International Union for Biological Sciences
Taxonomic Databases Working Group
http://www.tdwg.org

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Last modified: 2006-01-24

Best Current Practice in Standards Organisations Similar to TDWG

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Definition

"The term best practice generally refers to the best possible way of doing something; it is commonly used in the fields of business management, software engineering, and medicine, and increasingly in government. […] The [qualified] term, "best current practice", often represents the meaning in a more accurate way, showing the possibility for future developments of "better practice"." http://en.wikipedia.org/wiki/Best_practice

Summary

Best current practice (BCP) in standards development organisations similar to TDWG appear to have the following characteristics-

1. An effective organisational structure
    a. Four organisational levels seem appropriate for TDWG (an Executive, a technical advisory group, operational / interest groups and the members).
    b. An effective governance structure built around a simple development pathway, charters and work plans
    c. Examples: GGF, IEEE, IETF, OASIS, ~OGC
2. An effective communications strategy that includes
    a. A Web site that addresses all client needs (GGF, IETF, IMTC, OASIS, OGC, EIEN)
    b. Ready access to high quality standards documentation (W3C, IETF, GGF)
    c. A collaborative infrastructure that effectively supports standards development (GGF, ISO, ~OASIS)

Scope

This document outlines

a. basic principles of ‘Best Current Practice’ (BCP) and
b. identifies the standards organisations reviewed that are using these practices.

Most of the organisations reviewed (Appendix 1) are larger that TDWG. While this fact has not limited the principles listed here, consideration has been given in this report in the most applicable way that BCP may be implemented within TDWG.

This report identifies key areas of BCP as exhibited by other similar standards organisations. It does not address fine details for the following reasons-

a. To keep this document concise.
b. To foster discussion in the TDWG Executive Committee about how BCP in key areas may be best implemented within TDWG.
c. More detailed recommendations will be made in subsequent documents from the TDWG Process subgroup and the TDWG Infrastructure Project Team such as ‘Recommended Process’, ‘Web site requirements’ and ‘Documentation Specifications’.

It is hoped therefore that this document will be instrumental in identifying a few specific actions required to advance TDWG as an international standards organisation.

Criteria

An evaluation of BCP in similar standards organisations requires a statement of the criteria that one has used. The resource-base for this report includes-

a. My experiences in the development and use of international and national standards prior to the GBMF contract and
b. My review in August and September 2005 of parallel standards development organisations

The criteria that result from these resources include-

a. The reputation of the organisation
b. The quality/professionalism of the standards they produce
c. How broadly their standards are accepted and implemented
d. The speed at which standards are produced
e. Ease of access to the standards and the context in which they were developed and are used
f. The quality of the educational material and documentation associated with the organisation and its standards

As noted elsewhere in this document, there was a clear recognition that TDWG was smaller than the great majority of standards organisations reviewed. While this size difference may affect the level of resources applied to implementing BCP, I believe that TDWG should aspire to excellence across all the above criteria. Being relatively small does have its advantages, particularly in terms of communication.

A problem that I perceive with how TDWG currently operates is in its scope. The breadth of standards development activities is a credit to its member's enthusiasm. If TDWG is however to achieve excellence against the above criteria, it is critical that it limits itself to cover what it considers is its 'core business'. TDWG's motto should be

"these few things that we do well, not these many things that we dabble in."

I would hope that the TDWG Executive Committee would address this issue in the context of evaluating the charters for the establishment of interest groups and the work plans of task teams (se below).

1. Organisational Structure

Executive

All of the organisations reviewed had a minimum of four-levels within their structure-

a. An Executive
b. Committees that support the Executive (advisory or review groups) and guide 'interest / operational groups'
c. Operational / Interest groups
d. General members

TDWG has a three-level structure, omitting the second level; the groups that would support Executive functions and provide practical guidance to operational / interest groups (referred to subsequently as interest groups in this report). The result of this is that considerable additional load is placed on the TDWG Executive Committee which is small, voluntary and may not have the range leadership and management skills. The reality is that the functions of level (b) above are either poorly done in TDWG or not at all.

At a minimum, TDWG needs to extend its Executive Committee to better lead and to administer TDWG activities. At a minimum, one additional position should be appointed to take responsibility for the annual meeting. This Executive Committee member should chair a separate committee of members that organises and manages the TDWG annual meeting.

A second Executive Committee position should be appointed to be the link with some form of Technical Advisory Group (TAG: see next section). Such a TAG should form the second structural level in TDWG.

It is perceived that the TDWG Executive's Regional Secretaries are not generally effective. A number of organisations (IEEE and OGC) have a regional aspect that is reflected at a high level in their organisations. The regional concept has positive aspects. Local meetings, smaller groups and sensitivity to cultural issues all have merit. The fundamental issue is that there should be no appointed positions without specific responsibilities, an agreed annual work plan and clear annual reporting against that work plan. At present, a number of Executive Committee positions including the TDWG Regional Secretaries have no role except to provide advice and consent on issues that come before the Executive Committee.

Technical Advisory Group (TAG)

All other standards organisations reviewed had some form of technical advisory group independent of the Executive functions. A TAG is needed to-

a. Review the charter, status and outputs of interest groups,
b. Advise the Executive on any technical issues as required and
c. Provide a framework for, and advise to interest groups.

In TDWG's case, this group may best be made up of the Convenors or chairs of interest groups with any additional members appointed by the Executive to ensure diversity and skill. While an expanded Executive could perform the role of a TAG, BCP in other standards organisations suggests that the Executive and Technical leadership functions should be split. The Convenor of the TAG should be elected by the TAG membership. The Executive member acting as TAG liaison should not be the Convenor of the TAG, but should have a vote as with other TAG members.

Another factor supporting the establishment of a TAG is that the role of the Convenors in a new TDWG interest group will have greater responsibilities. Convenors therefore deserve greater recognition and more direct input into Executive decisions about the establishment and continuation of interest groups and product releases.

Interest Groups

All other standards organisations had more formal task-oriented groups and in most cases, less formal communities of people with similar interests. Two models could be effective for TDWG-

a. A one-group model where an Interest Group was established by charter and where specific tasks could be proposed, evaluated by the Executive Committee with advice from the TAG, and if approved, managed to completion.

b. A two-group model where

    1. 'Task Groups' that have a formal charter that includes a lifespan dictated by the standards development process and
    2. Less formal interest groups where no specific task has yet been proposed yet could be used by members to exchange information and keep current with developments in the field.

    In this model, Task Groups could become Discussion Groups at some point after a standard had been delivered. Discussion Groups could also become Task Groups.

The one-group model is probably the simpler option for TDWG to implement and manage.

Interest groups create a basic environment for discussion of concepts and initiatives. New initiatives would normally be proposed from within the interest group but could be proposed by any member of TDWG. The proposal would take the form of a work plan that requires approval by the Executive Committee on advice from the TAG. An approved work plan enables the generation of a 'task team'. Members of the task team should be involved in only one task team at a time. This requirement ensures that task teams do not proliferate at the expense of timely outputs of high quality.

Governance

> *"Governance comprises the processes and systems by which an organization or a society operates…Corporate organizations often use the word governance to describe the manner in which boards or their like direct a corporation, and laws and customs applying to that direction."* http://en.wikipedia.org/wiki/Governance

While the TDWG constitution is pleasingly simple, amendments are required to address the implementation of BCP as listed in this report. An amended version of the TDWG constitution is submitted for discussion (Appendix 2). The TDWG constitution had to be examined for this report as it embodies the current structure and process. It was useful to see the minimum change that was required to amend the constitution to support BCP. We have therefore tried to retain the simplicity of the current constitution and avoided being pedantic where it seemed unnecessary.

All the organisations reviewed had a far more formal process for the establishment and monitoring of their interest groups and for the management of the standards development process in general.

As noted above, the current TDWG structure makes effective governance difficult at best. The governance of TDWG could be more effective if additional members (with specific functions) are recruited to the Executive Committee, a TAG and interest groups established, and public charters required.

Specific tasks addressed by task teams within interest groups require a plan that must be approval by the Executive Committee on advice from the TAG. An annual review of interest groups and task teams by the Executive Committee with advice from the TAG is also required.

Governance is also simplified if office holders and members are encouraged to work intersessionally. This can be encouraged by having-

a. A broader distribution of workloads,
b. Concise charters and work plans,
c. clear responsibilities including reporting and
d. a supportive IT environment.

The Standards Development Process

The standards development process was the issue most cited by TDWG members as in need of improvement. The process is dependent on TDWG's foundations; its structure and governance. Hence, those issues have been addressed above.

The criticism of the standards development process in TDWG was that it is not sufficiently prescriptive. Examination of the development process in all other standards organisations reviewed supports this observation. The standards development process in reviewed organisations is more formal. A formal evaluation process for the establishment of new groups, a review of group performance and all of its outputs (e.g., documentation) were universally accepted as BCP in other standards organisations. In IETF, there was an indication that 'off-track' developments suggested that an overly bureaucratic standards development process needed to be streamlined.

An effective standards development process cannot be achieved with the current TDWG structure.

The TDWG Infrastructure Team has outlined a basic process for discussion but it is the role of the TDWG Process Subgroup to develop a 'New Process' for standards development within TDWG for the Executive Committee. This report presents a minimal process track based on BCP in other standards organisations-

a. Submit a charter for the establishment of an interest group
b. An Executive with advice from TAG evaluates the charter
c. If positive, an interest group is established
d. A proposal is submitted for a standards development (a work plan)
e. An Executive with advice from TAG evaluates the work plan
f. If approved a task team is formed
g. An Executive/TAG regularly reviews the work of the interest group and its task teams
h. An Executive/TAG reviews and makes recommendations about all public outputs of a task team

The status and the products of interest groups are the responsibility of the Convenors. Standards are predominantly documents that must be of high quality, conforming to a design established between the Executive and the TAG that is publicly available from a document repository through the TDWG Web site. The document 'Final report on requirements for

documentation and associated software' due December 2005 will address this specific issue. A review by Roger Hyam of the BCP of standards documentation is included as Appendix 3.

Administrative functions of the standards development process should be coordinated by the TAG liaison position on the TDWG Executive Committee.

Charters and Work Plans

Others standards organisations reviewed almost universally required a basic charter for the establishment of new groups or tasks; a basic requirement for effective governance.

Charters and work plans should have the same basic structure as outlined below. Tasks would however have a narrower scope and timeframe than the charters of interest groups.

Interest Group charters and task team work plans are public documents that concisely define the group's scope and mandate. The key topics that should be covered in a charter or work plan include-

- Name of group or task
- Date last modified
- Convenor
- Potential interest group or task team members
- Home URL
- Scope of the group or task
- Background (why is this group or task being proposed?)
- Goals: outputs and outcomes
- Strategy (steps involved in achieving the goals)
- Specific milestones

2. Communications Strategy

Web Site

A standard organisation's Web site is its main interface to its-

a. members,
b. clients,
c. sponsors and
d. the public.

It is important that the TDWG considers how its Web site addresses each sectors needs. The current TDWG Web site fails to address three fundamental requirements of BCP as demonstrated by standards organisations reviewed-

a. supporting members through the standards development process
b. informing the public on the significance and implications of its work and
c. maintaining an up-to-date repository of standards products in an effective format

The best Web sites were GGF, IMTC, OASIS, OGC, IETF and EIEN. These sites were simple and consistent in design, were easy to navigate and provided an information and support base for members and useful information for the public.

Ready Access to High Quality Standards Documentation

The better Web sites of other standards organisations (Appendix 4) had ready access to standards in a range of formats. Such sites had documentation and educational material suitable for a range of audiences, from technical to managerial. The best examples of standards documentation (W3C, IETF, GGF) demonstrated –

a. Consistency (conformance using a template)
b. Quality (concise yet comprehensive enough to make implementation simple)
c. Availability - standards readily available in formats that served client needs

The problem of the quality of standards documentation came second only to the lack of a clear and more formal process in comments by TDWG members in St Petersburg. The TIP document "Summary of requirements for collaboration environment" (submitted in October 2005 with a final version due in December 2005 titled "Review paper: collaboration infrastructure requirements and technologies") addresses the Web site and associated Collaborative Development Infrastructure. More detailed comments are left to these documents.

Collaborative Support Infrastructure

All of the reviewed standards organisations had a consistent and fairly extensive support infrastructure for their standards development groups. TDWG has no similar structure. This has resulted in a wide range of tools on a range of servers across the current TDWG subgroups. This inconsistency of support environments-

a. makes it difficult for members to move between TDWG groups,
b. provides varying levels of support,
c. impedes the development of central repository of documents and logs, and
d. increases the probability of hosting problems and therefore the loss of valuable historical information.

All the groups reviewed had a range of tools at their disposal and appeared to make effective use of a subset of them-

a. Mailing lists
b. Wikis
c. Blogs
d. A document repository
e. A Convenor-controlled documentation area for groups
f. Some degree of automation that may link the tools (e.g., document submission triggers review process)

None of these tools guarantees engagement of the members, but a lack of an effective support environment reduces the probability of engagement and the quantity and quality of output.

Most of the organisations reviewed had either some full-time staff or sufficient funds to employ contractors to provide both Web and 'groupware' infrastructure. That TDWG is small should not these days limit the extent to which an effective support can be established and maintained. TDWG has to 'do it smarter'. The tools noted above are getting broader in functionality and simpler to implement and maintain.

Some level of 'automation' in the standards development process appears to be BCP in many standards organisations (e.g., GGF). For example, group charters are Web-based forms that are stored in a database, trigger a review when submitted, and are displayed on the Web site when approved and a client clicks on a link. Static text may be easy to develop, but the adage of 'store once' – use multiple times should be a basic requirement of an organisation like TDWG.

Simplicity and some degree of automation need not be a trade-off. 'Off the shelf' tools such as Typo3 provide a range of required functions and facilitates automation. If basic 'automation' as noted above is not implemented in a standards development organisation, it probably implies more work for members.

Appendix 1: A Review of Other Similar Standards Organisations

These notes were generated from a review of standards organisations that were considered to have at least some similarities to TDWG. Some may question the degree of similarity on some of the organisations included in this report. In those cases, the organisations were intentionally added to aid discussion of what TDWG's mandate was and what it may not be.

Committee on Data for Science and Technology (CODATA)

URL: http://www.codata.org/

1. CODATA is an interdisciplinary Scientific Committee of the International Council for Science (ICSU), which works to improve the quality, reliability, management and accessibility of data of importance to all fields of science and technology.
2. CODATA is a resource that provides scientists and engineers with access to international data activities for increased awareness, direct cooperation and new knowledge.
3. Objectives: (Brief: to help foster and advance science and technology through developing and sharing knowledge about data and the activities that work with data)
    a. The improvement of the quality and accessibility of data, as well as the methods by which data are acquired, managed, analysed and evaluated, with a particular emphasis on developing countries
    b. The facilitation of international cooperation among those collecting, organizing and using data
    c. The promotion of an increased awareness in the scientific and technical community of the importance of these activities
    d. The consideration of data access and intellectual property issues
4. Tools
    a. Task Groups
    b. Working Groups
    c. National Member activities
    d. Conferences
    e. Workshops
    f. Publications
    g. Co-operation with other organisations on common interests
5. CODATA has four primary activities-
    a. Sponsorship of a Biennial CODATA International Conference on data, which attracts approximately 300 data specialists from around the world.
    b. Specialist meetings of scientific data experts, which address issues specific to one discipline or topic.
    c. Publications on data handling, data compilation, surveys of data activities, and conference proceedings.
    d. Sponsorship of Task Groups, Working Groups, Commissions and other groups addressing specific data issues, such as:
        i. Coordination of multinational data project
        ii. Establishment of format standards to promote data exchange, sharing, and compatibility
        iii. Guidelines to presentation of data in the primary literature or archival databanks
        iv. Supplying information on sources of reliable data
        v. Education and training

vi. Preparation of key data sets for which consistent international use is desirable
vii. Organization of conferences and workshop

Environmental Information Exchange Network

URL: http://www.exchangenetwork.net/index.htm

1. **The Exchange Network is** a partnership between state environmental departments and the U.S. Environmental Protection Agency that is revolutionizing the exchange of environmental information. Partners on the Exchange Network share data efficiently and securely over the Internet. This new approach is providing real-time access to higher quality data while saving time, resources, and money for partner states, tribes, and territories.
2. Their **Web site** is particularly well laid out at the top level (network basics, partner benefits, building a node, data exchange, network registry, progress, grants, press room, message board and workgroups).
3. They have an excellent introduction to newbies in their 'network basics' basic documents: Purpose; how does it work (with a figure); join the network; governance and history. None are more than a page. It even has pages on XML basics!
4. The **Exchange Network Leadership Council** ENLC is designed to provide high level leadership and direction for the Network.
    a. The **mission** of the ENLC is to: provide the Network with political support and leadership; establish strategic direction and planning activities; work to ensure that adequate Network resources are secured; and connect the Network to broader communities of interest.
    b. To ensure that the ENLC draws upon the expertise of a wide range of partners, the membership consists of a U.S. EPA and a State Co-Chair as well as eight other representatives from U.S. EPA and the states
5. The primary sub-group of the Council, the **Network Operations Board** (NOB), is focused on supporting the operational "day to day" issues of running the Network.
    a. The NOB will oversee the operation of the Exchange Network. The mission of the NOB is to: establish and maintain operational policies and guidance; manage shared services and infrastructure; manage data standards and format development; manage the development and implementation of Network web services and data exchanges; expeditiously, impartially, and judiciously resolve all Network Partner implementation and operational issues; and elevate issues to the ENLC as appropriate.
    b. To ensure that the NOB draws upon the expertise of a wide range of partners, the membership consists of a U.S. EPA and a State Co-Chair as well as seven other representatives from U.S. EPA and the states
    c. The NOB is currently assembling two workgroups (Once established, these workgroups will help support the NOB in making policy and technology decisions related to Network operations):
        i. the Network Technology Group (NTG),
        ii. Network Partnership and Resources Group (NPRG)
        iii. Data standards team
6. The Network is constituted around a **Business Plan (http://www.exchangenetwork.net/basics/npat_report.pdf)** .
    a. Executive Summary: This Business Plan contains a set of related strategies and proposals for the IMWG that are intended to guide the Network's operation, evolution, and growth, as it moves from conceptualization and initiation to managing implementation and expansion.
    b. Sections in the Business Plan include-
        i. A description of the network (vision, goals, objectives, web services, data standards and formats, access tools, reporting and data exchange scenarios)

ii. How partners use the network (automating flows and data publishing, integrated project teams)
iii. Finances (infrastructure, funding nodes, funding categories and sources, grants, vulnerabilities)
iv. Governance (leadership, council and board, communities of interest, developing standards and best practice guides, network management, coordination, communication/outreach).
v. Development timeline (appendix)
vi. Definitions and abbreviations (appendix)

7. **Partner Benefits** (this is a key area for TDWG). "The Exchange Network helps EPA, states, tribes, territories, and regulated facilities exchange environmental information more efficiently. This revolutionary approach to data exchange is providing governments, interest groups, and the public with a wide range of new benefits.
    a. **Saving money and resources**. For many organizations, exchanging environmental data has become a costly and time consuming exercise. Data exchange often requires dedicated resources to build and maintain interfaces between data systems. In many cases, data must be transferred manually between systems through labor intensive data entry. Implementation of the Exchange Network reduces the cost and resource requirements of data sharing. The Exchange Network allows partners to map data to XML schema--a universal language--and then send or publish that data with web services via a Network Node. The days of entering data multiple times and developing and maintaining interfaces between systems are over. It no longer matters if partner systems are different--the computers can now exchange the data automatically using a common language!
    b. **Better information and better decisions**. When stakeholders have better information, they can make better decisions that protect our environment and public health. As our understanding of complex environmental processes has grown, policy makers and the public have begun to demand more comprehensive information. Regional environmental analyses of watersheds or airsheds require data that can span several geographical, political, and agency jurisdictions. The Exchange Network allows for automated state-to-state and interagency data exchanges that allow partners to integrate, analyze, and interpret more comprehensive information from disparate sources. One of the foundations of the Exchange Network is that data do not have to be physically moved to another database. Instead, web services can be deployed to publish the data in XML format on each Network Node. Once data are on the Node, partners can query and use the information. Real-time data is now at your fingertips!
    c. **New data exchanges between states and EPA**. Traditionally, most environmental information exchanges have been driven by regulatory reporting relationships between the state environmental departments and the U.S. EPA. Negotiation of new data exchanges was difficult due to the burden of designing systems and exchange mechanisms that work for all partners. The Exchange Network provides the infrastructure for exchanging valuable new data between the states and EPA. New exchanges are easier--all partners do them the same way and they are no longer dependent on backend systems!
    d. **Improved data quality**. In the past, problems with traditional data exchange methods often compromised the quality of environmental data. These problems include faulty data entry, multiple data entry, transmittal of incorrect data types or file formats, and sporadic use of data standards. The Exchange Network improves data quality by incorporating data standards up front and establishing standard business rules in the XML schema used to package the data for exchange. Metadata can also be wrapped in the exchange easily so the data can be qualified!

e. A**ccess to real-time data.** Other labor intensive approaches to data exchange often create delays in transmittal, leaving decision makers with outdated information that is of little real value. Today, we live in a point-and-click culture--the public demands more timely access to information about environmental conditions. By utilizing web services and the Internet, the Exchange Network can provide real-time information. In addition, web services allow data to be stored at the data owner location and published to the Internet for easy access in a secure environment. Not only does this make data more timely, it ensures that the quality of the data is not compromised. Data is available for real-time environmental decision making!

8. The Network partitions data exchanges into a suite of **Communities of Interest**-
    a. Air
    b. Waste
    c. Health
    d. Natural resources
    e. Water and
    f. Cross program
9. The Exchange Network requires participants to map their data to **XML schemas**. These schema are designed to be reusable, so other Network participants can visit the Data Exchange section of this website to download the resources necessary to implement an existing data flow. Included in this aspect are documents for
    a. Design and best practice
    b. XML rules and conventions
    c. Shared schema components technical reference and usage
    d. Core reference model
    e. Review model
    f. Architecture model
10. A **Registry of XML schemas.** The registry "provides the capability to share information about XML Data Exchange Template (DETs), XML Schemas, Namespaces, WSDL files, and other supporting files needed to map data flows between partners. The Registry contains information about schemas approved for use on the Network, as well as information about schemas under development. The XML Registry provides a clearinghouse for information related to data flows on the Network."
11. **Node Status**. The status of each of the nodes and each of the data themes by nodes is readily available as tables or as USA maps.
12. **Working groups**. A login is required to get to workgroup areas so I'm uncertain of structure at this level.

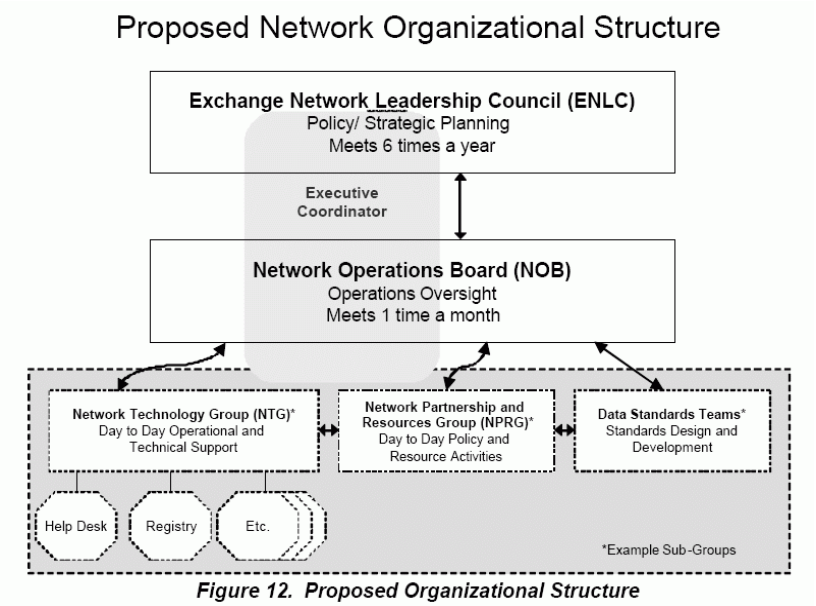


Figure 12. Proposed Organizational Structure

e-Learning Interoperability Standards (Sun Microsystems)

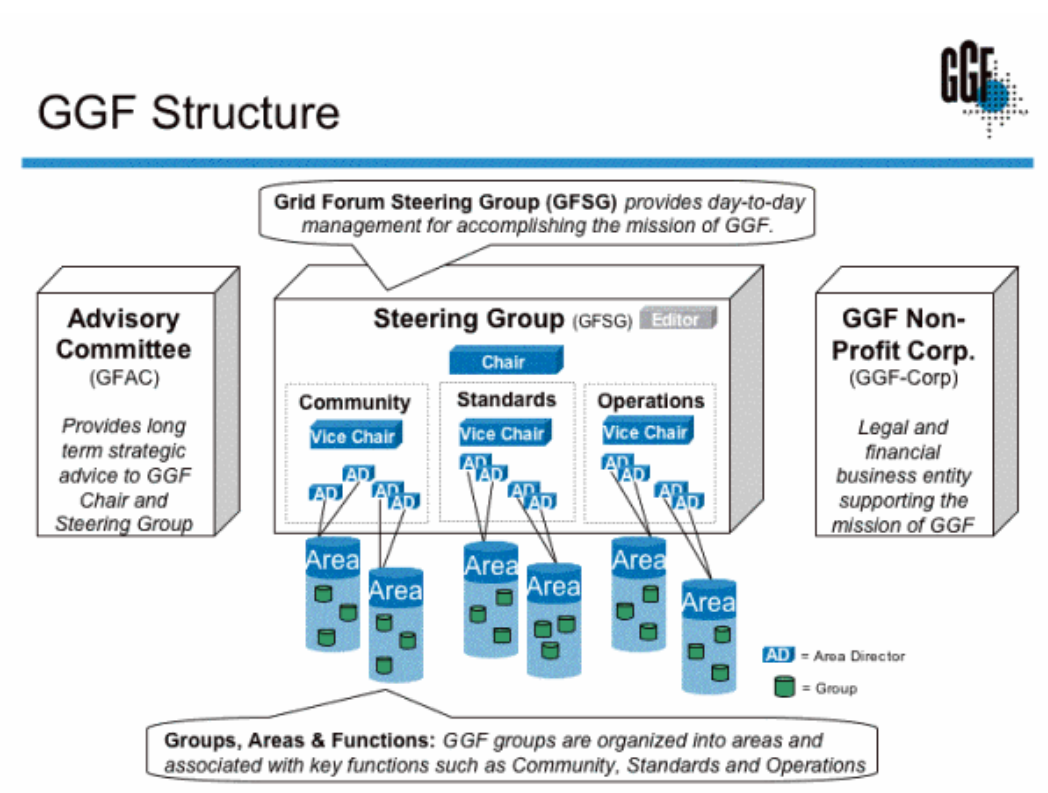
URL: http://www.sun.com/products-n-solutions/edu/whitepapers/pdf/eLearning_Interoperability_Standards_wp.pdf

1. Specification. Cooperating organizations work together to develop initial specifications that they hope to propose to the larger community as e-learning standards. These specifications are based on their analysis of the needs of the participating organizations. Examples of consortia gathering requirements and developing specifications relevant to e-learning are:
    a. IMS Global Learning Consortium,
    b. CEN/ISSS Workshop on Learning Technology,
    c. Customized Learning Experiences Online (CLEO) which involves IBM, Microsoft, Cisco, NetG, and click2learn,
    d. Aviation Industry CBT Committee (AICC), and
    e. HR-XML Consortium.
2. Validation. Vendors develop new products that incorporate these specifications, pilot programs are initiated to test out the effectiveness and usability of the specifications, and testbeds are established for validating conformance to the specifications. Reference models are developed that show how different specifications and standards work together to support a complete e-learning environment. Organizations creating testbeds and reference models for e-learning include:
    a. Advanced Distributed Learning initiative (ADL/SCORM),
    b. Advanced Learning Infrastructure Consortium (ALIC),
    c. Education Network Australia (EdNA), and
    d. European Commission Prometeus project.
3. Standardization. In the final step, specifications that have been proven and tested are taken to formal standards bodies for refinement, consolidation of competing efforts, clarification of conformance requirements, and accreditation. It is important to clearly distinguish between a specification, which is an evolving work in progress, and an accredited standard, which is ideally based on actual implementations and experience, and provides very clear and unambiguous criteria for implementation and conformance.
4. Bodies creating accredited standards for e-learning are:
    a. IEEE Learning Technology Standards Committee, and
    b. ISO/IEC Joint Technology Committee Subcommittee on Standards for Learning, Education, and Technology.

Global Grid Forum (GGF)

URL: http://www.ggf.org/ggf_abt_structure.htm , http://www.ggf.org/ggf_docs_final.htm

1. The Global Grid Forum (GGF) is the community of users, developers, and vendors leading the global standardization effort for grid computing. The GGF community consists of thousands of individuals in industry and research, representing over 400 organizations in more than 50 countries.
2. GGF's Mission. GGF leads the pervasive adoption of grid computing for research and industry by:
    a. defining grid specifications that lead to broadly adopted standards and interoperable software
    b. building an international community for the exchange of ideas, experiences, requirements and best practices
3. Process described by Joel Replogle (GGF Standards Contact). See document GFD.1 for detail
    a. Identify a problem
    b. Identify community support of solution to problem (usually by holding a BOF
    c. form a group to address problem (charter, chair(s) for working group)
    d. draft document(s)
    e. obtain public comments from community
    f. iterate in 4 & 5 with changes until satisfactory to community & Steering Committee (may also include implementation requirements)
    g. publish as official GGF document
4. GridForge Portal (collaborative environment): https://forge.gridforum.org/projects/ggf-editor



5. The GGF is managed by a general chair, a steering group, and working group and research group chairs.
6. The GGF chair

    a. works with a GGF editor, who guides the document process and a GGF Secretariat, which is a support team for the logistics of the GGF operation.
    b. is responsible for ensuring that the GGF as a whole and the research groups and working groups in particular produce coherent, coordinated, architecturally consistent, and timely output as a contribution to the overall evolution of Grid architecture and technologies.
    c. may arrange for topical or regional workshops attended by the GGF and perhaps other experts in the field.
    d. works with the GFSG to manage the creation of new working groups, research groups, or areas and in some cases encouraging the formation of a group rather than waiting for proposals.
    e. works with the GFSG to ensure that working groups and research groups receive adequate assistance from area directors and other GFSG members.
    f. serves as chair of the GFSG, and as such is responsible for guiding the group to consensus and making operational decisions based on this consensus, while taking into account input from other sources, including group chairs, the GFAC, the GGF Secretariat, and individual GGF participants.
    g. works with the GFAC in areas regarding long-term strategy for GGF.
    h. works with the GGF Secretariat to oversee the planning and management of GGF meetings and to ensure that the GGF Web site is kept up to date.
    i. selects one or two vice chairs from the GFSG, who will assist the GGF chair as needed.
7. The day-to-day management of GGF is through the Grid Forum Steering Group (GFSG), the primary steering body within the community.
    a. The GFSG is community-elected and the management structure exists to facilitate the productivity of the standards, community and operations activities of GGF.
    b. GFSG Composition: GGF Chair, one or more GGF Vice-Chairs and a number of Area Directors.
    c. GGF Chair is responsible for the activities of the GFSG and works with the Executive Director of the GGF Corporation, a 501c3 (non-profit) company that provides operational support for the standards and community activities.
    d. The GFSG meets face-to-face at all GGF at-large meetings and holds regular teleconference meetings.
    e. The GFSG is responsible for the GGF document series from the standpoint of architectural and technical quality and coherency, working with the GGF Editor to this end.
    f. Each area director works with the chairs of the groups within his or her area to guide the group formation process for proposed working groups and research groups, coordinate the work done by those groups, and oversee the document process as it relates to these groups.
8. The GGF Corporation is managed by a Board of Directors, whose involvement is voluntary.
9. The Grid Forum Advisory Committee (GFAC) provides long-term strategic input to the GGF chair and the GFSG.
    a. works closely with the GGF chair and GFSG to evaluate long-term strategies and directions for the GGF.
    b. often asked by the GGF chair or GFSG to comment on operational or near-term issues as well.
    c. run by a chair and vice chair selected from within the GFAC membership.
    d. The GGF chair and GGF executive director serve as ex-officio members of the GFAC. The GFAC meets face-to-face at a minimum of one GGF at-large meeting annually but will interact primarily via email and periodic teleconference calls as needed.

10. The GGF structure mirrors the IETF structure. It is composed of a combination of working groups (similar to IETF working groups) and research groups (similar to IRTF research groups).
    a. Working groups (WGs) and research groups (RGs) are the activity centers in the GGF.
    b. For management purposes, GGF working groups and research groups are organized into “areas” under the direction of one or more GGF Steering Group (GFSG) members, who are designated “area directors.
    c. The scope and timing of the work of a group is determined by the group’s charter. This charter document in essence is a contract with the Grid Forum Steering Group (GFSG), the primary steering body within the community.
    d. A WG is typically created to address a particular implementation or operational area related to infrastructure necessary for building “Grids,”
    e. A RG is typically created to address topics where there may not yet be sufficient experience to develop detailed technical specifications or recommendations track documents.
    f. WGs and RGs are expected to have a core of stable, committed membership in order to promote collaboration and teamwork. Participation in both types of group is by individual contributors, rather than by representatives of organizations.
    g. A WG or RG may be established at the initiative of an individual or group of individuals. Anyone interested in creating a GGF WG or RG should first discuss the idea with one or more area directors to determine which area is most appropriate as a home for the proposed group.
    h. A proposed charter must then be submitted to the area director or GGF chair along with a list of proposed founding members.
    i. The area directors and/or GGF chair, in consultation with the GGF Steering Group (GFSG), will review the charter for approval. In some cases a group will be encouraged to meet as a birds of a feather group until critical mass or focus can be achieved. In other cases the GFSG may provide specific feedback suggesting a target topic or set of objectives for a group in order to promote focus.
    j. Unless the GFSG determines that the group is well outside of the parameters of approval the draft charter will be posted to the general mailing list of the relevant GGF area to allow for interested parties to comment.
    k. Once the group has been approved by the GFSG, the group chair will work with the GGF Secretariat to integrate information about the group into the GGF Web site. In order to ensure that potentially interested individuals may participate in the formative stages of the group, the new group will be announced within 30 days via email and on the GGF Web site.
    l. Criteria for Formation
    m. Is the scope of the proposed group sufficiently focused? For working groups, the focus is expected to be much tighter than for research groups; however, it is important to appropriately scope research groups as well. For example, a broad topic such as “security” is more appropriate as an area than as a WG or RG. A more focused topic such as “security requirements for portals” might be an appropriate research group. A topic such as “GSI authentication for portals” is a reasonably focused topic for a working group.
    n. Are the topics that the group plans to address clear and relevant for the Grid research, development, implementation, and/or application user community?
    o. Will the formation of the group foster work that would not be done otherwise? For instance, membership drawn from more than a single institution, more than a single country, and so on is to be encouraged.
    p. Do the group’s activities overlap inappropriately with those of another GGF group or to a group active in another organization such as IETF or W3C? Depending on the nature and extent of the overlap, the proposed group may still be formed, or

the GFSG may recommend that the work be done within the existing GGF (or external) group.

q. Are there sufficient interest and expertise in the group's topic, with at least several people willing to expend the effort that is likely to produce significant results over time? To help in this determination, a proposal to create a group should include a list of potential charter members.
r. Does a base of interested consumers (e.g., application developers, Grid system implementers, end-users) appear to exist for the planned work? Consumer interest can be measured by participation of end-users and implementers within the GGF process, as well as by less direct means.
s. Does the GGF have a reasonable role to play in the determination of the technology? If other organizations are working in similar areas, the proposed group must outline how the members will coordinate with these other efforts.

11. Group Chairs responsible for ensuring that the group makes progress toward the objectives outlined in the group charter and that the group process is fair, open, and marked by consensus.
    a. Participants in GGF groups are volunteers and as such do not report to the group chairs. As a result, the group chair must foster a group culture that is productive (in the sense that visible and deliberate progress is made) yet is informal and consensus driven.
    b. The group chair is responsible for ensuring that agendas are planned for GGF meeting sessions or other meetings (including electronic or teleconference) of the group, and is responsible for running those sessions. The chair ensures that minutes are taken at all group meetings and posted to the group mailing list. The chair also ensures that the group Web site (or, in some cases, a simple Web page) is kept up to date so that new participants can use the Web site to rapidly come up to speed in order to contribute to the work of the group.
    c. The group chair monitors and guides the mailing list discussions to encourage open exchange while discouraging long discussions on issues that are not of relevance to the work of the group.
    d. The chair also periodically summarizes the points of consensus and progress made in both meeting and mailing list discussions and sends regular updates to the list regarding overall GGF developments, meeting planning process, agendas, or new documents or Web sites of potential interest to the group.
    e. The chair coordinates with the area director(s) regularly regarding the progress of the group in attaining its objectives.
    f. The chair works with the area director(s) to plan documentation, including selection and recruitment of authors and document topics and outlines.
12. Documents
    a. One of the primary purposes of the Global Grid Forum
    b. provide information and specifications to developers and others involved with Grid computing.
    c. authored by members of GGF Working Groups or Research Groups (WGs and RGs), but may be submitted by any person.
    d. multi-stage review for GGF documents, including editorial review and public comment. For Recommendation track documents, "proposed" recommendations are the basis for reference implementations and may, with sufficient experience, become full GGF recommendations.
    e. Documents intended to be submitted for publication as part of the GGF Document Series, are called Grid Working Drafts (GWD's). Once approved by the GGF Editor and Steering Group, a final document (GFD) becomes part of the GGF Document Series.
    f. Four document types are defined:
        i. Informational: To inform the community about a useful idea or set of ideas.

ii. Experimental: To inform the community about a useful experiment, testbed, or implementation of an idea of set of ideas.
iii. Community Practice: To inform the community of common practice or process, with the objective to influence the community.
iv. Recommendations: To document a specification, analogous to an Internet Standards track document. GGF Recommendations are initially designated as "proposed," and following further experience and review may become full GGF recommendations.

g. All must include the following components:
i. Author or Editor name(s), institution(s), and contact information
ii. Date (original and, where applicable, latest revision date)
iii. Title, table of contents, clearly numbered sections
iv. Security Considerations section (see RFC 3552)
v. GGF Copyright statement with correct/current year (below)
vi. GGF Intellectual Property statement.

h. The GGF document format to be used for both GWD's and GFD's is available in MSWord, RTF, and PDF formats. (note that font type is not part of the requirement, however authors should avoid font sizes smaller than 10pt).

13. References
a. GGF structure is documented in GFD-C.2, "Structure: Areas, Working Groups, Research Groups."
b. GGF Governance is documented in GFD-C.3, "Management and Governance."
c. Nominations Committee is documented in RFC2727.

Institute of Electrical and Electronics Engineers, Inc (IEEE)

URL: http://standards.ieee.org/announcements/bkgnd_stdsprocess.html

1. Structure
    a. Board of Directors (33, 5 activity Directors, 10 regions and 10 divisions) with two staff members and 21 standing committees of the Board.
    b. Executive Committee (12) and two staff
    c. Technical Advisory Board
    d. 44 Societies often with regional chapters
2. Process:
    a. Idea for standard
    b. Develop Project Authorisation Request (PAR) in Study Group
    c. PAR evaluated by by Standards Board on recommendation of New Standards Committee
    d. Organise Working group
    e. Develop draft standard
    f. Ballot draft standard
    g. Approve draft standard
    h. Publish approved standard
3. Process Detail
    a. Begins with a project idea known as a project authorization request (PAR), usually sponsored by the IEEE Society taking responsibility for the scope and content of a proposed standard. If an idea interests more than one society, it can be sponsored by a Standards Coordinating Committee set up by the IEEE Standards Board.
    b. Before taking on a new standard, the Standards Board determines if it is needed and if enough volunteers are likely to step forward to develop it.
    c. The document to be produced can be either a standard containing mandatory requirements, a recommended practice outlining preferred procedures, or a guide offering suggestions for working with a technology. Projects involve either new standards, revisions of existing standards or amendments to existing standards.
    d. Standards have a five-year life, or in the case of trial-use standards, two years, after which they can be considered for full status or revised.
    e. The Standards Board approves or disapproves a PAR based on a review by its New Standards Committee. This occurs at quarterly IEEE Standards Board meetings or by a continuous approval process that allows for approval of standard projects outside of scheduled Standards Board meetings.
    f. With PAR approval, the study group becomes a working group. Working groups are open to the public and should have well-publicized procedures regarding membership, voting, officers, recordkeeping and other areas. In the spirit of openness, agendas for working group meetings are distributed beforehand and the results of the group's deliberations are publicly available, usually through meeting minutes.
    g. Balloting begins when the sponsor decides the draft of the full standard is stable. The sponsor forms a balloting group containing persons interested in the standard. While anyone can contribute comments, the only votes that count toward approval are those of the eligible members of the balloting group. Balloting is a balanced process that prevents any one group or company from dominating. Balloters usually fall into one of three classes: producers, users or general interest. The latter is a broad category that can include government officials, consultants and end users. No interest category can comprise over one-half of the balloting group.
    h. The goal in balloting is to gain consensus. A standard will pass if at least 75 percent of all ballots from a balloting group are returned and if 75 percent of

these bear a "yes" vote. If ballot returns of 30 percent are abstentions, the ballot fails. Ballots usually last 30 to 60 days. Balloters can approve, disapprove, or abstain. They can also approve or disapprove with comment. If the comments made by those who disapprove are accepted into the standard, their votes then move into the approved category with the agreement of the voter. The ballot resolution group responds to all comments, whether submitted by those within or outside of the balloting group. Editorial comments are often straightforward; changes to the standard based on technical comments are recirculated.

i. Anyone can appeal actions and decisions made during the process at any time. Before IEEE-SA Standards Board approval, complaints are handled by the Sponsor. After approval, they are handled by the IEEE-SA Standards Board if the issue is procedural or by the Sponsor if the issue is technical.
j. The IEEE Standards Board approves or disapproves standards based on the recommendation of its Standards Review Committee. This committee makes sure working groups follow all procedures and guiding principles in drafting and balloting a standard. As with PARs, completed draft standards come before the Board four times a year or during the continuous approval process. After approval, the standard is edited by an IEEE-SA editor, given a final review by the members of the working group, and published.
k. Once a standard is in use, there may be a need to clarify some portions of it. This is done through an interpretations process based on questions officially submitted to the IEEE-SA. Interpretations are prepared by the sponsor.
l. Completed interpretations are published on the IEEE-SA website, within a standard, or in a separate interpretations volume.
m. A standard is valid for five years from its publication date. During this time, a working group can develop and ballot revisions or extensions to the standard, which are appended as amendments.
n. After five years, a standard is reaffirmed, revised or withdrawn. Reaffirmation occurs when there is no need to update the standard or its amendments. During the process, the entire document is open for comment.
o. Balloters vote for acceptance of the entire document as is. If the ballot fails, a revision is usually recommended. A reaffirmation ballot calls for the formation of a balanced ballot body and consensus approval (75 percent return and 75 percent approval). After approval by the Standards Board, the standard remains in force for another five years.
p. Revisions require PAR approval and follow the normal balloting process (75 percent return and 75 percent approval) and approval by the Standards Board. Out-of-date standards can be withdrawn by going through a balloting process that requires a 50 percent return and a 75 percent approval rate.

4. Training documentation exists for the following components of the process (http://standards.ieee.org/resources/development/index.html)
    a. Initiating a project
    b. Working Group development Writing a draft Balloting the draft
    c. Final approval
    d. Publishing the standard
    e. Reaffirming the standard
    f. Standards forms/templates
5. Standards development principles-
    a. Due process, which means having highly visible procedures for standards creation and following them. Procedures are set by the IEEE-SA Standards Board, the IEEE Societies that sponsor standards, and the working groups that actually formulate standards.
    b. Openness, which ensures all interested parties can participate actively in the IEEE standards development process.

c. Consensus, which holds that a clearly defined percentage of those in a balloting group vote to approve a draft of a standard.
d. Balance, which ensures that balloting groups include all interested parties and avoid an overwhelming influence by any one party.
e. Right of appeal, which allows anyone to appeal a standards development decision at any point, before or after a standard has been approved

Internet Engineering Task Force (IETF)

URL: http://www.ietf.org/rfc/rfc2026.txt

1. The Goals of the Process seem eminently stealable!
    a. technical excellence;
    b. prior implementation and testing;
    c. clear, concise, and easily understood documentation;
    d. openness and fairness; and
    e. timeliness.
2. The need to balance rigour and consensus against deployment speed
3. Open/public/inclusive charter (eg Section 8: Each of the organizations involved in the development and approval of Internet Standards shall publicly announce, and shall maintain a publicly accessible record of, every activity in which it engages, to the extent that the activity represents the prosecution of any part of the Internet Standards Process.)
4. Technical Specifications vs. Applicability Statements (the latter with elements 'required/recommended/elective/Limited/not recommended')
5. Standards track 'proposed/draft/standard/retired' with definitions and off-track 'experimental/informational/historic'
6. The BCP concept is good and may have some parallel in 'case studies' (section 5)
7. Didn't see anything on the process to positions on the IAG and IESGs?
8. Process
    a. Specification from WG to Area Director to IESG for review/approval (possibly using independent review) to "last call" to IETF mailing list (2 weeks) to final determination by IESG to RFC Editor (& removed from internet draft directory when published)
    b. Draft standard (min 4 months) - IESG review 24 months. Retiring a standard can originate from AD, WG or individual.
    c. Dispute resolution process: 1st to WG Chair/s, 2nd (if needed) to AD, 3rd to IESG, 4th to IAG.
9. Linking to external standards is desirable (Section 7).
10. Fostering participation (eg Section 8 "The announcement shall contain or provide pointers to) all of the information that is necessary to support the participation of any interested individual. In the case of a meeting, for example, the announcement shall include an agenda that specifies the standards- related issues that will be discussed.)
11. Minimum documentation (Section 8): The formal record of an organization's standards-related activity shall include at least the following:
    a. the charter of the organization (or a defining document equivalent to a charter);
    b. complete and accurate minutes of meetings;
    c. the archives of Working Group electronic mail mailing lists; and
    d. all written contributions from participants that pertain to the organization's standards-related activity.
12. Archival (Section 8): "each IETF Working Group is expected to maintain their own email list archive and must make a best effort to ensure that all traffic is captured and included in the archives."
13. Variation in process when deemed cost/beneficial by IESG
14. Intellectual Property (rights and conditions) seems well covered (Section 10).
15. A useful set of Definitions of Terms (Section 14)
16. Comments from the newtrk Chair (Scott Bradner) on the review of the IETF processes
    a. IETF working groups take a long (longer anyway) time to finish the 1st pass on a standard (proposed standard) because
        i. companies are too busy deploying the technology to spend the time finishing the documentation

    ii. b/ some company to company conflicts on the "right way" to do someting - sometimes because a company has product or patents in the space
    iii. c/ the IESG tries too hard to make the 1st pass perfect

b. once the 1st pass is done few people have the time to spend to do the work needed to progress the document along the standards track since
    i. by then its well deployed or ignired and there is no business need to progress along the standards track
    ii. it takes too much work to get to the next stage
c. in addition many people feel that the IESG has been less than helpful in getting documents approved because
    i. individual IESG members block things they don't like (has happened but I donlt think its all that common)
    ii. IESG members from other areas bring up issues that the WG discussed and resolved (but not the way the IESG member likes) or the WG did not think about – and they do so very late in teh game - often after there have been significant deployment newtrk was formed to try to come up with a description of the standards track that matched what the IETF actually does".

Open Geospatial Consortium (OGC)

URL: http://www.opengeospatial.org/

1. The OGC exists to enable a fast, effective, inclusive, user-driven process to develop, test, demonstrate, and promote the use of geospatial information and services by using OpenGIS® Specifications.
2. Board of Directors
3. Planning Committee (2 from TC …
4. OGC Review Board
    a. OGC Reference Model (Technical Baseline)
    b. Reviews RFP, RFC, RFT and RFQ documents
5. Technical Committee (Chair by BOD, broad membership)
    a. Subcommittees
    b. Working Groups (vote recommendations to TC)
    c. Revision Working Groups
6. Process:
    a. Identify an Interoperability Problem
    b. Members work together to define requirements for a new interface specification or enhancements to an existing OpenGIS Specification. These requirements drive how the membership will ultimately design an interface or encoding that solves the interoperability problem. There are several formal OGC processes that can be used (first two and hands-on 'sand box' approach)
        i. Generate an RFC (common) or
        ii. Interoperability Program (IP) – both rapid prototyping - ends up in-
        iii. Specification Program (TC/Workgroups: is theoretical and deliberate, and relies on high-level discussion and document writing.)
    c. Membership vote (majority) – TC vote – PC
    d. Revision Working group of TC (min 5 members)
    e. Post adoption
        i. Revision 0 (Adopted OGC IS: non public)
        ii. Revision WG Version 1 (public)
        iii. 30 day public comment or 60 for Application Schema
7. OGC's Interoperability Program runs Interoperability Initiatives in which technology-using organizations – Initiative Sponsors – set requirements and provide funding. Technology providers – Initiative Participants – develop, test and validate new candidate OpenGIS Specifications.
    a. Fast-paced Testbeds produce draft engineering specifications and prototype implementations addressing sponsor requirements.
    b. Pilot Projects help collaborating communities test and apply technology providers' interoperable offerings in real world settings.
    c. Planning Studies assess opportunities to expand and sustain organizations' capacities for interoperability.
    d. Feasibility Studies help communities and industries understand the application of interoperability in emerging technology areas.
    e. Insertion Studies introduce well established and tested OpenGIS technologies into sponsor environments for sustained support of the sponsor's information technology environment.
8. In the OGC Specification Program, the OGC Technical Committee reviews specifications for interfaces and encodings developed either in the Interoperability Program by groups of members or through an internal proposals process. The Technical Committee and Planning Committee then approve these as OpenGIS® Specifications for release to the public.
9. Papers

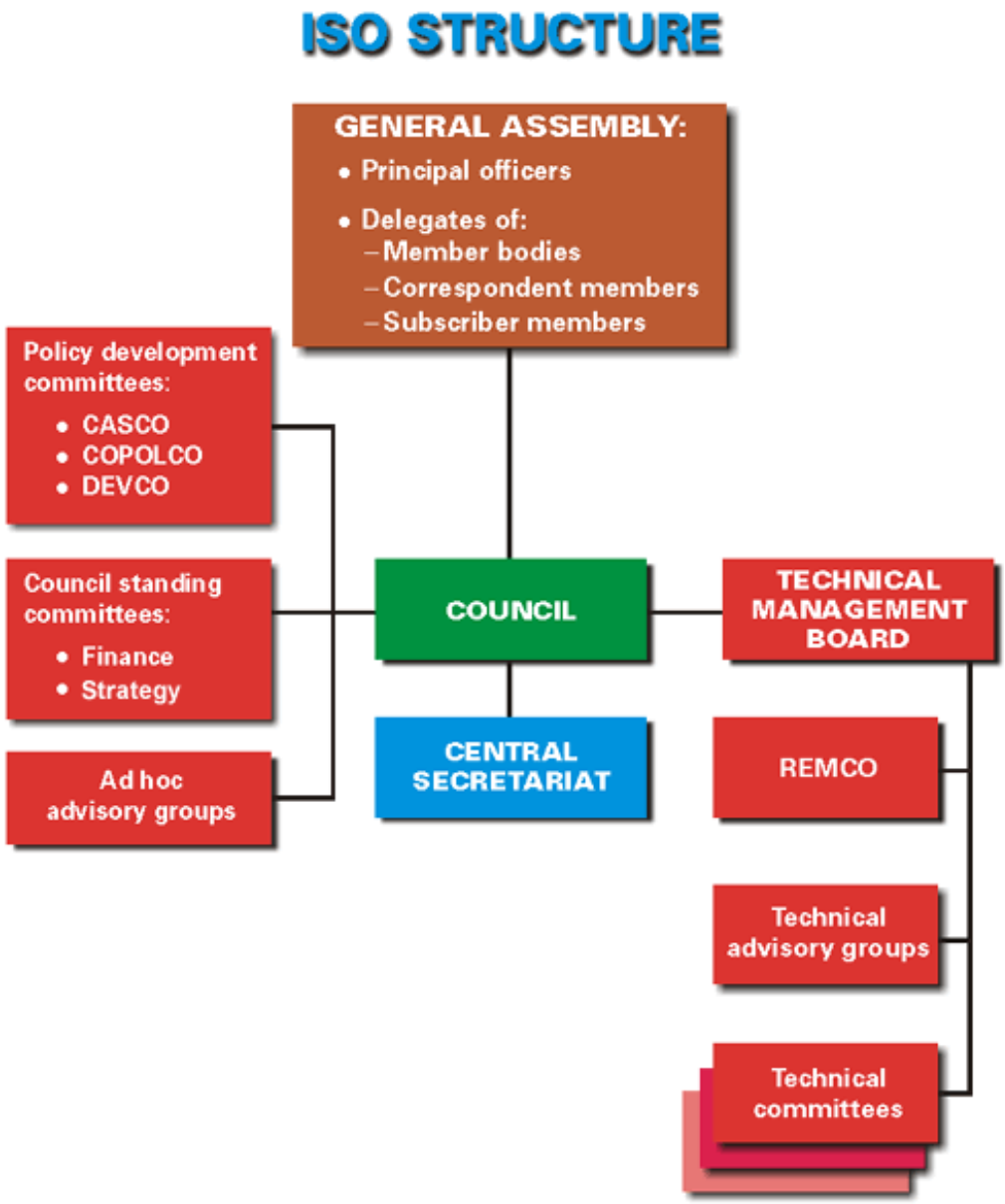
a. Word format
b. Numbered (official)
c. Reference Model
    i. Abstract Specification
    ii. Implementation Specification
d. Discussion Papers (unofficial)
e. Recommendation Papers (official)
f. RFC (could come from RP)
    i. LOI
    ii. Awareness of existing OGC specs
    iii. Candidate Implementation Specification (CIS)
    iv. Cover letter
    v. OGC submission of technology form
    vi. Letters of endorsement
    vii. List of implementation of the CIS
    viii. TC notified
    ix. Submit to WG for review discussion
    x. Presentation to TC
    xi. WG recommendation
    xii. If TC agrees RFC to industry (30 days)
    xiii. Industry response to submission team
    xiv. Modify CIS as required
    xv. TC votes
    xvi. If required an Abstract Specification Change Proposal developed
    xvii. PC accepts TC recommendation
    xviii. Becomes Adopted OGC Implementation Specification (Version 0.0)
    xix. Revision WG formed to amend to version 1.0
    xx. Submitted to TC chair
    xxi. TC vote
g. Change Request Proposal (any member & any time)
h. Distribution by members only portal
i. Schemas
    i. Profile (applicable to multiple Application Schemas)
    ii. Application Schema (subset of Implementation specification)
j. Propriety Rights, Copyrights & Disclosure (within membership)

10. OGC Cookbooks are free, online, easy-to-use technical documents for developers, available on this web page. Cookbooks typically include three chapters:
    a. Introduction
    b. Implementations and Applications, and Implementor Experiences:
        i. Examples of OGC Members' Implementations and Applications of OpenGIS® Specifications. See the design of software systems that implement open interfaces, schemas etc. See use-case scenarios, WMS/WFS request examples, illustrations, DTD/XML documents, XSL/XSLT style sheet examples and more.
        ii. Implementor Experiences: How and why organizations are building their enterprise solutions around OpenGIS Specifications, highlighting benefits and challenges.
    c. Recipes: Step by step "how to's" submitted by Web site developers and application developers. See how to implement WMS/WFS in existing software on both the server and client side using popular commercial, open source and freeware products.
11. Demos (http://www.opengeospatial.org/resources/?page=demos)

International Organisation of Standards (ISO)

URL: http://www.iso.org/iso/en/stdsdevelopment/whowhenhow/how.html

1. ISO is a network of the national standards institutes of 153 countries, on the basis of one member per country, with a Central Secretariat in Geneva, Switzerland, that coordinates the system. ISO is a non-governmental organization that occupies a special position between the public and private sectors.
2. Process Summary
    a. Proposal
    b. Working Draft developed and sent to parent committee
    c. Draft distributed to TC/SC for comments and consensus voting to Draft International Standard (DIS)
    d. DIS circulated to ISO member bodies and 75% vote to Final Draft International Standard (FDIS)
    e. FDIS circulated to all ISO member bodies and 75% vote to IS
    f. Publication
3. Strategic decisions are referred to the ISO members, who meet for an annual General Assembly. Proposals are developed by the ISO Council (a BOD drawn from the membership that meets two times a year with rotated membership and chaired by the President - a prominent figure in standardization or in business, elected for two years).
4. A Secretary-General (permanent appointment based at ISO in Geneva) manages operations and reports to the ISO Council. Has a compact staff which provides administrative and technical support to the ISO members, coordinates the decentralized standards' development programme, and publishes the output.
5. Members. Every full member has the right to take part in the development of any standard which it judges to be important to its country's economy with one vote.
6. Market-driven. ISO develops only those standards for which there is a market requirement. The work is carried out by experts from the industrial, technical and business sectors which have asked for the standards, and which subsequently put them to use.
7. Consensus. Standards are developed in response to market demand, and are based on consensus among the interested parties, ensures widespread applicability of the standards. Consensus, like technology, evolves and ISO takes account both of evolving technology and of evolving interests by requiring a review of its standards at least every five years to decide whether they should be maintained, updated or withdrawn. In this way, ISO standards retain their position as the state of the art, as agreed by an international cross-section of experts in the field.
8. Standards are developed by technical committees comprising experts (as national delegations chosen the ISO national member institute) from the industrial, technical and business sectors which have asked for the standards, and which subsequently put them to use. The member institute is expected to take account of the views of the range of parties interested in the standard under development and to present a consolidated, national consensus position to the technical committee.
9. Structure



10. Process Detail.
    a. Stage 1: Proposal. Confirm that a standard is needed. A new work item proposal (NP) is submitted for vote by the members of the relevant TC/SC to determine the inclusion of the work item in the programme of work. The proposal is accepted if a majority of the P-members of the TC/SC votes in favour and at least five P-members declare their commitment to participate actively in the project. A project leader responsible for the work item is appointed.
    b. Stage 2: Preparatory. A working group of experts, the chairman (convener) of which is the project leader, is set up by the TC/SC for the preparation of a working draft. Successive working drafts may be considered until the working group is satisfied that it has developed the best technical solution to the problem being addressed. At this stage, the draft is forwarded to the working group's parent committee for the consensus-building phase.
    c. Stage 3: Committee. When the first committee draft is available, it is registered by the ISO Central Secretariat. It is distributed for comments and, if required, voting, by the P-members of the TC/SC. Successive committee drafts may be considered until consensus is reached on the technical content. Once consensus

has been attained, the text is finalized for submission as a draft International Standard (DIS).

d. Stage 4: Enquiry. The DIS is circulated to all ISO member bodies by the ISO Central Secretariat for voting and comment within a period of five months. It is approved for submission as a final draft International Standard (FDIS) if a two-thirds majority of the P-members of the TC/SC are in favour. If the approval criteria are not met, the text is returned to the originating TC/SC for further study and a revised document will again be circulated for voting and comment as a draft International Standard.
e. Stage 5: Approval. The draft International Standard (FDIS) is circulated to all ISO member bodies by the ISO Central Secretariat for a final Yes/No vote within a period of two months. If technical comments are received during this period, they are registered for consideration during a future revision of the International Standard. The text is approved as an International Standard if a two-thirds majority of the P-members of the TC/SC are in favour. If criteria are not met, the standard is referred back to the originating TC/SC for reconsideration in the light of the technical reasons submitted in support of the negative votes received.
f. Stage 6: Publication. Once a final draft International Standard has been approved, only minor editorial changes are introduced into the final text. The final text is sent to the ISO Central Secretariat which publishes the International Standard.
g. All International Standards are reviewed at least once every five years by the responsible TCs/SCs. A majority of the P-members of the TC/SC decides whether an International Standard should be confirmed, revised or withdrawn

11. Standards development principles:
    a. Consensus. The views of all interests are taken into account: manufacturers, vendors and users, consumer groups, testing laboratories, governments, engineering professions and research organizations.
    b. Industry-wide. Global solutions to satisfy industries and customers worldwide.
    c. Voluntary. International standardization is market-driven and therefore based on voluntary involvement of all interests in the market-place.
12. Some ISO technical bodies have already gone over entirely to electronic working, which speeds up the development of standards and reduces travel costs.
13. Consensus and Speed. ISO standards are developed according to rules of transparency and fairness. It can take time to develop consensus among parties and for the resulting agreement to go through the public review process in the ISO member countries. For standards in fast-changing technology sectors, it may be more important to agree on a technical specification and publish it quickly, before going through the various checks and balances needed to win the status of a full International Standard. ISO has developed a new range of "deliverables", allowing publication before full consensus:
    a. Publicly Available Specification (PAS),
        i. A TC/SC may decide that a particular work item should result in publication of a PAS developed through the preparatory stage within a working group (representing consensus).
        ii. Submitted for approval either by correspondence or at a meeting for publication as a PAS.
        iii. Acceptance of the document requires approval by a simple majority of the P-members of the TC/SC under which the WG operates.
        iv. PAS may be processed in one language only.
        v. A TC/SC may decide to revise an ISO standard to allow conflicting PAS.
        vi. PAS is reviewed at least every three years to decide either to confirm the PAS for a further three years, revise the PAS, process the PAS further to become either a technical specification or an International Standard, or to withdraw the PAS.

        vii. After six years, a PAS shall either be converted into an International Standard or be withdrawn.
        viii. ISO member bodies may adopt PAS and publish them as documents having the same authority as an ISO/PAS.
    b. Technical Specification (TS),
    c. Technical Report (TR),
    d. International Workshop Agreement (IWA).
1. "conformity assessment" checks that products, materials, services, systems or people measure up to the specifications of a relevant standard. ISO in partnership with IEC (International Electrotechnical Commission), develops ISO/IEC guides and standards to be used by organizations which carry out conformity assessment activities. The voluntary criteria contained in these guides and standards represent an international consensus on what constitutes best practice. Their use contributes to the consistency and coherence of conformity assessment worldwide and so facilitates trade across borders.
2. Portal (login and public) with documents in various formats

Organization for the Advancement of Structured Information Standards (OASIS)

URL: http://www.oasis-open.org/home/index.php, http://www.oasis-open.org/committees/process.php

1. OASIS is a not-for-profit, international consortium that drives the development, convergence, and adoption of e-business standards.
2. OASIS has transparent governance and operating procedures. Members themselves set the OASIS technical agenda, using a lightweight process expressly designed to promote industry consensus and unite disparate efforts.
3. Completed work is ratified by open ballot.
4. Officers of both the OASIS Board of Directors and Technical Advisory Board are chosen by democratic election to serve two-year terms. Consortium leadership is based on individual merit
5. The primary objectives and purposes of this corporation shall be:
    a. OASIS is dedicated to accelerating the further adoption, application, and implementation of structured information standards.
    b. OASIS provides its members with an open forum to discuss market needs and directions, and to recommend guidelines for product interoperability.
    c. OASIS complements that of standards bodies, focusing on making structured information standards easy to adopt and standards-based products practical to use, in real-world, open system applications.
    d. OASIS may establish guidelines for an implementation framework within which diverse products will be able to interoperate, without compromising the platform and product independence of documents or the potential for diversity, growth, and extensibility inherent within structured information standards.
6. Board of Directors
    a. 1-11 members including president
    b. 2 year term with annual elections by membership (staggered membership)
    c. Officers: president, secretary and treasurer elected by BOD
    d. Executive committee (2 or more of BOD)
    e. Produce annual report
7. Members
    a. Agree with charter
    b. Pay fee
    c. Join groups
    d. Vote
8. Profile raised through use of Cover Pages (http://xml.coverpages.org/) whose objectives are provide a searchable reference collection that is
    a. comprehensive,
    b. cumulative,
    c. representative, and
    d. introspective,
    e. supporting the information needs of readers at their point of need.
9. Discussion Lists
    a. 3+ may begin a publicly subscribable discussion list for the purpose of forming a TC by submitting to the OASIS TC Administrator the following items:
        i. The name of the discussion list, which shall not be the same as the name of the list in which the TC itself shall operate if formed.
        ii. A preliminary statement of scope for the TC whose formation the list is intended to discuss.
        iii. The names, electronic mail addresses, and membership affiliations of the three or more Eligible Persons proposing to create the discussion list.

iv. The name of the discussion list leader.

10. Technical Committees
    a. Requires written in English and provided in electronic form as plain text (with other information)
        i. The name of the TC, such name not to have been previously used
        ii. A statement of purpose, including a definition of the problem to be solved.
        iii. The scope of the work of the TC, which must be germane to the mission of OASIS, and which includes a definition of what is and what is not the work of the TC, and how it can be determined when the work of the TC has been completed.
        iv. A list of deliverables, with projected completion dates.
        v. Specification of the IPR Mode under which the TC will operate.
        vi. The anticipated audience or users of the work.
        vii. The language in which the TC shall conduct business.
    b. Membership is individual not organizational
    c. Chair I elected at 1st meeting by simple majority vote (as all TC voting)
    d. Visibility
        i. Official copies of all resources of the TC and its associated subcommittees, including web pages, documents, email lists and any other records of discussions, must be located only on facilities designated by OASIS.
        ii. All web pages, documents, ballot results and email archives of all TCs and SCs shall be publicly visible.
        iii. Mailing lists
            1. TC shall be provided upon formation with a general discussion email list and a means to collect public comments.
            2. All official communications and discussions of the TC must take place on the email list.
11. Joint Committees
    a. to coordinate the technical activities of multiple TCs, is advisory only to those TCs, and has no deliverables.
    b. A TC shall have no obligation to abide by any decision arrived at in a JC to which it contributes membership.
12. Documents
    a. All documents and other files produced by the TC, including specifications at any level of approval, must use the OASIS file naming scheme, and must include the OASIS copyright notice.
    b. must use the OASIS document templates.
    c. The specification must include a list of people who participated in the development of the specification.
    d. Editable formats of all versions of TC documents must be submitted to the TC's document repository.
    e. TC Working Drafts may be in any format (i.e. produced by any application).
    f. All TC-approved versions of documents (i.e. Committee Drafts, Public Review Drafts, and Committee Specifications) must be submitted to the TC's document repository in the editable source, HTML, and PDF formats.
    g. Any links published by the TC shall be to the HTML and/or PDF formats stored in the TC's document repository.
    h. All schema and XML instances, whether by inclusion or by reference, including fragments of such, must be well formed. All expressions must be valid. All machine-processable schemas, XML instances etc. that are part of the specification must be available separately in their own plain text file with their own file name.
    i. A specification may be composed of any number of files of different types, though any such multi-part specification must have a single specification name and version number.

j. Irrespective of the number and status of the constituent parts, the specification as a whole must be approved by a single TC ballot. Any change made to a specification requires a new version or revision number, except for changes made to the title page and in the running footer noting the approval status and date, which must be made after the approval of the specification.

13. Approvals Process
    a. The TC may at any stage during development of a specification approve the specification as a Committee Draft and require a Full Majority Vote of the TC.
    b. The TC may approve a specification, revise it, and re-approve it any number of times as a Committee Draft
    c. Before the TC can approve its Committee Draft as a Committee Specification the TC must conduct a public review of the work. The decision by the TC to submit the specification for public review requires a Full Majority Vote. The Committee Draft approved to go to review shall be called a Public Review Draft. The public review must be announced by the TC Administrator on the OASIS members email list and optionally on other public mail lists; the TC Administrator shall at the same time issue a Call For IPR Disclosure.
    d. After the public review of a Public Review Draft the TC may approve the specification as a Committee Specification (requires a Special Majority Vote). The TC Chair shall notify the TC Administrator that the TC is ready to vote on the approval of the specification, and provide to the TC Administrator the location of the editable versions of the specification files. The TC Administrator shall set up and conduct the ballot to approve the Committee Specification
    e. Approval of an OASIS Standard. With the approval of a Committee Specification or at a later date, a TC may resolve by Special Majority Vote to submit the Committee Specification to the membership of OASIS for consideration as an OASIS Standard. The Chair shall submit the following items to the TC Administrator:
        i. Links to the approved Committee Specification in the TC's document repository, and any appropriate supplemental documentation for the specification, both of which must be written using the OASIS templates. The specification may not have been changed between its approval as a Committee Specification and its submission to OASIS for consideration as an OASIS Standard, except for the changes on the title page and running footer noting the approval status and date.
        ii. The editable version of all files that are part of the Committee Specification;
        iii. Certification by the TC that all schema and XML instances included in the specification, whether by inclusion or reference, including fragments of such, are well formed, and that all expressions are valid;
        iv. A clear English-language summary of the specification;
        v. A statement regarding the relationship of this specification to similar work of other OASIS TCs or other standards developing organizations;
        vi. Certification by at least three OASIS member organizations that they are successfully using the specification;
        vii. The beginning and ending dates of the public review(s), a pointer to the announcement of the public review(s), and a pointer to an account of each of the comments/issues raised during the public review period(s), along with its resolution;
        viii. An account of and results of the voting to approve the specification as a Committee Specification, including the date of the ballot and a pointer to the ballot;
        ix. An account of or pointer to votes and comments received in any earlier attempts to standardize substantially the same specification, together with the originating TC's response to each comment;
        x. A pointer to the publicly visible comments archive for the originating TC;

xi. A pointer to any minority reports submitted by one or more Members who did not vote in favor of approving the Committee Specification, which report may include statements regarding why the member voted against the specification or that the member believes that Substantive Changes
xii. were made which have not gone through public review; or certification by the Chair that no minority reports exist.

f. The "OASIS TC Administrator shall act as the Technical Committee Liaison to the Board to provide a notice when a proposal has been received for the creation of a new TC and when a TC submits a Committee Specification to OASIS for consideration as an OASIS Standard.
g. The TC Administrator shall also send a copy of proposals for the creation of new TCs to the Technical Advisory Board (TAB) for their comment.
h. Upon majority vote of the members of the Board, the creation of a new TC may be prevented, or a proposed OASIS Standard may be withheld from voting by OASIS membership; the proposal or the submission shall be returned to the proposers or the sponsoring TC for additional consideration, with an explanation of the reasons for such action.

The Java Community Process (JCP)

URLS: http://www.jcp.org/en/home/index, http://www.jcp.org/en/procedures/jcp2 , http://www.jcp.org/en/introduction/glossary

1. Since its introduction in 1998 as the open, participative process to develop and revise the Java™ technology specifications, reference implementations, and test suites, the Java Community Process (JCP) program has fostered the evolution of the Java platform in cooperation with the international Java developer community.
2. The Spec Lead's role is to drive the proposed specification through the process. Communication between the Spec Lead and the PMO (Process Management Office – in Sun) is essential to achieve the goal of releasing a final spec within the schedule outlined in the Proposal. This schedule should be updated by the Spec Lead at regular intervals to show the correct information on the JSR (Java Specification Request) public page.
3. Writing a JSR
    a. The Proposal should describe clearly what problem is being solved, what the constraints are on the solution, what approach will be taken, what existing technologies may be used as a starting point, etc. The Spec Lead should consider marketing and business issues as well -- who are the customers for the solution, how the solution will be delivered, and what companies should be involved in creation of the specification. The Spec Lead should find endorsers/supporters for the proposal before submitting it, so as to demonstrate community support/interest in the specification.
    b. Solicit support for your Proposal from the Members of the voting Executive Committee (EC) at an early stage. EC Members will look at various aspects of the JSR Proposal:
        i. Is the schedule credible?
        ii. Does the submitter have the appropriate expertise?
        iii. Does the Proposal address appropriate needs in specific markets?
        iv. Is the featureset appropriate?
        v. Is there enough detailed information?
    c. The JCP 2.6 Proposal Form requires the outline of the proposed business terms for the final Specification. This gives potential Expert Group members the opportunity to decide whether or not they want to become members of your Expert Group and accept these terms.
    d. License templates are available.
    e. The Spec Lead should consider how the technology will be tested, how the test suite will be developed, and what testing infrastructure might be needed. Plan the budget for the development of the Reference Implementation (RI) and Technology Compatibility Kit (TCK).
    f. Spec Leads must also consider how the work of their JSR will be made available to the community and the public. The Executive Committees will review the Spec Lead's plans for how their Expert Group will inform the outside world of the progress and decisions that have been made, and could choose to reject a JSR if the operating plan does not take the community and the public into account. Spec Leads are encouraged to answer the following questions in their transparency plan:
        i. How often will you provide a draft specification to the community and to the public?
        ii. How will the community be made aware of the open issues that the Expert Group is working on, and the decisions it has made?
    g. Some of the tools that Spec Leads are encouraged to use:
        i. JSR community page - This is a page Spec Leads can edit to provide the community with updates of the draft spec and information about the current

topics and issues of the Expert Group (EG). Spec Leads are required to provide regular updates to this page, especially between the JSR Ballot and EDR (Early Draft Review).

ii. observer alias - Each JSR is provided with an alias that the Spec Lead can administer to inform interested members about the progress and issues within the JSR. Spec Leads are encouraged to use this alias as a means of reaching out to the members of the community who are most interested in the progress of their JSR.

iii. java.net - This is a software development site aimed at easing the burden of collaboration and group development. This site is most valuable for maintaining a tree of source code and opening the development of the code to multiple participants.

4. Submitting a JSR
    a. Use the JSR Proposal form to submit a JSR. The JSR is posted to the JCP website and announced via the jcp-interest alias when the JSR Approval Ballot begins. The JSR Approval Ballot runs for a 2 week voting period.
    b. A Ballot requires a minimum of 5 yes votes and a majority of the votes cast to be approved. The Spec Lead must be responsive to comments sent to the JSR comments alias from the voting EC. The PMO establishes the comments alias with the posting of a JSR. The Spec Lead(s) and the PMO are on the comments alias. You may provide the PMO at any time with an addition to the comments alias on either a temporary or permanent basis.
    c. If your JSR Proposal is not approved by the EC, you have 14 calendar days to revise the Proposal for a reconsideration ballot. If you plan on submitted a revised Proposal, please notify the PMO (pmo@jcp.org) as soon as possible.
    d. You may update the JSR detail page throughout the process in all stages. Please note that you can update schedules, TBAs, dependencies on or connections to other JSRs, but not the approved scope of the JSR.
    e. Spec Leads are encouraged to use third party tools for providing frequent updates of the JSR to the community and the public (regular updates before the review periods are very valuable to those outside of the EG who are tracking the JSR). Java.net, SourceForge and other services are available for this.
5. Expert Group Formation and Expansion
    a. Nominations for the Expert Group are accepted from the first day that the JSR is available for review from the JSR page itself (with the JSR # already inserted) or from http://jcp.org/en/jsr/egnom. They will be accepted until you notify the PMO (pmo@jcp.org) that the EG will no longer accept new nomination. The PMO then closes the EG and the link "I would like to join this Expert Group" will be removed from the JSR detail page. The PMO forwards nominations received via the JSR web page to the Spec Lead with a spreadsheet containing all contact information and the JSPA status of each nominee. You may submit this spreadsheet to the PMO using the admin@jcp.org alias at any time with additional information for nominations that you receive directly and indicating which nominees you would like to accept from the list of all nominations. Remember that all Experts on your Group must be JCP Members or have signed one IEPA for your JSR first. You are encouraged to actively recruit Members to join. Recruit your EG as soon as possible. Before inviting multiple experts from one company or organization you should consider the diversity and industry representation of your EG. Please note, you may have more than one Expert from any given company or organization on your EG. As the Spec Lead you can also edit contact information for your EG there,
    b. As the Spec Lead you have the following responsibilities with respect to formation of the EG:
        i. Form an Expert Group large enough and diverse enough to ensure wide adoption of the resulting Specification.

ii. Notify each person who volunteered to serve on the EG of the status of their nomination.
iii. Document the reasons for accepting or rejecting each nomination. You will be expected to provide these reasons if there are questions from the nominee or the ECs about the composition of the EG.
iv. Keep in mind that most Expert Group members are only available part-time. Depending on the JSR decide on the ideal size of the Expert Group. The Expert Group should be large enough to ensure reasonable industry representation and diversity of opinion. The EG should not have less than 4 Members excluding the Spec Lead.
v. You must inform the newly formed EG at the earliest opportunity how you plan to manage the group (eg conference calls, e-mail list, regular face-to-face meetings, etc.). The best opportunity is a kickoff meeting where EG members still have the choice to withdraw from the EG without having a lot of time and work invested if they cannot agree to your methods or your business terms. Even though the planned business terms are outlined in the Proposal, they usually cause lively discussions in kickoff meetings. It is important for you as the Spec Lead to have the support and active involvement of your EG.
vi. Maintain communication venues for the Expert Group. The PMO provides a comments alias for the initial JSR, a private web site for the Expert Group (with file upload capability), and a private Expert Group e-mail alias archived on that same site. Also listed on this private page is the entire Expert Group and any aliases that you wanted added to the EG's private alias. As the Spec Lead you can edit the contact information for your EG at any time on this site. Whatever additional communication venues you choose, keep in mind that they must be accessible to all experts in the EG. The archives of these communications must also be accessible to all experts in the EG.
vii. Each JSR has a comments alias created for it, to which the Spec Lead is subscribed. This alias, jsr-xxx-comments@jcp.org, is intended for comments by Community Members and the general public on the JSR. The Spec Lead should collect and share those comments with the EG. Each individual on the Expert Group is subscribed to a private Expert Group mailing list, jsr-xxx-eg, to which only they can post by use of their unique e-mail address. Communications on this alias are stored on the Expert Group private page in an archive accessible only by the individuals on the EG.
viii. The methods that you use to stay in touch with your EG may differ depending on the JSR, the locations of the experts, the size of the EG and how involved the individual team members are. For some Groups e-mail aliases, online groups or web sites will work best. Others might consider face to face meetings, conference calls, video conferences or any combination of these.
ix. You need to be responsive to your Experts' concerns and input. You must make it clear to the EG that each Expert has the right to call for a conference call to resolve issues with a further ability to inform the PMO in case of failure.
x. The involvement of the Expert Group can determine how well a spec is written and its success. You should consider involving the Expert Group team in each stage of the Specification's development. As the Spec Lead you will write successive drafts of the spec and present these for comments and review to the Expert Group. You should work to address your Expert Group's questions and concerns about the drafts you present. The more diverse an Expert Group, the more likely the Spec Lead will get a broader perspective followed by acceptance and buy-in. Remember that the goal of

the JSR is to accommodate real business needs, the needs of the community and to have it widely adopted.

6. Community Review (CR)
    a. Once the EG agrees that you are ready for Community feedback on the draft of your spec please submit it to the PMO (spec-submit@jcp.org) via e-mail with the JSR number and "Community Review" or "CR" in the subject line. When submitting the draft please provide the following:
        i. The Spec, in pdf or zip format (please note that Javadoc files must be zipped).
        ii. The alias for comments. You need to share all comments received during the review with your EG. It is also very important that you acknowledge these comments.
        iii. The length of the Review (30, 45, 60 or 90 calendar days). During the review until the the draft goes on the Community Review Ballot you can increase the length to the next increments.
        iv. A draft of the anticipated Business Terms. These terms are made available to the voting EC as part of the draft approval ballot. Please provide the draft of the business terms to the PMO. At the minimum this draft needs to include the licensing model and the anticipated licensing fees. Your Marketing Department can help you with this part of the requirements. Please look in the "Writing a JSR" section above for licensing templates. You can use one of these templates or any other licensing model provided that the compatibility requirements in the appropriate JCP document are addressed. The lastest version is JCP 2.6 found at: http://jcp.org/en/procedures/jcp2
        v. The answer to the following questions.
        A. Does the specification include software codes in the following format:
        Binary : Yes _____ No _____
        Source (compilable) : Yes _____ No _____
        Javadocs : Yes _____ No _____
        B. Do the codes or the spec call on, contain, use or demonstrate encryption technology?
        Yes _____ No _____
        If yes, please describe in detail
    b. At this point the PMO recommends you begin with the scheduling and planning of your Reference Implementation RI and TCK. A stable RI and well planned TCK require careful scheduling.
    c. Please note that you cannot enter any Review period until all of your deliverables are submitted.
    d. During Community Review you may receive good suggestions that you wish to incorporate into the Spec. You and the EG may revise the Spec. In the case of major revisions to the draft during Community Review, you should send the revised draft, along with a synopsis of the changes, to the PMO (pmo@jcp.org) at any time up until the last 7 days of the review period. (The draft is frozen during the last 7 days of Community Review in order for the EC to complete their Draft Specification Approval Ballot). The PMO will notify Members of any updated drafts and change synopses received via the jcp-interest alias, and make them available for download.
    e. If your draft is not approved by the EC, the EG has 30 calendar days to revise the draft for a reconsideration ballot. If you plan on submitting a revised draft, please notify the PMO (pmo@jcp.org) as soon as possible. Working with your EG and lobbying the voting EC members reduces the risk of no votes.
7. Early Draft Review (EDR)
    a. Once the EG agrees that you are ready for feedback from the public on the draft of your spec please submit it to the PMO (spec-submit@jcp.org) via e-mail with

the JSR number and "Early Draft Review" or "EDR" in the subject line. Please note that this review is open to the public. This review occurs early in the process and does not have a ballot at the end of it. This is designed to encourage Expert Groups to feel comfortable going into this review with open issues and questions that they would like the public to help them resolve.

b. The PMO will host your draft and provide the export classification and spec license for you.
c. When submitting the draft please provide the following:
    i. The Spec, in pdf or zip format (be aware that Javadoc files must be zipped) The PMO will provide a standard evaluation license unless you choose to provide your own.
    ii. The alias for comments. You need to share all comments received during the review with your EG. It is also very important that you acknowledge these comments.
    iii. The length of the Review (30, 45, 60 or 90 calendar days). During the review you can increase the length to the next increments.
    iv. The answer to the following questions.
    v. Does the specification include software codes in the following format:
    Binary : Yes _____ No _____
    Source (compilable) : Yes _____ No _____
    Javadocs : Yes _____ No _____
    B. Do the codes or the spec call on, contain, use or demonstrate encryption technology?
    Yes _____ No _____
    If yes, please describe in detail
    vi. A draft of the anticipated Business Terms. These terms are made available to the EC for comment. Please provide the draft of the business terms to the PMO. At the minimum this draft needs to include the licensing model and the anticipated licensing fees. Your Marketing Department can help you with this part of the requirements. Please look in the 'Writing a JSR' section above for licensing templates. You can use one of these templates or any other licensing model provided that the compatibility requirements in the appropriate JCP document are addressed. The lastest version is JCP 2.6 found at: http://jcp.org/en/procedures/jcp2
d. You are encouraged to be proactive about including Spec Leads and Expert Group members from other JSRs in your review period. Communication between JSRs is invaluable in developing the most successful technologies.
e. This is the first stage in the JSR process where companies are allowed to specifically begin talking in press releases and other public venues about the JSR and their company's plans to produce products that implement it. Until the Early Draft Review Stage is reached, JSR access is only open to Expert Group members. Please consult the JCP PR and Communication Guidelines for more information.
f. At this point the PMO recommends you begin with the scheduling and planning of your RI and TCK. A stable RI and well planned TCK require careful scheduling. Starting early will make the preparation the required TCK documentation for FAB less time consuming. The TCK Coverage Document requires little effort if it is started in the EDR stage. Please see the requirements in the FAB section below and in the 'Developing TCKs' section below.
g. You cannot enter any Review period until all of your deliverables are submitted.
h. During each review period you may receive good suggestions that you wish to incorporate into the Spec. You and the EG may revise the Spec. In the case of major revisions to the draft during the review, you should send the revised draft, along with a synopsis of the changes, to the PMO (pmo@jcp.org) at any time The

PMO will notify Members of any updated drafts and change synopses received via the jcp-interest alias, and make them available to them for download.

8. Public Review (PR)
    a. This is the first stage in the JSR process where press releases are allowed. Until the Public Review Stage is reached the JSR access is only open to JCP members.
    b. Once you and your EG are ready to have the Public review your draft you submit all materials as detailed below to the PMO (spec-submit@jcp.org) via e-mail with the JSR number and "Public Review Draft" in the subject line. The PMO will host your draft and provide the export classification and spec license for you.
        i. The Spec, in pdf or zip format (be aware that Javadoc files must be zipped). The PMO will provide a standard evaluation license unless you choose to provide your own. Any drafts posted for review must remain on the site as a record of the spec's development and will not be removed.
        ii. The alias for comments. You can use the JSR comments alias if you wish for this or choose another alias.
        iii. the length of the Review (30, 45, 60 or 90 days).
        iv. The answer to the following questions.
        v. Does the specification include software codes
        vi. in the following format:
        vii. Binary : Yes _____ No _____
        viii. Source (compilable) : Yes _____ No _____
        ix. Javadocs : Yes _____ No _____
        x. Do the codes or the spec call on, contain, use
        xi. or demonstrate encryption technology?
        xii. Yes _____ No _____
        xiii. If yes, please describe in detail
        xiv. An anticipated date when the PMO will receive the Proposed Final Draft specification
        xv. If you are operating under JCP 2.1, the location for hosting your draft, if you are hosting it. In this case, you must submit your Evaluation license for the draft Spec. For a template of Sun's evaluation license please send your request to the PMO (pmo@jcp.org).
    c. If you are operating under JCP 2.6 you may receive good suggestions during PR that you wish to incorporate into the Spec. You and the EG may revise the Spec. In the case of major revisions to the draft during Public Review you should send the revised draft, along with a synopsis of the changes, to the PMO (pmo@jcp.org) at any time up until the last 7 days of the review period. (The draft is frozen during the last 7 days of the Public Review in order for the EC to complete their Draft Specification Approval Ballot). If you are operating under JCP 2.1 there is no ballot at the end of PR which will allow you to make changes throughout the PR period. The PMO will notify Members of any updated drafts and change synopses received via the jcp-interest alias, and make them available for download.
    d. If your draft is not approved by the EC, the EG has 30 calendar days to revise the draft for a reconsideration ballot. If you plan on submitting a revised draft, please notify the PMO (pmo@jcp.org) as soon as possible. If you have reason to believe that your draft may not be approved, you might want to start on revising the draft earlier. Working with your EG and lobbying the voting EC members reduces the risk of no votes. You can find information on the current voting EC Members for your draft at: http://jcp.org/en/participation/committee .
9. Proposed Final Draft (PFD)
    a. Once the EG agrees that you are ready to go final with the Spec, you will release a Proposed Final Draft. This final draft allows the EC, JCP Members and the Public to review the Spec before it goes to the EC for the Final Approval Ballot.

As with previous drafts when submitting this Proposed Final Draft, you need to submit it to the PMO (spec-submit@jcp.org) via e-mail with the JSR number and "Proposed Final Draft" in the subject line.

b. Please submit the draft to the PMO and providing the following:
    i. The Spec, in pdf or zip format (be aware that Javadoc files must be zipped). The PMO will provide a standard evaluation license unless you choose to provide your own.
    ii. The alias for comments.
    iii. The PMO recommends that you allow sufficient time between the Proposed Final Draft and the Final Approval Ballot for comments from the Public.
    iv. An anticipated date when the PMO will receive the materials for the FAB.
    v. The answer to the following questions.
    vi. Does the specification include software codes
    vii. in the following format:
    viii. Binary : Yes _____ No _____
    ix. Source (compilable) : Yes _____ No _____
    x. Javadocs : Yes _____ No _____
    xi. Do the codes or the spec call on, contain, use
    xii. or demonstrate encryption technology?
    xiii. Yes _____ No _____
    xiv. If yes, please describe in detail
c. The PMO will use this information to update the Export Classification Control Number (ECCN) for you.

10. Final Approval Ballot (FAB)
    a. After you have incorporated any changes you decided to make after the Public has reviewed your PFD, you are ready to go final with the Spec, RI and TCK. You need to submit the Final materials to the PMO (spec-submit@jcp.org) to put on the EC Final Approval Ballot. As with JSR Approval Ballot the PMO must receive all the materials of your submission on or before the Wednesday before the Tuesday that you wish the Ballot to start. The Final Approval Ballot runs for a 2 week voting period starting on Tuesday and ending on Monday, midnight PST/PDT. Once again it is good practice to get a sense of the voting EC's opinion on what you consider to be the Final version of your JSR.
    b. It is necessary that you are available during the voting period or you designate someone that will be able to respond any questions the voting EC may have.
    c. When submitting the Final Spec to the PMO please provide the following:
        i. The completed questionnaire, found at: http://jcp.org/aboutJava/communityprocess/speclead/final-questions.txt.
        ii. The Final Spec, in pdf or zip format (please note that Javadoc files must be zipped), the Final Reference Implementation, and the Final Technology Compatibility Kit (both in .zip format).
        iii. The PMO hosts the Final Approval Ballot for you, and uses Sun's general FCS license unless you provide your own FCS license. Please be sure to provide the PMO with the version number for your spec and with the full legal name of your company or organization for the license.
        iv. The PMO will get the update of the ECCN for you.
        v. The alias for comments.
        vi. The final business terms for the RI and TCK. The business terms must address compatibility. 3rd party implementations must pass the TCK. Any JSR developed under JCP 2.6 or later must allow for independent implementations. JSRs under JCP 2.6 or later must also license the RI and TCK separately and provide no cost access of TCKs to qualified individuals, educational and not for profit organizations.

vii. The TCK Coverage Document. This is a one- to two-page summary to assist the EC in evaluating the TCK. Please see more details in the 'Developing TCKs' section below.
viii. The final licensing model, usually integrated in the Business Terms. Please look in the "Writing a JSR" section above for licensing templates. You can use one of these templates or any other licensing model provided the compatibility requirements as demanded in the appropriate JCP Document are addressed. The latest version is JCP 2.6, found at: http://jcp.org/en/procedures/jcp2
ix. The name and contact info of the Maintenance Lead. In case the Maintenance Lead is a different company or organization the PMO requires an authorization from an Executive of the current Spec Lead company or organization relinquishing interest in the JSR. The same applies for a Spec Lead change earlier in the JSR process.
x. The URL of the Maintenance Lead's Change Log. If you do not provide a Change Log, the PMO will create one for your JSR.
xi. In addition you should establish a first level TCK Appeals Process per JCP Document section 3.2.2. to handle challenges to the tests in the TCK.

d. Assuming the Final Approval Ballot is successful, please notify the PMO at your earliest convenience when you will be submitting the materials for Final Release.

11. Final Release (FR)
    a. Now that the EC has approved your Specification, RI and TCK through the Final Approval Ballot, you can go public with the Final Release. Note that this does not happen automatically after the Final Approval Ballot. The Final Release must follow the FAB within a reasonable time frame. The PMO will contact you if the material for the Final Release has not been received within approx 4 weeks after a successful Final Approval Ballot. To post a Final Release, you need to submit the following to the PMO (spec-submit@jcp.org), specifying the JSR number and "Final Release" in the subject line.
        i. The Spec, in pdf or zip format (please note that Javadoc files must be zipped).
        ii. The Final license for your specification, which will be set up as a click-through license. Please be advised that your Final Product License for your Spec must ensure compatibility.
        iii. The alias for comments.
        iv. An URL or detailed description of how interested parties can get the RI and TCK.
        v. The URL for your Change Log.
        vi. The Export classification for the RI & TCK. Please contact your Trade Affairs or Legal Dept to get the ECCN. If you need help with this classification please contact the JSR Program Manager.
    b. Once all these pieces are received, the PMO will post your JSR as having gone Final and announce it to the jcp-interest list. At that point your Expert Group is normally dissolved and the Maintenance process begins. Some Spec Leads decide to keep working with their Expert Groups.
12. Maintenance Review (MR)
    a. The Maintenance Review is an optional stage. You may choose to leave your JSR as FR or choose a new JSR instead.
    b. For a Maintenance Review, you will need to submit the following to the PMO (spec-submit@jcp.org) via e-mail, specifying the JSR number, and "Maintenance Review" in the subject line:
        i. The alias for comments (this may be the Maintenance Lead's email address).
        ii. The length of the Review (30, 45, 60 or 90 calendar days).
        iii. The current URL for your Change Log.

c. No updates should be made to the Change Log during the Review.
d. At the close of review you will have a list of changes that have been approved and a list of changes that have been deferred to a major revision (requires a new JSR). Update the Change Log accordingly.
e. Grandfathered JSRs (Specifications that have been developed outside the JCP) that are coming into the JCP enter at this stage and are assigned a 9xx number. If you are the Maintenance Lead for one of these Grandfathered JSRs you are responsible to provide the above listed materials.

13. Maintenance Release (MREL)
    a. After a successful Maintenance Review you may opt to prepare a Maintenance Release, a new JSR submission, or both. Note that "DEFERRED" items may not be placed in a Maintenance Release but must go into a new JSR. The Maintenance Release process is like the Final Release Process.
    b. To post a Maintenance Release, you need to submit the following to the PMO (spec-submit@jcp.org), specifying the JSR number and "Maintenance Release" in the subject line:
        i. The Spec, in pdf or zip format (please note that Javadoc files must be zipped, and the spec file must be set up with a click-through license). Please be advised that your Final Product License for your Spec must ensure compatibility.
        ii. The alias for comments.
        iii. An URL or detailed description of how interested parties can get the RI and TCK.
        iv. The URL for your Change Log.
        v. The answer to the following questions.
        vi. Does the specification include software codes in the following format:
        vii. Binary : Yes _____ No _____
        viii. Source (compilable) : Yes _____ No _____
        ix. Javadocs : Yes _____ No _____
        x. Do the codes or the spec call on, contain, use
        xi. or demonstrate encryption technology?
        xii. Yes _____ No _____
        xiii. If yes, please describe in detail

14. Developing TCKs
    a. A good Technology Compatibility Kit (TCK) is critical to insuring that independent implementations of the Specification are compatible with the Specification and each other. The JCP PMO does not impose requirements for these TCKs, but relies on the expertise within the Expert Group to provide feedback to the Specification Lead on the quality of the TCK. The PMO does, however, provide some Guidelines for Developing TCKs, http://jcp.org/en/resources/tdk/.
    b. What is compatibility? Implementation conformance to a specification. NOT application portability (though it's related). Compatibility provides assurance that:
        i. Implementations match the specification
        ii. Implementations all meet (at least) a minimum level of quality
        iii. Developers can write to a specification rather than an implementation
    c. What makes up a typical TCK?
        i. Test Suite designed to demonstrate and verify implementation compliance to its specification.
        ii. Test Framework defines the particular test environment used by the test harness to run the tests and collect test results.
        iii. Exclude List provides a means to remove invalid tests.
        iv. Test Harness to automate testing for:
            1. Selection
            2. Scheduling
            3. Execution

4. Reporting
5. Assures all required tests are run and pass.
6. Tests can easily be rerun for debugging purposes.
7. Very difficult to manually manage testing without introducing human error.

v. Documentation on how to Run the Test Suite
vi. Compatibility Requirements
vii. Appeals Process
viii. Supporting Tools Documentation

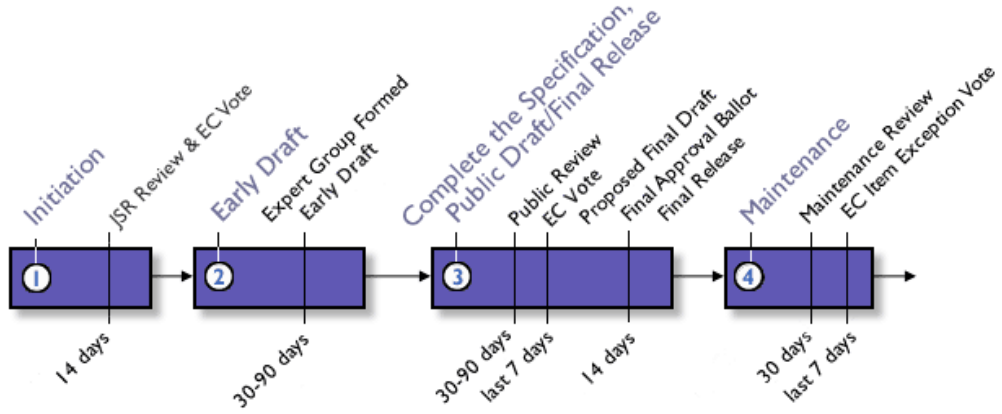
d. What is the Appeals Process? The process defined by the Spec Lead that allows implementors of the Specification to challenge one or more tests defined by the Specification's TCK. The appeals process should identify:
   i. Who can make challenges to the TCK.
   ii. What challenges to the TCK may be submitted.
   iii. How these challenges are submitted.
   iv. How and by whom challenges are addressed.
   v. How accepted challenges to the TCK are managed.
e. What is the scope of the TCK?
   i. TCKs are not trivial to produce, so Begin Early! Define the level of assertion coverage desired and plan adequate resources and time. Creating a good TCK will require nearly the same amount of effort and time as the RI.
f. What is needed for Test Development?
   i. Several levels of compatibility testing coverage:
   ii. Signature - checks completeness
   iii. Method - checks basic functionality
   iv. Assertion - checks required behavior 75 % assertion coverage is a good practical target.
   v. If started too late, you may not even achieve 50%.
   vi. Must have signature coverage.
   vii. Strive for 100% method coverage as minimum.
   viii. Goal should always be to provide as much assertion coverage as possible.

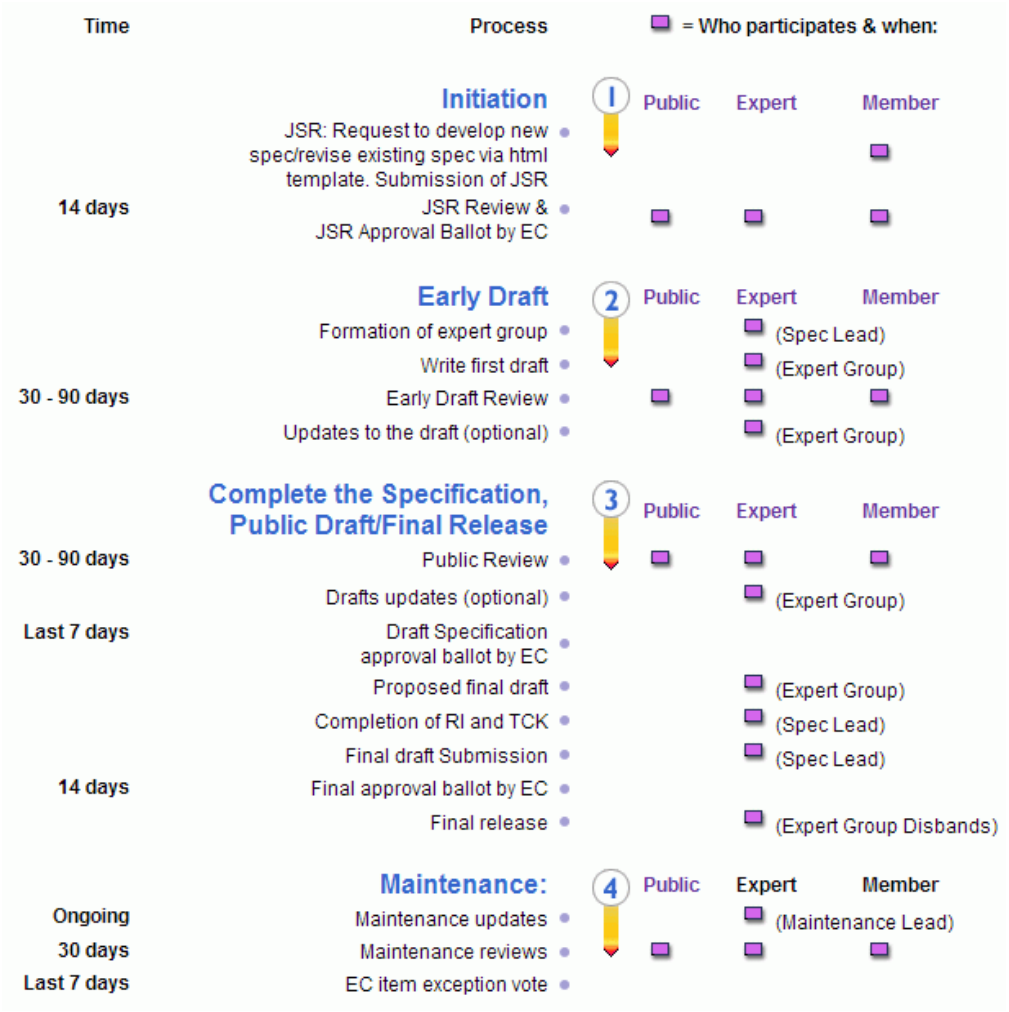
15. Case Studies
    a. e-mail required for development groups of ~30 (teleconferences no use and face-to-face difficult to organize) – up to 100/week
    b. air ideas openly
    c. summaries from ‘spec leads’ with ‘summary of topic x in header’. Their summaries may also include decisions and their justification, status reports, and pointers to new specification drafts posted to the group's private web site. Often when discussion gets hyper-active, people dive into irrelevant topics in a general free-for-all, Coward says, and that is when he sends out a summary message to refocus discussion into what is important.
    d. All e-mail is saved for history
    e. More interesting is the group's own homegrown web site. "We started way before there was anything provided by the JCP. Some of the things [such as providing web sites] that the JCP is doing are because we did them, and they thought they were good ideas," says Pelegri. Here, spec leads post new drafts for review, then send go-get-it email. Members can also access status reports, and all drafts and errata, as well as lists of members, features to be included, pieces remaining for each feature area, outstanding issues, and decisions made. On the lighter side, pictures of social interactions at JavaOne and photos of individual experts are also posted there.
    f. The web site has turned out to be instrumental in helping orient the expert group. Coward understands that people need a picture of where they are, where they're headed, what open issues remain, and target dates for concluding discussion. "We used this web site infrastructure to provide a compass for the unknown

terrain we were navigating," he says. The lists on the web site also serve to assure any expert anxious about resolving a particular feature or issue that it has not been forgotten and will eventually be addressed.

g. Eventually, issues must resolve into decisions, but that doesn't happen automatically. "If summary emails were the only technique a spec lead used in an expert group, nothing would ever get decided," says Coward. He maintains the answer lies not in adopting formal voting rules, but in floating test balloons to the group. When discussion had churned long enough, Coward would summarize discussions on a topic, identify solutions to a problem, list his own pros and cons for each known option, and indicate the direction he considered most useful.
h. "Making people aware of the thought processes behind decisions helps build consensus very effectively," Coward says.
i. If no one knows you're targeting a date, they won't make the concerted effort to address the issues. But if people know the schedule, they'll work together as a community," Coward says.
j. Because experts don't know the metric for draft readiness, they might fail to realize that drafts required by the JCP don't necessarily have to be entirely complete. Coward recommends that a spec lead allay fears by adding some perspective, as in, "Don't worry. We don't have to get through all of these issues by then, but I think these pieces are most important. Does everyone agree?"
k. Since these key industry leaders and book authors have been involved from the start, the entire community can grasp and employ the technology more quickly. "They understand the specification, they can evangelize it, they can explain it, and they can quickly incorporate it into their products," Coward says.

16. Timeline




Time
Process
= Who participates & when:
Initiation
1
Public
Expert
Member
JSR: Request to develop new spec/revise existing spec via html template. Submission of JSR
14 days
JSR Review & JSR Approval Ballot by EC
Early Draft
2
Public
Expert
Member
Formation of expert group
(Spec Lead)
Write first draft
(Expert Group)
30 - 90 days
Early Draft Review
Updates to the draft (optional)
(Expert Group)
Complete the Specification, Public Draft/Final Release
3
Public
Expert
Member
30 - 90 days
Public Review
Drafts updates (optional)
(Expert Group)
Last 7 days
Draft Specification approval ballot by EC
Proposed final draft
(Expert Group)
Completion of RI and TCK
(Spec Lead)
Final draft Submission
(Spec Lead)
14 days
Final approval ballot by EC
Final release
(Expert Group Disbands)
Maintenance:
4
Public
Expert
Member
Ongoing
Maintenance updates
(Maintenance Lead)
30 days
Maintenance reviews
Last 7 days
EC item exception vote

Web Services Interoperability Organisation (WS-I)

URL: http://www.ws-i.org/

1. WS-I is an open industry organization that creates, promotes and supports generic protocols for the interoperable exchange of messages across platforms, operating systems and programming languages.
2. Board of Directors
    a. WS-I is governed by an 11-member BOD consisting of one representative from each of the nine founding companies, plus one representative from each of the two companies elected to the board by the membership.
    b. President, 1 or more VPs, secretary & treasurer
    c. The BOD is responsible for administration and operations and for ensuring that the organization adheres to its charter of delivering practical, unbiased guidance and resources and tools to promote interoperable Web services.
3. Membership
    a. Founding (member on BOD) - $50,000/year
    b. Contributing - $3,000/year
    c. Associate
4. Committees and special interest groups (SIGs) include:
    a. Liaison Committee: manages relationships with other organizations involved in standards-related work.
    b. Marketing and Communications Committee (MCC): responsible for all outward-facing communications, including press and analyst relations, speaking opportunities, events and conferences.
    c. Japan SIG: active Japanese member companies and supports WS-I's evangelism efforts in Japan.
5. Working Groups (6)
    a. All WS-I members are invited and encouraged to actively participate in one or more working groups, open committees or SIGs, based on their interest and expertise.
    b. The Board will create Working Groups to develop Material that is within the Scope Of The Organization.
    c. The Board will approve a charter for each such Working Group that will define the Material to be developed by the Working Group, and will appoint a chair for each Working Group.
    d. The Board may create and charter Working Groups to perform tasks or develop other material necessary for the operation of WS-I, such as the development of marketing recommendations, white papers, guidelines, messaging, positioning, content and common collateral.
    e. Upon appointment, the Working Group chair will promptly send a notice to all Members inquiring as to whether they desire to participate in the Working Group. Each such member shall appoint one person to act as its representative in the Working Group, and will so advise the Working Group chair.
    f. Working Group chair may partition the Working Group into subgroups (e.g., a subgroup for actively developing the material) and appoint members of the Working Group who may participate in each subgroup.
    g. No Material will be approved by the Working Group unless approved by a majority of the Founding and Contributing Members in Good Standing of the entire Working Group.
6. Process
    a. Material to be considered for approval by the Working Group must be circulated by the Working Group chair, with notice that the review is to commence, to all of

the members of the Working Group by secure e-mail or by registered mail at least thirty (30) days prior to the date for the Working Group Approval Meeting.

b. The Material for consideration at the Working Group Approval Meeting (50% quorum) will agree is final. During this review period, the members of the Working Group agree to meet and confer regarding any inconsistencies or other issues that members of the Working Group may raise as part of their review of the Material.
c. Voting is by simple majority
d. Within one (1) week following the date of approval of a Material by the Working Group, the Working Group chair shall send written notice of such approval, including a copy of such approved Material, to all Members and the Secretary.
e. Material approved by the Working Group will be considered for approval at a Board meeting
f. If the Material is approved by the Board unmodified, within one (1) week following the date of approval the Secretary shall send written notice of such approval, including a copy of such Material, to all members. If the Material is modified by the Board prior to approval, within one (1) week following the date of approval the Secretary shall send written notice of such modification and approval to the Working Group chair and the approval process will begin again except that the notice periods for the Working Group and Board review period shall be shortened from thirty (30) calendar days to fourteen (14) calendar days.
g. To ensure that each Member has the opportunity to review any Material approved by the Board, the item must be circulated by the Secretary, with notice that the review is to commence, to all Members by secure e-mail or by registered mail no later than one (1) week after the Board's approval at least fourteen (14) calendar days prior to the vote at which the Material will be considered for approval by the Members as Final Material. 7 calendar day voting period.
h. Within one (1) week following the date of approval by the Members of Material, the Secretary shall send written notice indicating such adoption, including a copy of such Final Material, to all Members.

7. Test Material will include certain test materials that one or more Working Groups will be chartered to develop, which shall include the following:
    a. Test Sniffers. Test Sniffers will be software programs that monitor the incoming and outgoing messages to the web service being tested and generate a log of such messages. It is expected that a separate Test Sniffer may be developed for each platform on which web services are to be tested.
    b. Test Analyzers. Test Analyzers will be software programs that analyze the incoming and outgoing messages logged by a Test Sniffer and generate a report stating whether the web service satisfied certain selected requirements of one or more standards. The first Final Test Analyzer adopted by WS-I must test for satisfaction of certain selected requirements of the Specifications developed by the first Working Groups as provided in ARTICLE VI. Test Analyzers will be written in at least both Java and C#. Final Test Analyzers will be made available for use by the Members or third parties only by simultaneous release in both Java and C# versions. It is expected that a separate Test Analyzer will be developed for each platform on which web services are to be tested. It is further expected that versions of Test Analyzers will be successively adopted to, for example, expand the requirements of a particular standard that are selected for test, or increase the number of standards the requirements of which are tested.
    c. Test Procedures. Test Procedures will describe (A) the procedure for conducting testing of web services using the Test Materials in order to determine whether such web service complies with certain selected requirements of a particular standard or set of standards, and (B) the permissible
    d. Sample Applications. One or more Working Groups may be chartered to develop Sample Applications.

e. Specifications. One or more Working Groups may be chartered to develop Specifications.

8. Publication.
    a. Each Final Specification will be published as soon as practicable following its adoption but in no event shall such publication occur later than forty-five (45) days following its adoption.
    b. Any publication of Specifications or other technical documents by WS-I will include the following disclaimer language: The material contained herein is not a license, either expressly or impliedly, to any intellectual property owned or controlled by any of the authors or developers of this material or WS-I. The material contained herein is provided on an "AS IS" basis and to the maximum extent permitted by applicable law, this material is provided AS IS AND WITH ALL FAULTS, and the authors and developers of this material and WS-I hereby disclaim all other warranties and conditions, either express, implied or statutory, including, but not limited to, any (if any) implied warranties, duties or conditions of merchantability, of fitness for a particular purpose, of accuracy or completeness of responses, of results, of workmanlike effort, of lack of viruses, and of lack of negligence. ALSO, THERE IS NO WARRANTY OR CONDITION OF TITLE, QUIET ENJOYMENT, QUIET POSSESSION, CORRESPONDENCE TO DESCRIPTION OR NON-INFRINGEMENT WITH REGARD TO THIS MATERIAL. IN NO EVENT WILL ANY AUTHOR OR DEVELOPER OF THIS MATERIAL OR WS-I BE LIABLE TO ANY OTHER PARTY FOR THE COST OF PROCURING SUBSTITUTE GOODS OR SERVICES, LOST PROFITS, LOSS OF USE, LOSS OF DATA, OR ANY INCIDENTAL, CONSEQUENTIAL, DIRECT, INDIRECT, OR SPECIAL DAMAGES WHETHER UNDER CONTRACT, TORT, WARRANTY, OR OTHERWISE, ARISING IN ANY WAY OUT OF THIS OR ANY OTHER AGREEMENT RELATING TO THIS MATERIAL, WHETHER OR NOT SUCH PARTY HAD ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES.
9. Website Standards. The Board will develop standards for the creation and maintenance of the organization's website, including a published statement regarding unsolicited submissions to the organization.
10. Final Specifications may be submitted to a standards setting organization, if approved by the Board, under the terms specified in the IPR Agreement. In any submission to a standards organization, the Members who, based on a good faith investigation by the Board, submitted Contributions that were included in the Final Specifications, shall be identified as co-authors thereof. The failure to identify any Member as a co-author has no effect on that Member’s obligations to grant licenses under the IPR Agreement.
11. Deliverables
    a. Profiles provide implementation guidelines for how related Web services specifications should be used together for best interoperability. To date, WS-I has finalized the Basic Profile, Attachments Profile and Simple SOAP Binding Profile. Work on a Basic Security Profile is currently underway.
    b. Sample Applications demonstrate Web services applications that are compliant with WS-I guidelines. These implementations are developed using multiple platforms, languages and programming tools, demonstrating interoperability in action, and providing readily usable resources for the Web services developer. Sample applications serve as working examples for developers looking to follow the WS-I guidelines in their programming environment of choice. To date, WS-I has delivered eleven implementations of the WS-I Sample Application for the Basic Profile.
    c. Testing Tools are used to determine whether the messages exchanged with a Web service conform to WS-I guidelines. These tools monitor the messages and analyze the resulting log to identify any known interoperability issues. These testing capabilities are important for developers to ensure that their

implementations comply with the current interoperability guidelines for the use of Web services specifications. Tests are self administered and aimed at uncovering unconventional usage or errors in specification implementations, thus improving interoperability between applications and across platforms. To date, WS-I has developed tests for developers to verify their conformance with the Basic Profile 1.0, and work on the other WS-I profiles is underway.

World Wide Web Consortium (W3C)

URL: http://www.w3.org/2004/02/Process-20040205/

1. Decision-making based on consensus within membership, teams and public
2. W3C processes promote fairness, responsiveness, and progress toward a W3C recommendation (a Web standard)
3. The Process-
    a. People generate interest in a topic (e.g., Web services) and generate Member Submissions, and a Team monitors work inside and outside of W3C for signs of interest. W3C is likely to organize a workshop to bring people together to discuss topics that interest the W3C community.
    b. When sufficient interest generated, the Director announces the development of a proposal for a new Activity or Working Group charter, depending on the breadth of the topic of interest. An Activity Proposal describes the scope, duration and other characteristics of the intended work, and includes the charters of one or more Working Groups, Interest Groups, and possibly Coordination Groups to carry out the work. W3C Members review each Activity Proposal and the associated Working Group charters. When there is support within W3C for investing resources in the topic of interest, the Director approves the new Activity and groups start working. [eg, For the Web Services Activity, the initial Activity Proposal called for one Working Group to work on Web Services Architecture and one to work on a language for Web Services Description. The Activity Proposal also incorporated an existing Working Group (from another Activity) working on XML Protocols].
    c. There are three types of Working Group participants: Member representatives, Invited Experts, and Team representatives. Team representatives both contribute to the technical work and help ensure the group's proper integration with the rest of W3C. The Working Group charter sets expectations about each group's deliverables (e.g., technical reports, test suites, and tutorials).
    d. Working Groups generally create specifications and guidelines that undergo cycles of revision and review as they advance to W3C Recommendation status. The W3C process for producing these technical reports includes significant review by the Members and public, and requirements that the Working Group be able to show implementation and interoperability experience. At the end of the process, the Advisory Committee reviews the mature technical report, and if there is support, W3C publishes it as a Recommendation.
4. There are two permanent groups within W3C: the
    a. Technical Architecture Group (TAG), to help resolve Consortium-wide technical issues; and the
    b. Advisory Board (AB), to help resolve Consortium-wide non-technical issues, and to manage the evolution of the W3C process.
5. Advisory Committee comprised of one representative per member organization-
    a. reviews plans for W3C at each Advisory Committee meeting;
    b. reviews formal proposals from the W3C Director: Activity Proposals, Proposed Recommendations, and Proposed Process Documents.
    c. elects the Advisory Board participants other than the Advisory Board Chair.
    d. elects 5 of the 9 participants on the Technical Architecture Group
6. Members. W3C does not have a class of membership tailored to, or priced for individuals - however, an individual MAY join W3C as an Affiliate Member
7. W3C Team
    a. consists of the W3C paid staff, unpaid interns, and W3C Fellows. W3C Fellows are Member employees working as part of the Team.The Team provides technical leadership about Web technologies, organizes and manages W3C

Activities to reach goals within practical constraints (such as resources available), and communicates with the Members and the public about the Web and W3C technologies.
    b. The Team is led by the Director, W3C Chair, and Chief Operating Officer.
    c. The Director is the lead technical architect at W3C and is responsible for assessing consensus within W3C for architectural choices, publication of technical reports, and new Activities. The Director appoints group Chairs and has the role of "tie-breaker" for questions of Good Standing in a Working Group or appeal of a Working Group decision. The Director is generally Chair of the TAG.
8. Advisory Board
    a. provides ongoing guidance to the Team on issues of strategy, management, legal matters, process, and conflict resolution.
    b. serves the Members by tracking issues raised between Advisory Committee meetings, soliciting Member comments on such issues, and proposing actions to resolve these issues.
    c. manages the evolution of the Process Document.
    d. Only an advisory role within W3C;
    e. consists of nine elected participants and a Chair. The Team appoints the Chair of the Advisory Board, who is generally the W3C Chair. The remaining nine Advisory Board participants are elected by the W3C Advisory Committee following the AB/TAG nomination and election process.
    f. With the exception of the Chair, the terms of all Advisory Board participants are for two years. Terms are staggered so that each year, either four or five terms expire.
    g. The Team MUST make available a mailing list for the Advisory Board to use for its communication, confidential to the Advisory Board and Team.
    h. The Advisory Board SHOULD send a summary of each of its meetings to the Advisory Committee and other group Chairs. The Advisory Board SHOULD also report on its activities at each Advisory Committee meeting.
9. Technical Architecture Group (TAG) mission is stewardship of the Web architecture
    a. to document and build consensus around principles of Web architecture and to interpret and clarify these principles when necessary;
    b. to resolve issues involving general Web architecture brought to the TAG;
    c. to help coordinate cross-technology architecture developments inside and outside W3C.
    d. hears appeals of Member Submission requests that are rejected for reasons related to Web architecture;
    e. scope is limited to technical issues about Web architecture.
    f. MUST make available two mailing lists for the TAG:
        i. a public discussion (not just input) list for issues of Web architecture. The TAG will conduct its public business on this list.
        ii. a Member-only list for discussions within the TAG and for requests to the TAG that, for whatever reason, cannot be made on the public list.
    g. The TAG SHOULD send a summary of each of its meetings to the Advisory Committee and other group Chairs. The TAG SHOULD also report on its activities at each Advisory Committee meeting.
    h. The TAG consists of eight elected or appointed participants and a Chair. The Team appoints the Chair of the TAG, who is generally the Director. Three TAG participants are appointed by the Director. The remaining five TAG participants are elected by the W3C Advisory Committee following the AB/TAG nomination and election process.
    i. With the exception of the Chair, the terms of all TAG participants are for two years.
10. There are three qualities an individual is expected to demonstrate in order to participate in W3C:

    a. Technical competence in one's role
    b. The ability to act fairly
    c. Social competence in one's role
11. Meetings: W3C distinguishes two types of meetings:
    a. A face-to-face meeting is one where most of the attendees are expected to participate in the same physical location.
    b. A distributed meeting is one where most of the attendees are expected to participate from remote locations (e.g., by telephone, video conferencing, or IRC).
12. A Chair MAY invite an individual with a particular expertise to attend a meeting on an exceptional basis. This person is a meeting guest, not a group participant and does not have voting rights.
13. Consensus is a core value of W3C. To promote consensus, the W3C process requires Chairs to ensure that groups consider all legitimate views and objections, and endeavor to resolve them, whether these views and objections are expressed by the active participants of the group or by others.
    a. Consensus: A substantial number of individuals in the set support the decision and nobody in the set objects. Individuals in the set may abstain. Abstention is either an explicit expression of no opinion or silence by an individual in the set. Unanimity is the particular case of consensus where all individuals in the set support the decision (i.e., no individual in the set abstains).
    b. Dissent: At least one individual in the set objects.
    c. A charter MAY include a quorum requirement for consensus decisions.
    d. Where unanimity is not possible, a group SHOULD strive to make consensus decisions where there is significant support and few abstentions. The Process Document does not require a particular percentage of eligible participants to agree to a motion in order for a decision to be made. To avoid decisions that are made despite nearly universal apathy (i.e., with little support and many abstentions), groups SHOULD set minimum thresholds of active support before a decision can be recorded. The appropriate percentage MAY vary depending on the size of the group and the nature of the decision. A charter MAY include threshold requirements for consensus decisions. For instance, a charter might require a supermajority of eligible participants (i.e., some established percentage above 50%) to support certain types of consensus decisions.
14. Voting
    a. A group SHOULD only conduct a vote to resolve a substantive issue after the Chair has determined that all available means of reaching consensus through technical discussion and compromise have failed, and that a vote is necessary to break a deadlock. In this case the Chair MUST record (e.g., in the minutes of the meeting or in an archived email message):
        i. an explanation of the issue being voted on;
        ii. the decision to conduct a vote (e.g., a simple majority vote) to resolve the issue;
        iii. the outcome of the vote;
        iv. any objections.
    b. For the purposes of voting:
        i. A Member or group of related Members is considered a single organization.
        ii. The Team is considered an organization.
        iii. Unless the charter states otherwise, Invited Experts MAY vote
15. Dissemination
    a. The Team is responsible for managing communication within W3C and with the general public (e.g., news services, press releases, managing the Web site and access privileges, and managing calendars).
    b. Members SHOULD solicit review by the Team prior to issuing press releases about their work within W3C.

c. The Team makes every effort to ensure the availability of the following public information:
    i. W3C technical reports whose publication has been approved by the Director. Per the Membership Agreement, W3C technical reports (and software) are available free of charge to the general public;
    ii. A mission statement that explains the purpose and mission of W3C, the key benefits for Members, and the organizational structure of W3C.
    iii. Legal documents, including the Membership Agreement and documentation of any legal commitments W3C has with other entities.
    iv. The Process Document.
    v. Public results of W3C Activities and workshops.
    vi. a regular (e.g., weekly) news service and maintains a calendar [MEM3] of official W3C events. Members are encouraged to send schedule and event information to the Team for inclusion on this calendar.
d. Confidentiality: 3 levels at Web site
    i. Public (most is),
    ii. Member-only (to authorized parties only, including representatives of Member organizations, Invited Experts, the Advisory Board, the TAG, and the Team. For example, the charter of some Working Groups may specify a Member-only confidentiality level for group proceedings) , and
    iii. Team-only.

16. Activities
    a. organizes the work necessary for the development or evolution of a Web technology.
    b. An Activity starts based on interest from the Members and Team. W3C Members build interest around new work through discussions among Advisory Committee representatives, Chairs, and Team, and through the Submission process.
    c. The Team tracks Web developments inside and outside W3C, manages liaisons, and organizes workshops.
    d. Based on input from the Team and Members about the structure and scope of an Activity, the Team sends an Activity Proposal to the Advisory Committee. This is a proposal to dedicate Team and Member resources to a particular area of Web technology or policy, and when there is consensus about the motivation, scope, and structure of the proposed work, W3C starts a new Activity.
    e. Each Activity has its own structure that generally includes Working Groups, Interest Groups, and Coordination Groups. Within the framework of an Activity, these groups produce technical reports, review the work of other groups, and develop sample code or test suites.
    f. The progress of each Activity is documented in an Activity Statement. Activity Statements describe the goals of the Activity, completed and unfinished deliverables, changing perspectives based on experience, and future plans. At least before each Advisory Committee meeting, the Team SHOULD revise the Activity Statement for each Activity that has not been closed.
    g. The Team MUST notify the Advisory Committee when a proposal for a new or modified Activity is in development. This is intended to raise awareness, even if no formal proposal is yet available. Advisory Committee representatives MAY express their general support on the Advisory Committee discussion list. The Team MAY incorporate discussion points into an Activity Proposal. Refer to additional tips on getting to Recommendation faster
    h. The Director MUST solicit Advisory Committee review of every proposal to create, substantively modify, or extend an Activity.
    i. After a Call for Review from the Director, the Advisory Committee reviews and comments on the proposal. The review period MUST be at least four weeks. The Director announces to the Advisory Committee whether there is consensus within W3C to create or modify the Activity (possibly with changes suggested during the

review). For a new Activity, this announcement officially creates the Activity. This announcement MAY include a Call for Participation in any groups created as part of the Activity.

j. If there was dissent, Advisory Committee representatives MAY appeal a decision to create, modify, or extend the Activity. Note: There is no appeal of a decision not to create an Activity; in general, drafting a new Activity Proposal will be simpler than following the appeal process.

k. An Activity Proposal defines the initial scope and structure of an Activity, and MUST include or reference the following information:
    i. An Activity summary. What is the nature of the Activity (e.g., to track developments, create technical reports, develop code, organize pilot experiments, or for education)? Who or what group wants this (providers or users)?
    ii. Context information. Why is this Activity being proposed now? What is the situation in the world (e.g., with respect to the Web community, market, research, or society)? within the scope of the proposal? Who or what currently exists that is pertinent to this Activity? Is the community mature/growing/developing a niche? What competing technologies exist? What competing organizations exist?
    iii. A description of the Activity's scope. How might a potential Recommendation interact and overlap with existing international standards and Recommendations? What organizations are likely to be affected by potential overlap (see the section on liaisons with other organizations)? What should be changed if the Activity is approved?
    iv. A description of the Activity's initial deployment, including:
        1. The duration of the Activity.
        2. What groups will be created as part of this Activity and how those groups will be coordinated. For each group, the proposal MUST include a provisional charter. Groups MAY be scheduled to run concurrently or sequentially (either because of a dependency or an expected overlap in membership and the desirability of working on one subject at a time). These charters MAY be amended based on review comments before the Director issues a Call for Participation.
        3. The expected timeline of the Activity, including proposed deliverable dates and scheduled workshops and symposia.
        4. If known, the date of the first face-to-face meeting of each proposed group. The date of the first face-to-face meeting of a proposed group MUST NOT be sooner than eight weeks after the date of the Activity Proposal.
    v. A summary of resources (Member, Team, administrative, technical, and financial) expected to be dedicated to the Activity. The proposal MAY specify the threshold level of effort that Members are expected to pledge in order for the Activity to be accepted.
    vi. Information about known dependencies within W3C or outside of W3C.
    vii. Intellectual property information. What are the intellectual property (including patents and copyright) considerations affecting the success of the Activity? In particular, is there any reason to believe that it will be difficult to meet the Royalty-Free licensing goals of section 2 of the W3C Patent Policy?
    viii. A list of supporters and references. What community is expected to benefit from this Activity? Are members of this community part of W3C now? Are they expected to join the effort?

17. Groups
    a. Working Groups typically produce deliverables (e.g., Recommendation Track technical reports, software, test suites, and reviews of the deliverables of other groups).
        i. Member representatives,
        ii. Invited Experts, and
        iii. Team representatives (including the Team Contact).
    b. Interest Groups bring together people who wish to evaluate potential Web technologies and policies. An Interest Group is a forum for the exchange of ideas. There are no Good Standing requirements for Interest Group participation. Interest Groups do not create W3C Recommendations.
        i. Membership as in WGs PLUS public
    c. Coordination Groups manage dependencies and facilitates communication with other groups, within or outside of W3C.
        i. There are dependencies between groups within the same Activity or in different Activities, also dependencies between W3C Activities and the activities of other organizations. Examples of dependencies include the use by one technology of another being developed elsewhere, scheduling constraints between groups, and the synchronization of publicity for the announcement of deliverables.
        ii. Coordination Groups are created to manage dependencies so that issues are resolved fairly and the solutions are consistent with W3C's mission and results.
        iii. Consist of Chair, Invited Experts and Team representatives (inc Team Contact)
    d. Each group MUST have a
        i. public charter that depends on the group type,
        ii. a Chair (or co-Chairs) to coordinate the group's tasks. The Director appoints (and re-appoints) Chairs for all groups. The Chair is a Member representative, a Team representative, or an Invited Expert (invited by the Director).
        iii. a Team Contact, who acts as the interface between the Chair, group participants, and the rest of the Team. The Chair and the Team Contact of a group SHOULD NOT be the same individual.
        iv. an archived mailing list for formal group communication (e.g., for meeting announcements and minutes, documentation of decisions, and objections to decisions). It is the responsibility of the Chair and Team Contact to ensure that new participants are subscribed to all relevant mailing lists.
        v. After a call for Participation, any Member representatives and Invited Experts MUST be designated (or re-designated).
18. W3C Recommendation Track Process
    a. designed to maximize consensus about the content of a technical report, to ensure high technical and editorial quality, and to earn endorsement by W3C and the broader community.
    b. Steps
        i. Publication of the First Public Working Draft.
        ii. Last Call announcement
        iii. Call for Implementations. Note: The Director MAY permit the Working Group to skip this step if the entrance criteria for the next step have already been satisfied.
        iv. Call for Review of a Proposed Recommendation.
        v. Publication as a Recommendation.
    c. Document Maturity Levels

i. Working Draft (WD) - a document that W3C has published for review by the community, including W3C Members, the public, and other technical organizations.
ii. Candidate Recommendation (CR) - a document that W3C believes has been widely reviewed and satisfies the Working Group's technical requirements. W3C publishes a Candidate Recommendation to gather implementation experience.
iii. Proposed Recommendation (PR) - a mature technical report that, after wide review for technical soundness and implementability, W3C has sent to the W3C Advisory Committee for final endorsement.
iv. W3C Recommendation (REC) - a specification or set of guidelines that, after extensive consensus-building, has received the endorsement of W3C Members and the Director. W3C recommends the wide deployment of its Recommendations. Note: W3C Recommendations are similar to the standards published by other organizations.

d. Requirements for Advancement. The working group must
i. Record the group's decision to request advancement.
ii. Indicate whether the document has been modified substantively since the previous step. A substantive change (whether deletion, inclusion, or other modification) is one where someone could reasonably expect that making the change would invalidate an individual's review or implementation experience. Other changes (e.g., clarifications, bug fixes, editorial repairs, and minor error corrections) are minor changes. A Working Group MUST document changes (both substantive and minor) between steps.
iii. Report which, if any, of the Working Group's requirements for this document have changed since the previous step.
iv. Report any changes in dependencies with other groups.
v. Show evidence of wide review.
vi. Formally address all issues raised about the document since the previous step. In practice, once a Working Group wishes to advance to Candidate Recommendation or beyond, the Director expects positive documentation that issues have been formally addressed (e.g., in an issues list that shows their disposition). For earlier stages on the Recommendation Track, less formal documentation generally suffices (e.g., evidence in an archived mailing list).
vii. Report any formal objections.

e. Public information important to the decision to advance a technical report-
i. Details of changes if the technical report has been modified substantively since the previous step (e.g., by providing "diffs" and summaries of substantive changes);
ii. A statement that requirements have been fulfilled or a listing of unfulfilled requirements and the rationale for advancing the document though some requirements have not been met.
iii. Evidence of wide review and that dependencies with other groups have been resolved;
iv. Responses that formally address issues raised by reviewers;
v. Any formal objections.

f. Build consensus around technical reports:
i. Frequent publication (see the Working Group "Heartbeat" requirement).
ii. Early review, to find errors quickly and decrease the chances of diverging technologies.
iii. Wide review, including from other groups in and outside of W3C.

g. Every document published as part of the Recommendation Track process
i. MUST be a public document.
ii. MUST clearly indicate its maturity level.

iii. is edited by one or more editors appointed by a Working Group Chair.
iv. The primary language for W3C technical reports is English. W3C encourages the translation of its technical reports.

19. Liaisons
    a. coordination of activities with a variety of organizations, through a number of mechanisms ranging from very informal (e.g., an individual from another organization participates in a W3C Working Group, or just follows its work) to mutual membership, to even more formal agreements.
    b. Goals
        i. Enable both organizations to pursue related goals (e.g., technical specifications) to their mutual benefit.
        ii. Facilitate development of complementary technologies, possibly resolving mutual dependencies.
        iii. Document the commitment from both organizations, in resources and principle, to pursuing work in a particular area.
        iv. Coordinate communication about the focus of the liaison.
        v. Allow synchronization of schedules and calendars.
        vi. Ensure that technical progress can be made in a manner consistent with W3C's Patent Policy, W3C Document License, and other IPR policies.
        vii. Prevent market fragmentation.
        viii. Provide for specific benefits (such as mutual membership) enumerated in the liaison charter.
    c. The process consists of:
        i. Creation. The Director creates, modifies, or extends a formal liaison by announcement to the Advisory Committee.
        ii. Charter – details about the organizations, goals, policies and procedures, resources, schedule,
        iii. Status Report. At each Advisory Committee meeting, the Team MUST present an update of each formal liaison that describes the state of the liaison, goals achieved or not, and deliverables produced or not. The update SHOULD highlight significant changes, successes, and failures since the previous update. The Team SHOULD also keep the Advisory Board regularly informed (e.g., once per quarter) of important events or changes regarding liaisons.

20. References
    a. Public (W3C Web site)
        i. [PUB5] How to Join W3C
        ii. [PUB6] Membership Agreement
        iii. [PUB8] The list of current W3C Members
        iv. [PUB9] The list of W3C Activities
        v. [PUB10] The list of acknowledged Member Submissions
        vi. [PUB11] The W3C technical reports index
        vii. [PUB12] Public list of Activity Proposals. In this version of the Process Document, there is no public reference to the list of Activity Proposals.
        viii. [PUB13] Submission request overview
        ix. [PUB14] The W3C Team
        x. [PUB15] About the W3C includes the W3C mission statement some background information about W3C, and additional information about W3C Activities and organization.
        xi. [PUB16] The list of published Team Submissions
        xii. [PUB17] Invited expert and collaborators agreement
        xiii. [PUB18] W3C Document License
        xiv. [PUB19] W3C Software Notice and License
        xv. [PUB20] Translations of W3C technical reports
        xvi. [PUB21] Public W3C mailing lists

xvii. [PUB23] Conflict of Interest Policy for W3C Team Members Engaged in Outside Professional Activities
xviii. [PUB25] Technical Architecture Group (TAG) Charter
xix. [PUB26] The TAG home page
xx. [PUB27] Tips for Getting to Recommendation Faster
xxi. [PUB28] W3C liaisons with other organizations
xxii. [PUB30] The Advisory Board home page
xxiii. [PUB31] Publication Rules
xxiv. [PUB32] W3C Fellows Program
xxv. [PUB33] 5 Feb 2004 version of the W3C Patent Policy. The latest version of the W3C Patent Policy is available at http://www.w3.org/Consortium/Patent-Policy/.

b. Member-only information
   i. [MEM1] Current Advisory Committee representatives
   ii. [MEM2] Group mailing lists
   iii. [MEM3] The calendar of all scheduled official W3C events
   iv. [MEM4] The New Member Orientation, which includes an introduction to W3C processes from a practical standpoint, including relevant email addresses.
   v. [MEM5] Advisory Committee meetings
   vi. [MEM6] Member Web site
   vii. [MEM8] How to send a Submission request
   viii. [MEM9] The Art of Consensus, a guidebook for W3C Working Group Chairs and other collaborators
   ix. [MEM14] Guidelines for Disciplinary Action
   x. [MEM15] How to Organize an Advisory Board or TAG election

Appendix 2: Amended Constitution of the International Working Group on Taxonomic Databases

International Union for Biological Sciences
Taxonomic Databases Working Group
http://www.tdwg.org

Article 1. Name and Purpose

The International Working Group on Taxonomic Databases (herein called "TDWG") is a not-for-profit scientific and educational association formed to establish international collaboration among biological repositories so as to promote the wider and more effective dissemination of information about the World's heritage of biological organisms for the benefit of the world at large.

To achieve its goals, TDWG

(a) develops, adopts and promotes standards and guidelines for the recording and exchange of data about organisms,
(b) promotes their use through the most appropriate and effective means,
(c) acts as a forum for discussion through holding meetings and through publication such as a newsletter, and
(d) undertakes any other activities that are judged useful to the organization.

Article 2. Affiliation and incorporation

TDWG may affiliate to or cooperate with other associations or organizations with similar or complementary aims.

TDWG may obtain legal status in the country or countries under countries under the laws of which it decides to operate.

Article 3. Membership

Membership is open to individuals, institutions, and database Projects interested in or concerned with taxonomic databases. Membership consists of two classes,

a. institutional members (institutions and/or projects), and
b. individual members.

Membership is acquired by written notification to the Chair, Secretary, or Treasurer and payment of the current year's membership fee. Under extraordinary circumstances the Executive committee may waive the current year's membership fee upon petition - by individuals, institutions, or database projects.

Members in good standing are entitled to take part in and vote at meetings, and to participate in all votes. They are also entitled to receive the Newsletter of TDWG, and such other publications as the Executive Committee may decide.

Membership rights and entitlements, including voting rights, are suspended if the membership fee is two years in arrears. Otherwise, members are considered to be in good standing.

Membership ends upon written resignation addressed to the Chair, Secretary, or Treasurer.

Article 4. Meetings

TDWG shall meet each calendar year to discuss standards; elect officers; receive reports of the officers, including a financial report; discuss changes in the constitution and on by-laws; fix the date and place of the next annual meeting and conduct any other competent business. Each member, whether institutional or individual, shall normally be entitled to a single Vote on each motion. Individuals attending the meeting and voting by combination of multiple membership, or as a delegate for another voting member, are limited to three votes on each motion. Institutional members shall be represented by a member of staff or other delegate designated in writing. Prior to the opening of the meeting institutions and projects must notify the Secretary as to whom will be representing their organizations during votes.

Article 5. Executive Committee

TDWG is governed by an Executive Committee consisting of the officers, elected as defined below from the membership, and up to two members co-opted by the officers. It shall meet at least once each calendar year. The Committee organizes the day to day affairs of TDWG, proposes the amount of dues (subject to ratification at the annual meeting), administers the assets, acts to fulfil the goals of TDWG, provides timely notification of progress towards goals electronically, has power to apply for legal status for TDWG and such other power as stated elsewhere in this constitution and its by-laws.

Article 6. Officers

At each annual meeting the following individual officers shall be elected from the membership. The Chairman will normally hold office for a period not exceeding three years. All other officers will normally hold post for a period not exceeding six years, with no time limit on the editors.

Chairman

Presides at meetings of TDWG and at meetings of Executive Committee; is entitled to sign jointly with one other officer on behalf of TDWG; enacts such functions as are assigned to him by the Executive Committee.

Secretary

Operates the secretariat; keeps and distributes minutes of meetings; sends notices of the annual meeting to the membership and notices of meetings of the Executive Committee to its members; distributes proposals and draft standards, and organizes votes.
One of the members Co-opted by the officers may be designated as Associate Secretary and assists and substitutes for the Secretary as required.

Treasurer

Is entitled to sign jointly with one other officer on behalf of TDWG; maintains the membership list, reports finances annually to the membership; collects membership dues; administers the assets of TDWG in conformance with instructions from the Executive committee.

Annual Meeting Convenor

Is responsible for recruiting membership of, and chairing the Annual Meeting Committee. Appointment is for 1 year. The Convenor should be appointed from an organisation within the city of the up-coming annual meeting.

Technical Advisory Group Liaison

Responsible for liaison between the Executive and the Technical Advisory Committee. Is a member of, but cannot chair the Technical Advisory Committee.

Regional Secretaries (up to six, based in regions of the world other than the Secretary)

Shall have responsibility, assigned by the Executive Committee, to assist in the coordination of the development of standards; serves as regional contact for the members; represents the interests of TDWG in appropriate meetings and other activities.

Editor (or editors, having one vote collectively on the Executive Committee)

Shall have responsibility for ensuring that general information about TDWG the TDWG Web site is up to date and that a balance is maintained between this information and pushing relevant information to members.

Should vacancies of office occur during the term of office, the Executive committee is empowered to fill these from the membership until the next annual meeting, at which time the position will be filled by general election.

Article 7. Technical Advisory Group

The Technical Advisory Group will be comprised of the Convenors of interest groups, the Executive TAG Liaison and other members as appointed by the Executive. The role of the TAG will be to provide recommendations to the Executive on-

1. The establishment of interest groups (evaluated by their charter)
2. Technical architecture oversight of standards development
3. An annual review of interest groups and
4. The quality of standards/documents

The Convenor will be elected by TAG members and this position cannot be held by the Executive liaison member.

Article 8. Assets

The revenue of TDWG shall consist of membership dues, of income from and sales of publications and lease of rights, of grants, donations and legacies, of income from investments and of all other kinds of income that are compatible with the aims of TDWG. The assets of TDWG shall be used exclusively for the statutory aims and purposes, and in no case to the immediate profit of its members.

The financial year shall be the calendar year.

Article 9. Amendments

This constitution may only be altered by a two-thirds majority of the membership. Alterations may be proposed by the Executive committee, or may be submitted in writing to the Executive committee by either at least five members, or at least three institutional members, from at least two different countries. In order to be acted upon in either case, the text of the

proposed alteration, and ballots for those members entitled to vote, must be dispatched to the membership at least thirty days before the annual meeting. Ballots must be returned by members to the Secretary prior to the tally of the vote at the annual meeting.

By-laws may be adopted, altered, or repealed by a majority of the membership voting by postal vote, upon written proposal by the Executive committee dispatched to the membership at least thirty days before the voting deadline.

Article 10. Dissolution

Dissolution of TDWG can only be enacted by a two-thirds majority of the members voting at a meeting, summoned for that specific purpose by the Executive Committee at least 180 days in advance, and by a two-thirds majority of institutional members voting at that same meeting.
Upon dissolution of TDWG, any net remaining assets shall be transferred to the International Association for Plant Taxonomy or its successor.

BY-LAWS

(1) Ratification of standards

A major activity of TDWG is the establishment of data standards for the efficient storage and exchange of biological information. When the need for a standard is recognized, any member may submit a Charter for the establishment of an interest group to the TAG Liaison member of the Executive Committee. This member will distribute the Charter to the Executive and TAG and institute an evaluation process. The TAG will produce a recommendation to the Executive for a decision to establish an interest group.

If a standards development (a Task) is proposed that could be hosted in an existing interest group, a work plan must be evaluated by the Executive with advice as required from the TAG.

A member can only belong to a single Task Team at one time.

In certain cases, it may not be appropriate for a standard to be produced. In such circumstances, an interest group may be tasked to produce documents to guide workers in their field. These documents must conform to the minimal document requirements and will be submitted to the TAG Liaison member of the Executive for evaluation. Once the Executive is satisfied with the documents, they will be loaded onto the Web site in conformance with the documentation process, and the TDWG membership will be informed.

When a standards is ready for public release, the document suite will be submitted to the TAG Liaison member of the Executive for distribution within the Executive and TAG. The TAG liaison member of the Executive will then institute an evaluation process that will comprise

a. A recommendation from the TAG to the Executive followed by
b. Opportunity for membership comment (minimum of thirty days)
c. Vote by membership (>65% yes for acceptance)
d. Recommendation by the TDWG Executive
e. If accepted, posting of the suite of standards material to the TDWG Web site and notification of members

(2) Information and Documentation

In order to achieve its goals, TDWG maintains a documents program. Public documents are produced by interest groups or as directed by the Executive. Public documents are approved by the Executive on recommendations from the Technical Advisory Group.

It is the responsibility of the Editor/s to ensure that TDWG documents conform to TDWG's standards and that the information on the TDWG Web site is current.

Appendix 3: Review of the Documentation of Other Standards Organisations

Summary

‘Best practice’ in terms of documentation within standards organisations similar to TDWG is comprised of the following:

- Organisation is document focused: uses documents as primary outputs.
- Organisation has clearly documented documentation process.
- Documentation of documentation is included within the standards process itself to allow for controlled evolution through time.
- Clear documentation templates and style guidelines are provided.
- Clear IP and copyright policies are in place and used.

Best practice in terms of the overall quality of documentation appears best exhibited within W3C and IETF. Other bodies tend to copy these two organisations, but each organisation has useful lessons for TDWG. It is regrettable that a number of the standards organisations reviewed do not make their documentation freely available.

The GGF strategy is notable and appealing

> Documentation of documentation + open document formats = best practice.

GGF: Global Grid Forum

- http://www.ggf.org/index.php
- First document in series sets out documentation requirements (http://www.ggf.org/documents/GFD.1.pdf)
- Authors strongly encouraged to follow IETF Internet Drafts format where possible
- Documents must contain:
    - Document type: GWD-X or GFD-X, where X is one of several types including I(informational), E (experimental), P (Community Practice), or R (Recommendations track).
    - Author name(s), affiliation(s), and contact information
    - Date of the document (original date and revised date).
    - Name of working group or research group (where applicable)
    - Title of document
    - Document URL
    - 1-2 paragraph abstract
    - a summary of security considerations.

IEEE: Institute of Electrical and Electronic Engineers

- http://www.ieee.org/portal/site
- Difficult to find out much about as this group appear largely commercial.

IETF: Internet Engineering Task Force

- http://www.ietf.org/
- Detailed document describing document formatting (http://www.ietf.org/ietf/1id-guidelines.html)
    - ASCII text only for standard documents.
    - May have accompanying (but non-normative documents).
    - Documents are the standards.
    - Strong on IP issues.

IMTC: International Multimedia Telecommunications Consortium

- http://imtc.org/
- Does not produce standards of its own but works with other bodies notably IETF.

ISO: International Organisation for Standardization

- http://www.iso.org/iso/en/ISOOnline.frontpage
- Over 14,000 standards and long history.

- Documents are the standards.
- Detailed documentation for docs (http://isotc.iso.org/livelink/livelink/fetch/2000/2122/3146825/4229629/texts_list.htm)

OASIS: Organization for the Advancement of Structured Information Standards

- http://www.oasis-open.org/home/index.php
- "A specification may be composed of any number of files of different types, though any such multi-part specification must have a single specification name and version number. Irrespective of the number and status of the constituent parts, the specification as a whole must be approved by a single TC ballot. "
- "All documents and other files produced by the TC, including specifications at any level of approval, must use the OASIS file naming scheme, and must include the OASIS copyright notice. All document files must also use the OASIS document templates." (http://docs.oasis-open.org/templates/)
- Templates are provided for working in MS Word, OpenOffice? and XHTML.

OGC: Open Geospatial Consortium

- http://www.opengeospatial.org/
- Released as PDF (and white papers as Word docs).
- Appears to be a clear format/template used.
- Can't find documentation on website (may be members only)

WS-I: Web Services Interoperability Organisation

- http://www.ws-i.org/
- Issue documents are PDF
- Standards ('deliverables') include software.
- Supply MS Word templates for creation of documents.
- Document format is very similar to W3C format.
- Details may be in members only area.

W3C: World Wide Web Consortium

- http://www.w3.org/
- Well defined document rules (http://www.w3.org/2005/07/pubrules)
- Well defined style (http://www.w3.org/Provider/Style/)
- Well defined help on authoring documents (http://www.w3.org/2001/06/manual/)
- Some guides only available to members (http://www.w3.org/Guide/Reports)

Appendix 4: Review of the Websites of Other Standards Organisations

Summary

Best current practice for Web sites of reviewed standards organisations have the following characteristics:

- Website provides easy access to standards, either via accessible categorized list or through website-wide search. Standards documents are provided in several convenient file formats, including HTML and PDF.
- Website content is written for the web, i.e., it employs scannable text using highlighted keywords, meaningful sub-headings, bulleted lists, inverted pyramid writing style (starting with the conclusion) and low word count.
- Website provides easy access to subgroups charter, contact information, documentation on how to join and participate, latest developments, meeting agendas and minutes, all following templates (applies only for organizations providing open access to working group operations).
- Organization provides on-line tools to support working group operations and communications. A great deal of automation is applied to streamline working group operations.
- Website is light-weight and conforms to web and accessibility standards.
- Navigation is simple. Links are self-evident and use common standards development terminology.

IETF: Internet Engineering Task Force

IETF standards are presented in plain English documents in ASCII format. They are generated from XML or other source format that is then converted to ASCII using standard tools. That means that the requirements for reading them are very low, but there may be paging problems when they are printed.

Their website is very simple. No fancy web design, right to the point. The homepage has only about 14KB.

A search box right at the top of the homepage lets users perform Google searches on IETF website content and elsewhere. This is handy to locate standards (RFCs) particularly if you know the number of the standard, which is a fair assumption, given that this number is widely publicized wherever the standard is implemented. Keyword search work well, as in Google. There is also a specific page that helps people find RFCs

IETF website effectively communicates the organization goals and how to join. This strategy matches their "openness", which is their main strength IMO. Their process document is in form of an RFC and is accessible up front in the website (for example, RFC 2026). It is concise and well written.

It's easy to navigate to a working group page (3 levels down: working groups -> areas -> specific group charter). Working group pages are very simple and present only basic charter information: name, chair, area director, advisor, and respective emails, mailing list address and brief subscription instructions, working group description, goals and milestones, current drafts and open RFCs.

Meetings appear to be a big part of IETF. All information about them is recorded on the website. That includes: meeting arrangements information, agendas, presentations and minutes. All of the 65 meetings (~3 per year) so far have been recorded in detail.

The only dynamic part of the website is composed by a set of tools used by WG chairs and higher bodies to track and manage the standards track. In other words, they have a simple information system to track where an RFC is on the standards track. There is a statechart describing the possible states an RFC is in. The system is regarded as a very handy tool for chairs, probably because of the high traffic they have on the standards track.

The website also has an educational section that contains presentations and documents addressed to a range of clients. For example how to be a chair or an editor. Those documents are usually prepared at meetings then converted to an educational format.

Standards development support is simple: an editor presents an initial draft, the group discusses the draft on mailing list, the editor summarizes discussion and incorporates changes to the draft. After consensus is reached, a draft is pushed through the standards track. Each group can have additional supporting tools if they want them. The burden of managing additional resources is on the group however.

As supporting tools for standards development, IETF provides mailing lists and the charter pages for each group.

IEEE: Institute of Electrical and Electronic Engineers

News items seem the most prominent content in the front page. A menu on the left gives access to the various areas of the site. The site seems well structured.

A separate website (at least regarding web design) is used to deliver the standards. That site also present news as the foremost content item. Apparently one needs to subscribe (a fee) to get access to the standards.

IEEE website has a page describing the standard development tools they provide. From their website:

What services are available and who can use them? Here are some of the services provided:

Public and private webspace for working-group use

- custom search capability for public and private areas
- Public and private FTP areas
- e-mail-based discussion groups
    - web-based list archiving/searching
- web-based discussion groups
- Stylesheets to use with popular word processing software so that information can be readily converted to Standard Generalized Markup Language (SGML), which is the internal production format of IEEE-SA.

- The IEEE-SA website also includes various interfaces that working groups can use:

  Electronic forms
    - Query capabilities into various databases and status reports
    - Online abstracts and indexes of IEEE standards

The public web and FTP areas are open to the public. Access to private areas and mailing lists is generally controlled by the individual working groups and is limited to people involved in the development or revision process of a particular standard.

Most IEEE-SA working groups choose to set up public and private web areas, along with a e-mail list to which all the working-group members are subscribed. Examples of these public web areas are visible at http://grouper.ieee.org/groups/index.html. The private areas often include drafts, minutes, mailing-list archives, and other sensitive material.

Typically, a draft will be uploaded into a working group's private web area. A notice will then be sent to members through the e-mail list. Comments, suggested revisions, etc. are passed around and discussed on the list, then the working-group editor will incorporate the changes into the next draft, upload it and send out a notice.

Group public areas do not follow any standards (even more heterogeneous than W3C, contrary to IETF).

Standard development follows the process described in http://standards.ieee.org/resources/development/index.html. People vote on drafts using an electronic balloting system.

ISO: International Organisation for Standardization

The evaluation of ISO collaborative environment is based on their website section dedicated to standards developers, called ISOTC. The site is implemented by a commercial package called Livelink[1]. The front page of ISOTC provides a list of individual TC (Technical Committee) that can be sorted by number or sector and a number of other menus (process, contacts, catalogue, members, electronic tools and training courses).

Each TC has its own section on the ISOTC Portal, from information technologies to screw threads and zinc alloys. Each TC is further subdivided into sub committees.

Each TC has an initial introductory text on their website section followed by a table with relevant folders and documents. This table view has many Windows Explorer features such as copy, move and delete functions, and right-click (popup or context) menus. Some TCs have a number of "Featured Items" at the top for easy access. Most TCs only provide administrative and standards documents on the TC site (Business Plans, etc). Some TCs pages link to external Working Group websites where the current work and management information probably is.

The site implements some kind of shopping cart metaphor for documents. However, I could not explore this further because the "add to basket" link requires a login.

As an example, the Information Technologies TC (JTC 1), which seems to be the most elaborated TC, is organized as follows:

Main page with a number of links to other sections of JTC1, such as:

At a glance: overview of TC, describing briefly membership, meetings, structure, products, experts and other information.
Structure
Membership
Documents: Search form to documents database. Each group has lots of documents. Document info shown in table is: type (pdf, doc), N number (77691), name (JTC001-N7769-1), title, document type (National Body Contribution), action (act, info), due date, created, pages, size.
Ballots: List of member ballots, used for various vote procedures (members-only)
Personnel: More regular documents
Meetings: members-only
Resolutions: members-only
Procedures: general ISO process overview document
Templates: various useful document templates
Projects
Pas Submitters
Email Archives: blank.

List of relevant documents in table view (described above)

The IT group targets collaborative development of documents with the following tools:

- **Automated templates for word processors**:

[1] Most of it is members-only and requires a login & password

    - Provides a document skeleton to improve conformity with rules for structure, conformity with drafting rules, automatic application of typographic rules. Files are compliant with rules for structure and drafting
      so they are easy import into publishing system
    - Nothing on the lines of PleaseReview software package, though. Documents are edited and reviewed the old way.

- **Automated templates for AutoCAD**: Aimed at standardization of drawings. Not related to TDWG, but effective).

W3C: World Wide Web Consortium

Their homepage, as well as all the other W3C pages, appears too 'busy'. All pages seem verbose. They acknowledge that the website is a bit hard to use by newcomers, but it is useful to experienced users.

Except for the main menus, most of the links in all pages are nicely inserted (i.e. buried) inside plain English paragraphs which seems to go contrary to the common web design knowledge that people scan web pages quickly, rather than carefully reading each paragraph.

Main content is the W3C news in the middle of the homepage. The news area pushes the other content and links down the bottom or into the corners, making it difficult to get what you may want. There is a direct access to various W3C section (W3C A to Z) right from the home page (left-hand panel) that eases this problem. Several different (heterogeneous) contents are listed there.

Activities pages don't follow a strict template so they don't benefit from previous user experience with other activities pages but does allow more flexibility to accommodate different kinds of activities.

Standards can be obtained from activities pages. The links are provided within the activities pages (rather than in a neat list or matrix) and presented as a web page in HTML. The standard is available in a range of formats (PS, PDF, ZIP, Gzip'd TAR) that are accessible from the HTML version of the standard. Standards are nicely hyperlinked to other documents (such as the references, latest and previous versions, and a neat difference marked version - see http://www.w3.org/TR/2002/REC-xhtml1-20020801/xhtml1-diff.html for example). Compressed archives include other related standards documents as well, such as DTD.

In W3C, the standards development supporting tools are only accessible by members and therefore could not easily be evaluated.

Organisation	Homepage	Navigation	Standards	Support	Communication	Notes
GGF	Introductory paragraph explaining what GGF and grids are about	All uppercase letters in menu are a bit confusing, but structure is flat and simple.	List of all current standards is one click away. List has basic info (name, author, and area) and a link to document in PDF format.	Easy access to all working groups 1-click from homepage. Standard group structure - abstract, links to charter and milestones, current drafts, meeting agendas and minutes, chairs, secretaries, emails, mailing lists, issue tracker, news, and reporting	Every page has a short and concise explanation on what it is about and links to more detailed information	Remarkably similar to current trends in TDWG website development.
IEEE	News is the most important content	A menu on the left gives access to the various areas of the site - well organized	Provided by a separate website at a fee	Public and private webspace & FTP areas for working-group use. e-mail & web-based discussion groups with web-based list archiving/searching. Stylesheets for popular WP software readily conversions to SGML (internal production format of IEEE-SA).		
IETF	Simple and light weight (homepage is only 14KB). Search box up front.	Simple and effective	Plain text generated from XML or other source format. Referenced by their RFC number. Easy to find if you know the number or using search	Mailing lists. Editors in charge of discussion and incorporating comments into a draft. Chair and higher bodies have a simple information system to track documents in the various stages of the development. It also handles requests.	Standard charter for each group, mailing lists, and meetings with detailed minutes	
IMTC	Main focus is on organization information. A bit to wordy.	Menu system is not intuitive	Standards are buried under About IMTC -> Standards page and is mixed with links to other standards organisations	Didn't find anything but mailing lists	Logs of meetings from the Historical Archive (which can be sent upon request?). Texts in website seem to wordy.	Page isn't rendered properly in FireFox. Sometimes there is incomplete information about activity groups. Most important groups present basic info following a template (~charter).
ISO				Use Livelink system (IT group uses most). Technical Committees have a separate area on the site. The IT group targets collaborative development of documents with the following tools: Automated templates for word processors and AutoCad.		Looks like the IT group made a poor use of Livelink
OASIS	Focus on news, but provides links to reviews, votes, and other.	Intuitive enough - standards come first, then development.	Links to standards from the homepage but the link takes you to entry in list instead of the actual standard page (shame)	Members-only.	Members-only.	Group list is too crowded and includes closed and completed groups in the same page. They seem to have more groups than standards.

OGC	Takes time to render pages. Short introductory paragraph about OGC with a list of news, events and requests.	Dropdown menu offers access to whole website. Search box is not up front, but it should.	Hidden under Documents menu & users need to understand the classification scheme for standards to use it effectively.	Members-only.	Members-only. Some public fora for public topics and announcements	
W3C	Pages are a bit too busy. Focus on news	Links are buried inside plain English paragraphs, which is difficult to locate when you are scanning the page for links.	HTML version, with links to other formats: PS, PDF, ZIP, GZiped TAR. Text versions include only normative document while compressed versions include other artefacts (DTD, Schemas).	Members-only.	Members-only. Some public fora for public topics and announcements.	
WS-I	Boxy design with short introductory paragraph and other useful information	Simple and flat structure but group charters, test tools, specs, documents, templates, use cases, presentations, and FAQ under the same “deliverables” umbrella.	All is mixed up under the term “deliverables”. Documents are in PDF format.	Members-only. Seems to provide document management. No public information on working groups, committees and special interest groups. Members vote on deliverables.	Meetings 3 times a year, newsletter	

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