is comprised of individuals who are elected annually by the full members for three-year terms. The Board appoints Officers of the corporation to run the daily operations.

Membership in the Consortium is open to "all corporations, other business entities, governmental agencies, not-for-profit organizations and academic institutions" who support the Consortium's purpose. Formally, one class of voting membership is recognized, and dues-paying members are typically for-profit corporations, research and educational institutions, or national governments. Each such full member sends representatives to meetings of the Unicode Technical Committee (see below), as well as to a brief annual Membership meeting.

3. The Unicode Technical Committee

The Unicode Technical Committee (UTC) is the technical decision making body of the Consortium. The UTC inherited the work and prior decisions of the Unicode Working Group (UWG) that was active prior to formation of the Consortium in January 1991.

Formally, the UTC is a technical body instituted by resolution of the board of directors. Each member appoints one principal and one or two alternate representatives to the UTC. UTC representatives frequently do, but need not, act as the ordinary member representatives for the purposes of the annual meeting.

The UTC is presided over by a Chair and Vice-Chair, appointed by the Board of Directors for an unspecified term of service.

The UTC meets 4 to 5 times a year to discuss proposals, additions, and various other technical topics. Each meeting lasts 3 to 4 full days. Meetings are held in locations decided upon by the membership, frequently in the San Francisco Bay Area. There is no fee for participation in UTC meetings. Agendas for meetings are not generally posted to any public forum, but meeting dates, locations, and logistics are posted well in advance on the "Unicode Calendar of Events" web page.

At the discretion of the UTC chair, meetings are open to participation of member and liaison organizations, and to observation by others. The minutes of meetings are also posted publicly on the "UTC Minutes" page of the Unicode Web site.

All UTC meetings are held jointly with the INCITS Technical Committee L2, the body responsible for Character Code standards in the United States. They constitute "ad hoc" meetings of the L2 body and are

usually followed by a full meeting of the L2 committee. Further information on L2 is available on the official INCITS web page.

4. Unicode Technical Committee Procedures

The formal procedures of the UTC are publicly available in a document entitled "UTC Procedures", available from the Consortium, and on the Unicode web site.

Despite the invocation of Robert's Rules of Order, UTC meetings are conducted with relative informality in view of the highly technical nature of most discussions. Meetings focus on items from a technical agenda organized and published by the UTC Chair prior to the meeting. Technical items are usually proposals in one of the following categories:

1. Addition of new characters (whole scripts, additions to existing scripts, or other characters)
2. Preparation and Editing of Technical Reports and Standards
3. Changes in the semantics of specific characters
4. Extensions to the encoding architecture and forms of use

Note: There may also be changes to the architecture, character properties, or semantics. Such changes are rare, and are always constrained by the "Unicode Stability Policies" posted on the Unicode web site. Significant changes are undertaken in consultation with liaison organizations, such as W3C and IETF, which have standards that may be affected by such changes. See sections 5 and 6 below.

Typical outputs of the UTC are:

1. The Unicode Standard, major and minor versions (including the Unicode Character Database)
2. Unicode Technical Reports
3. Stand-alone Unicode Technical Standards
4. Formal resolutions
5. Liaison statements and instructions to the Unicode liaisons to other organizations.

For each technical item on the meeting agenda, the general process is as follows:

1. Introduction by the topic sponsor
2. Proposals and discussion
3. Consensus statements or formal motions
4. Assignment of formal actions to implement decisions

5. Unicode Technical Committee Motions

Technical topics of any complexity never proceed from initial proposal to final ratification or adoption into the standard in the course of one UTC meeting. The UTC members and presiding officers are aware that technical changes to the standard have broad consequences to other standards, implementers, and end-users of the standard. Input from other organizations and experts is often vital to the understanding of various proposals and for successful adoption into the standard.

Technical topics are decided in UTC through the use of formal motions, either taken in meetings, or by means of thirty-day letter ballots. Formal UTC motions are of two types:

1. Simple motions
2. Precedents

Simple motions may pass with a simple majority constituting more than 50 percent of the qualified voting members; or by a special majority constituting two-thirds or more of the qualified voting members.

Precedents are defined, according to the UTC Procedures as either

- (A) an existing Unicode Policy, or
- (B) an explicit precedent.

Precedents must be passed or overturned by a special majority.

Examples of implicit precedents include:

1. Publication of a character in the standard
2. Published normative character properties

3. Algorithms required for formal conformance

An Explicit Precedent is a policy, procedure, encoding, algorithm, or other item that is established by a separate motion saying (in effect) that a particular prior motion establishes a precedent.

A proposal may be passed either by a formal motion and vote, or by consensus. If there is broad agreement as to the proposal, and no member wishes to force a vote, then the proposal passes by consensus and is recorded as such in the minutes.

6. Unicode Consortium Policies

Because the Unicode Standard is continually evolving in an attempt to reach the ideal of encoding "all the world's scripts", new characters will constantly be added. In this sense, the standard is unstable: in the standard's useful lifetime, there may never be a final point at which no more characters are added. Realizing this, the Consortium has adopted certain policies to promote and maintain stability of the characters that are already encoded, as well as laying out a Roadmap to future encodings.

The overall policies of the Consortium with regard to encoding stability, as well as other issues such as privacy, are published on a "Unicode Consortium Policies" web page. Deliberations and encoding proposals in the UTC are bound by these policies.

The general effect of the stability policies may be stated in this way: once a character is encoded, it will not be moved or removed and its name will not be changed. Any of those actions has the potential for causing obsolescence of data, and they are not permitted. The canonical combining class and decompositions of characters will not be changed in any way that affects normalization. In this sense, normalization, such as that used for International Domain Naming and "early normalization" for use on the World Wide Web, is fixed and stable for every character at the time that character is encoded. (Any changes that are undertaken because of outright errors in properties or decompositions are dealt with by means of an adjunct data file so that normalization stability can still be maintained by those who need it.)

Once published, each version of the Unicode Standard is absolutely stable and will never be changed retroactively. Implementations or specifications that refer to a specific version of the Unicode Standard can rely upon this stability. If future versions of such implementations or specifications upgrade to a future version of the Unicode Standard, then some changes may be necessary.

Property values of characters, such as directionality for the Unicode Bidi algorithm, may be changed between versions of the standard in some circumstances. As less-well documented characters and scripts are encoded, the exact character properties and behavior may not be well known at the time the characters are first encoded. As more experience is gathered in implementing the newly encoded characters, adjustments in the properties may become necessary. This re-working is kept to a minimum. New and old versions of the relevant property tables are made available on the Consortium's web site.

Normative and some informative data about characters is kept in the Unicode Character Database (UCD). The structure of many of these property values will not be changed. Instead, when new properties are defined, the Consortium adds new files for these properties, so as not to affect the stability of existing implementations that use the values and properties defined in the existing formats and files. The latest version of the UCD is available on the Consortium web site via the "Unicode Data" heading.

Note on data redistribution: Unlike the situation with IETF documents, some parts of the Unicode Character Database may have restrictions on their verbatim redistribution with source-code products. Users should read the notices in files they intend to use in such products. The information contained in the UCD may be freely used to create derivative works (such as programs, compressed data files, subroutines, data structures, etc.) that may be redistributed freely, but some files may not be redistributable verbatim. Such restrictions on Unicode data files are never meant to prohibit or control the use of the data in products, but only to help ensure that users retrieve the latest official releases of data files when using the data in products.

7. UTC and ISO (WG2)

The character repertoire, names, and general architecture of the Unicode Standard are identical to the parallel international standard ISO/IEC 10646. ISO/IEC 10646 only contains a small fraction of the semantics, properties and implementation guidelines supplied by the Unicode Standard and associated technical standards and reports. Implementations conformant to Unicode are conformant to ISO/IEC 10646.

ISO/IEC 10646 is maintained by the committee ISO/IEC JTC1/SC2/WG2. The WG2 committee is composed of national body representatives to ISO. Details on the ISO organization may be found on the official web site of the International Organization for Standardization (ISO).

Details and history of the relationship between ISO/IEC JTC1/SC2/WG2 and Unicode, Inc. may be found in Appendix C of The Unicode Standard. (A PDF rendition of the most recent printed edition of the Unicode Standard can be found on the Unicode web site.)

WG2 shares with UTC the policies regarding stability: WG2 neither removes characters nor changes their names once published. Changes in both standards are closely tracked by the respective committees, and a very close working relationship is fostered to maintain synchronization between the standards.

The Unicode Collation Algorithm (UCA) is one of a small set of other independent standards defined and maintained by UTC. It is not, properly speaking, part of the Unicode Standard itself, but is separately defined in Unicode Technical Standard #10 (UTS #10). There is no conformance relationship between the two standards, except that conformance to a specific base version of the Unicode Standard (e.g., 4.0) is specified in a particular version of a UTS. The collation algorithm specified in UTS #10 is conformant to ISO/IEC 14651, maintained by ISO/IEC JTC1/SC2, and the two organizations maintain a close relationship. Beyond what is specified in ISO/IEC 14651, the UCA contains additional constraints on collation, specifies additional options, and provides many more implementation guidelines.

8. Process of Technical Changes to the Unicode Standard

Changes to The Unicode Standard are of two types: architectural changes, and character additions.

Most architectural changes do not affect ISO/IEC 10646, for example, the addition of various character properties to Unicode. Those architectural changes that do affect both standards, such as additional UTF formats or allocation of planes, are very carefully coordinated by the committees. As always, on the UTC side, architectural changes that establish precedents are carefully monitored and the above-described rules and procedures are followed.

Additional characters for inclusion in the The Unicode Standard must be approved both by the UTC and by WG2. Proposals for additional characters enter the standards process in one of several ways: through...

1. a national body member of WG2
2. a member company or associate of UTC
3. directly from an individual "expert" contributor

The two committees have jointly produced a "Proposal Summary Form" that is required to accompany all additional character proposals. This form may be found online at the WG2 web site, and on the Unicode web site along with information about "Submitting New Characters or Scripts". Instructions for submitting proposals to UTC may likewise be found online.

Often, submission of proposals to both committees (UTC and WG2) is simultaneous. Members of UTC also frequently forward to WG2 proposals that have been initially reviewed by UTC.

In general, a proposal that is submitted to UTC before being submitted to WG2 passes through several stages:

1. Initial presentation to UTC
2. Review and re-drafting
3. Forwarding to WG2 for consideration
4. Re-drafting for technical changes
5. Balloting for approval in UTC
6. Re-forwarding and recommendation to WG2
7. At least two rounds of international balloting in ISO

About two years are required to complete this process. Initial proposals most often do not include sufficient information or justification to be approved. These are returned to the submitters with comments on how the proposal needs to be amended or extended. Repertoire addition proposals that are submitted to WG2 before being submitted to UTC are generally forwarded immediately to UTC through committee liaisons. The crucial parts of the process (steps 5 through 7 above) are never short-circuited. A two-thirds majority in UTC is required for approval at step 5.

Proposals for additional scripts are required to be coordinated with relevant user communities. Often there are ad-hoc subcommittees of UTC or expert mail list participants who are responsible for actually drafting proposals, garnering community support, or representing user communities.

The rounds of international balloting in step 7 have participation both by UTC and WG2, though UTC does not directly vote in the ISO process.

Occasionally a proposal approved by one body is considered too immature for approval by the other body, and may be blocked de-facto by either of the two. Only after both bodies have approved the additional characters do they proceed to the rounds of international balloting. (The first round is a draft international standard during which some changes may occur, the second round is final approval during which only editorial changes are made.)

This process assures that proposals for additional characters are mature and stable by the time they appear in a final international ballot.

9. Public Access to the Character Encoding Process

While Unicode, Inc. is a membership organization, and the final say in technical matters rests with UTC, the process is quite open to public input and scrutiny of processes and proposals. There are many influential individual experts and industry groups who are not formally members, but whose input to the process is taken seriously by UTC.

Internally, UTC maintains a mail list called the "Unicore" list, which carries traffic related to meetings, technical content of the standard, and so forth. Members of the list are UTC representatives; employees and staff of member organizations (such as the Research Libraries Group); individual liaisons to and from other standards bodies (such as WG2 and IETF); and invited experts from institutions such as the Library of Congress and some universities. Subscription to the list for external individuals is subject to "sponsorship" by the corporate officers.

Unicode, Inc. also maintains a public discussion list called the "Unicode" list. Subscription is open to anyone, and proceedings of the "Unicode" mail list are publicly archived. Details are on the Consortium web site under the "Mail Lists" heading.

Technical proposals for changes to the standard are posted to both of these mail lists on a regular basis. Discussion on the public list may result in a written proposal being generated for a later UTC meeting. Technical issues and other standardization "events" of any significance, such as beta releases and availability of draft documents, are announced and then discussed in this public forum, well before standardization is finalized. From time to time, the UTC also publishes on the Consortium web site "Public Review Issues" to gather feedback and generate discussion of specific proposals whose impact may be unclear, or for which sufficiently broad review may not yet have been brought to the UTC deliberations.

Anyone may make a character encoding or architectural proposal to UTC. Membership in the organization is not required to submit a proposal. To be taken seriously, the proposal must be framed in a substantial way, and be accompanied by sufficient documentation to warrant discussion. Examples of proposals are easily available by following links from the "Proposed Characters" and "Roadmaps" headings on the Unicode web site. Guidelines for proposals are also available under the heading "Submitting Proposals".

In general, proposals are publicly aired on the "Unicode" mail list, sometimes for a long period, prior to formal submission. Generally this is of benefit to the proposer as it tends to reduce the number of times the proposal is sent back for clarification or with requests for additional information. Once a proposal reaches the stage of being ready for discussion by UTC, the proposer will have received contact through the public mail list with one or more UTC members willing to explain or defend it in a UTC meeting.

10. Acknowledgements

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11. Security Considerations

This memo describes the operational procedures of an organization; the procedures themselves have no consequences for Internet Security.

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