



ARTS Technical Committees Development Process

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TABLE OF CONTENTS

1. References	4
2. Abstract.....	4
3. Definitions:	4
4. Technical Organization.....	4
4.1 Mission	4
4.2 Membership Rules	5
4.2.1 Technical Committees	5
4.2.2 Sub-Committees	6
4.2.3 Work Teams.....	6
4.3 Organization Chart.....	8
4.4 Meeting Guidelines.....	8
4.4.1 Scheduling	8
4.4.2 Format.....	9
4.5 Voting Rules	9
4.6 Responsibilities.....	10
5. Development Processes	10
5.1 Overview	11
5.1.1 Overview	11
5.1.2 Process Flow.....	11
5.1.3 Charters.....	11
5.1.4 Technical Specification Development Process	12
5.1.5 Deliverables	13
5.2 Technical Specification Submission Process	14
5.2.1 Overview	14
5.2.2 Process Flow.....	14
5.2.3 Deliverables	14
5.3 Technical Report Development Process	14
5.3.1 Overview	14
5.3.2 Process Flow.....	15
5.3.3 Deliverables.....	15
5.4 Development Rules.....	15
5.4.1 Best Practices.....	15
5.4.2 Public Comment Response	15
5.4.3 Public Posting of Work Product	15
6. ARTS Data Model Lifecycle Management	16
6.1 Overview	16
6.2 Problem/Enhancement Definition.....	16
6.3 Design.....	16
6.4 Development.....	16
6.5 Release.....	17
7. ARTS Deliverables.....	17
7.1 Deliverable Artifacts.....	17
7.1.1 Artifact Maturity Levels	17
7.1.2 Document Naming	18
7.1.3 Versioning Guidelines	18
7.1.4 Technical Specifications	19
7.1.5 Technical Reports	20
7.2 Process Support Documents	20
7.3 Development and Publication Tools.....	20
7.4 Work Product Posting Rules.....	21
8. Revision History	21
9. Issues	21
10. Glossary.....	21

11. Appendix22

1. REFERENCES

The Unified Modeling Language Reference Guide – Rumbaugh, Jacobson, and Booch.
The ARTS Intellectual Property Policy as approved January 16, 2005 and effective March 5, 2005.

2. ABSTRACT

This document outlines the organizational structures, roles and responsibilities, voting rules, development methodology and deliverables and of the ARTS technical committees. Current technical committees covered by this document are ARTS XML, UnifiedPOS and Data Model. Additional technical committee may be created by the ARTS Board of Directors and added to this document.

3. DEFINITIONS:

The Association for Retail Technology Standards (“ARTS”) is an open standards organization operated under the auspices of the National Retailers Federation (“NRF”). ARTS is established and sponsored by NRF as an open forum for Members to create and promote technical specifications for retail technology. This Intellectual Property Policy (“IP Policy”) states the ARTS policies concerning intellectual property rights of Members, contributors and others in developing, contributing to and using ARTS Specifications. The ARTS IP Policy is intended to strike a balance to support ARTS development of open standards; promote broad industry adoption of ARTS Specifications; encourage Members and others to participate in developing ARTS Specifications; and recognize the intellectual property rights of Members and others.

Meetings are defined in this document as scheduled conference calls or face to face and include:

- ARTS Update meeting surrounding meeting of technical committees that are open to all members of ARTS in good standing.
- Technical Committee and Work Team meetings open to members of the committee or team who have formally joined. Non-members of the ARTS may attend no more than one meeting of a Technical Committee or Work Team as a guest by approval of the Chair or ARTS Executive Director subject to any additional limitations or requirements that the ARTS Board may impose, provided that (i) such attendance furthers a purpose of ARTS, and (ii) such individuals or entities agree in writing to be bound by all of the obligations of Members in the ARTS IP Policy.

Review periods specified in this document are to provide the participants, ARTS members and non- members the opportunity to review draft and proposed technical specifications for technical accuracy and completeness and for identification and disclosure of intellectual property within the document as provided for in the ARTS IP Policy.

4. TECHNICAL ORGANIZATION

4.1 Mission

The Association for Retail Technology Standards (ARTS) was established in 1993 to enable the rapid implementation of technology within the retail industry by developing standards to ease integration of software

applications and hardware devices. To accomplish this mission technical committees have been established with assigned objectives.

- The Data Model Technical Committee was created in 1994 to develop and maintain a logical data model containing all the data elements necessary to automate computer applications to support retail business operations. *The mission of the ARTS Data Model Committee (DMC) is to maintain the ARTS Data Model and present it to the ARTS membership as a Logical model, in 3rd normal form so that retail systems constructed by the ARTS membership using the ARTS Data Model will be able to inter-operate with reduced integration costs. The data model committee recognizes that interoperability at the level of a physical database implementation is only one focus of the data model, the other focus is the provision of common data element definitions to be used in the development of XML messages to interface applications within the retail enterprise.*
- The ARTS XML Technical Committee was created in 1999 to develop and maintain standard XML schemas based on the structures and data elements within the ARTS Data Model to integrate applications within the retail enterprise.
- Unified Point of Service (UnifiedPOS) Technical Committee was created in 1998 to develop and maintain a single API inclusive of OPOS and JavaPOS to interface hardware devices to POS terminals independent of the software application and operating systems. *The mission of Unified Point of Service, UnifiedPOS, is to produce an Application Interface specification that is platform independent (language and OS neutral) for Point of Service devices used in the retail environment. This committee evaluates new technologies that are available in proprietary solutions and creates a standard definition for application function for exploiting the device category. The scope may include the programming and/or management model for the device and both local and browser access interfaces. It is the intent of this standard to allow for interoperability between standard applications and standard devices from multiple providers by defining an architecture for application interface to retail devices and a set of retail device behaviors sufficient to support a range of POS solutions.*

4.2 Membership Rules

4.2.1 Technical Committees

Participation on all technical committees is available only to members of ARTS in good standing that have accepted the ARTS IP Policy. To serve on a technical committee the ARTS member company representative must agree to participate in writing or by declaration in approved meeting minutes and commit to attend at least 2 of every 4 committee meetings, accept work assignments beyond committee meeting of a minimum of 10 hours per month and have high speed internet access

New technical committees will be created by the ARTS Board of Directors. All technical committees must contain a minimum of 5 members that should include one or more retailer representatives. The initial members of a new technical committee will be appointed by the Executive Director of ARTS with the approval of the Board of Director. The maximum number of members of a technical committee will be established by each technical committee. Membership on a technical committee, except as appointed by international councils, will be by majority vote of the then members from requests for committee membership received by the committee chair from qualified ARTS member. The ARTS Board may establish Chapters or Councils in EMEA and Asia Pacific and these Councils may appoint a member to all technical committees.

An ARTS member company including its subsidiaries may have only one representative on a technical committee.

Each technical committee will elect by separate ballots a chair and vice chair from its membership by majority vote of all committee members to serve a one year term, and may be re-elected to a second consecutive one year term. If willing to serve, the vice chair will automatically assume the position of chair on the resignation, removal or expiration of the second term of the chair.

Any member that does not continue to meet the requirements of membership will be removed from the Technical Committee. Removal from the Technical Committee for any other reason must be initiated by the Chair or by a motion from the committee. The Chair of the Technical Committee will notify the member in question of their impending removal. The member in question will be given three months to correct the membership issue. If the

issue is not corrected the Technical Committee will vote by simple majority to remove the member. The member in question must abstain from the vote.

4.2.2 Sub-Committees

Technical committees, with approval of the Board and assignment of a Board sponsor, may appoint sub-committees to make special studies, prepare white papers, interface with other ARTS technical committees, or other assignments. Sub-committee may not develop specifications or other products that will become ARTS standards. Chairs of sub-committee must be members of the creating technical committee. Sub-committee membership is open to ARTS members that regularly attend ARTS meetings.

4.2.3 Work Teams

Work Teams will be formed to develop or enhance standards or make specifically assigned contributions to a standard by the ARTS Board of Directors or the NRF. A member of the Board must agree to sponsor the work team.

The Work Team scope may be written by the ARTS Board or Technical Committee and must be included in the motion to create the work team.

Work Teams should be organized on regional areas, for example, Europe, Asia Pacific, West and East coasts of the United States to reduce travel time and cost allowing more frequent meetings. Work Teams will disband when their assignment is completed as indicated by ARTS Board approval of the Proposed Recommendation.

The Technical Committee with the consent of the ARTS Board can disband teams that do not meet their published timelines or follow the development process documented herein.

4.2.3.1 Board Sponsorship Responsibilities

A Board Sponsor of a committee, subcommittee or work team has the following responsibilities:

1. At least monthly discuss with the work team or committee chair progress and challenges to offer advice and counsel.
2. Assist the Executive Director and chair to recruit members for team/committee.
3. Make a reasonable effort to have a representative of their company participate on the team/committee.
4. Promote the adoption of the sponsored standard within their organization.
5. Supplement the appropriate chair report to the Board.

4.2.3.2 Work Team Membership requirements and qualifications

- A. All members of a work team must be a representative of an ARTS member company in good standing and formally agree to participate on the work team.
- B. An ARTS member company representative may only be a member of two Work Teams within one technical committee concurrently. Organizations that wish serve on additional work teams may appoint one additional representative to join work teams.
- C. A Work Team will be three (3) or more participants who have formally agreed to serve on the team, one of which should be the representative of a retailer ARTS member company. Each work team should have one member of the Technical Committee agree to participate. A member company may have up to 3 representatives on a work team but each company is limited to one vote.
- D. Each ARTS XML Work Team must include a data modeler familiar with the ARTS Data Model preferably a member of the DMC.
- E. Each work team shall elect a chairman by majority vote of the participating members. The chair shall be responsible for managing all meetings of the work team and providing minutes of the proceedings of all

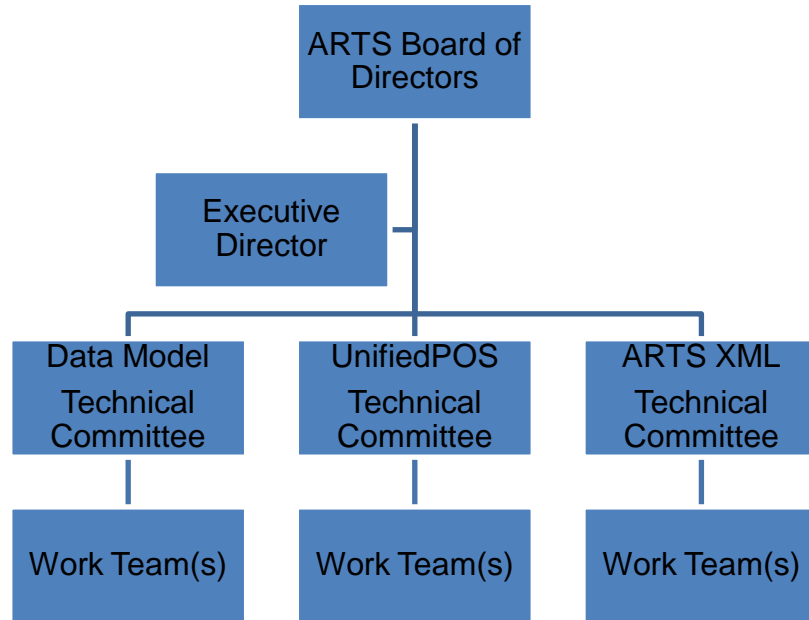
ARTS Technical Committees Development Process

meetings to the organizing technical committee. Meeting minutes must record motions, suggestions, contributions and agreements to join the work team by named individuals and the company they represent.

- F. The Work Team must develop the team charter based on the scope defined by the Technical Committee within 90 days of the formation of the team.
- G. Members of the work teams should have one or more of the following backgrounds: retail data and systems design experience; working knowledge of technical domain; or retail domain expertise applicable to the charter of the Work Team.
- H. A team member must have access to the Internet and is expected to commit at least 10 hours a month to the work team. Those who wish to contribute to the project but are unable to commit that amount of time will be asked to conduct periodic reviews of draft releases when published on the web.
- I. Non-ARTS member guests may attend no more than one work team meeting and must agree in writing to comply with all provisions of the ARTS IP Policy.
- J. An ARTS member representative who is not a participating member of a work team may attend up to two meetings of a work team as a guest without becoming a participating member of the work team. Technical committee members may attend an unlimited number of meetings of work teams organized under the technical committee on which they serve. Meetings are defined as scheduled conference calls or face to face, in which the business of the work team is discussed.

4.3 Organization Chart

The following diagram illustrates the organization of the ARTS Technical Committees and work teams.



4.4 Meeting Guidelines

Technical Committee meetings are to advance the work of standards for the retail industry as prescribed by the ARTS Board of Director. Meetings of the technical committees are called by the elected chairs of the respective technical committee or the ARTS Executive Director. All members of ARTS in good standing are invited to send representatives to these meetings. Member representative may participate as members of the technical committee, work teams or as guests. Agendas indicating the topics for technical committee discussion and announcing the work teams that will convene during the meeting days are prepared by the ARTS staff in cooperation with the technical committee chair and must be available to all ARTS members 30 days in advance of the meeting date. Chairs of work teams that will be meeting per the published agenda, should furnish work team agendas at least 7 days in advance of the meeting.

Robert’s rules of order will be use to govern all meetings.

4.4.1 Scheduling

The following meeting guidelines are currently in effect for technical committee meetings:

- Meetings will be held no less frequently than every three months.
- At each meeting the following meeting date and location will be confirmed and the subsequent meeting will be tentatively scheduled.
- Meetings should avoid conflicts with retail industry events.
- Meetings should last a full three days, unless two or more technical committees, with the approval of the ARTS Executive Director, agree to combine meetings for purposes of cooperation and coordination.
- Meetings should be scheduled to minimize the required travel time for participants (for example, avoid Fridays for US West Coast meetings and Mondays for US East Coast meetings).
- Meetings should alternate locations East Coast, West Coast then the third in Europe or Asia Pacific and return to the Coast to Coast rotation.

ARTS Technical Committees Development Process

- Meetings should be held in cities with major airports, with ease of access from international and US cities.

4.4.2 Format

The standard agenda for Technical Committee meetings will be:

The morning of the first day will begin with a general meeting for all attendees to discuss new assignments or directions from the ARTS Board, review/resolve follow-ups from previous meeting, review work team agenda, and select work team meetings to attend. This session should last no more than 2 hours.

The remainder of the first day, second day and the first hour of the third day will be devoted to deliberations of the technical committee and if appropriate individual sub-committee and work team meetings.

The on the third day a minimum of 3 hours must be allotted for an ARTS Members Update meeting open to all ARTS members in good standing that have agreed to the ARTS IP Policy. At this ARTS Members Update meeting the chairs of sub-committee, work teams and technical committees will present detail minutes of the proceedings of their individual meetings during the previous two days. These minutes will be provided to the secretary of the applicable technical committee for inclusion in the published minutes of the meeting. It is the responsibility of the chair of each sub-committee or work team to ensure these minutes are available for presentation at this Members Update meeting. Chairs that do not fulfill this responsible, after warning from the ARTS Executive Director or the chair of the technical committee, will be remove from the chair and the work team or sub-committee directed to elect a new chair.

Technical Committee meetings are open to the all ARTS members and guests as prescribed in the ARTS IP Policy. The minutes of all Technical Committee meetings will be posted in the public section of the web site. .

The minutes of all meetings Technical Committee, Sub-Committees and Work Teams must be document to record motions, suggestions, contributions and agreements to join the work team by named individuals and the company they represent.

4.5 Voting Rules

A simple majority of the membership of the Technical Committee must be present in any meeting to conduct official business. Matters of policy or approval of specification must be decided by a two-thirds vote of Technical Committee membership. A simple majority of the Technical Committee is required to approve other motions and considerations. Voting may be done in person during Technical Committee meetings or by email. Email voting must be used if sufficient members of Technical Committee are not present in a meeting or conference call. For example a minimum of two-thirds of the membership must be present to vote on matters of policy or approval of specification. At least seven days shall be allowed for votes to be cast by email from the date the call to vote is issued by the applicable Technical Committee chair..

Vote must be cast as Yes, No or Abstain on all motions and calls for voting to approve specification. Comments are required on No votes indicating recommended modifications. Comments may be provided on Yes and/or Abstain votes. A member may vote Yes and suggest enhancement, but may not vote conditionally. If the call for voting to approve fails to obtain the required two-thirds Yes vote, the Technical Committee chair will Take appropriate actions to enhance the specification based on comments and call for a re-vote as soon and possible.

4.6 Responsibilities

The following chart summarizes the responsibilities of each committee/group/team associated with the ARTS technical committee development process:

<i>Organization</i>	<i>Inputs</i>	<i>Activities</i>	<i>Internal Output</i>	<i>External Output</i>
ARTS Board	Direction and prioritization of Technical Committee work. Requests for additions and changes from retailers and application vendors Submissions for inclusion in standards set Retail Enterprise and Process Models Work Team Charters	Prioritize work Define releases Review all specifications for intellectual property own by their company and make immediate disclosure. Approves all specifications and other published work products	Internal work plan Release schedule Meeting minutes / status / plan	Prioritized list Release Information
Technical Committee	Modeling information from retailers, vendors and standards bodies	Guide development specifications and other work products. Provide technical guidelines to all subordinate work teams. Review all specifications and work products for intellectual property owned by their company and make immediate disclosure. Approve all work team charters. Approve all specification for public review and final approval of the ARTS Board.	Retail Enterprise Model Retail Process Model Meeting minutes, status and plan	Retail Enterprise Model Retail Process Model
Work Teams	Retail Enterprise Model Retail Process model Context specific priorities External submissions Common data repository Infrastructure parameters ARTS Data Dictionary	Develop specifications and other work products. Review all specifications and work products for intellectual property owned by their company and make immediate disclosure.	Work Team Charter Meeting minutes, status reports and plans. Technical Specification(s)	Technical Specification(s)
Sub Committees	Board direction, membership requests, new industry functions and/or products.	Sub-committees may be formed by the Board or Technical Committees to manage special activities, conduct research, develop specific documents. Two standing sub-committees of the Board are Conformance and Process.	Sub-committee mission statement. Meeting minutes.	Suggested revised policies and processes. White papers, FAQ's, research reports.

5. DEVELOPMENT PROCESSES

There are several key ARTS development processes that result in the publication of technical specifications. All technical committees and work teams participate in the development process.

5.1 Overview

The key development processes required to publish and maintain Technical Specifications are described in this section. Technical Specifications are developed by Technical Committees and/or Work Teams formed by the Technical Committee as directed and approved by the ARTS Board of Directors. Technical Reports are produced by Technical Committees and used during the development process so the process of creating a published Technical Report is also described in this section. The publication process for White Papers and Reference materials is not currently described in this section, but the publication of any materials produced by Technical Committees can only be done based on the rules specified in Section 7.4 Work Product Posting Rules.

5.1.1 Overview

This process is used by Technical Committees and Work Teams during the development of a Technical Specification for public use. The process defines the steps for development, IP research and disclosure, technical review and approval for external publication and approval as a recommended standard.

5.1.2 Process Flow

The following specifies the main process flow for developing, approving and publishing a Technical Specification, which is defined a new or update to existing technical specification to be approved by the ARTS Board and published as a standard. Technical Reports, White Papers or Reference Materials are not Technical Specifications. All review periods provided for in this section include review for technical accuracy and completeness and for identification of intellectual property within the document being reviewed.

5.1.3 Charters

The Technical Specification process must begin with the creation of a Charter by the Technical Committee or a Work Team that has been approved by the Technical Committee and if requested, the ARTS Board of Directors. Technical Committees may directly develop a Technical Specification or create a work team to do so. The Charter must contain the following:

- Name – a unique name descriptive of document to be produced.
- Mission – a description of what the work team will develop within the scope provided by the TC or Board. May include intended links and or cooperation with other ARTS or industry standards.
- Agreement to operate under the ARTS IP Policy (all work is under the IP Policy)
- Participating Member Roster – name of individuals and the companies they represent that have via email or work team minutes agreed to serve on the work team, noting date joined and terminated as a work team member.
- Business Justification – a comprehensive explanation of why the mission of this work team should be approved by the TC and Board. Must include:
 - Technical Value proposition – a statement of the expected impact (time and cost) this specification will have on a retailer's TCO when the standard is used versus a proprietary approach to the same solution.
 - Business Value proposition – identification of two or more business problems/challenges this standard addresses and specifically how it will be of benefit to implementers. Include value measures and statistics when possible. (See appendix ? for sample Business Value proposition information.)
- Business Scope – what business process the intended standard will address. Relates to the Solution Center and the enterprise architecture or business model. It is important to initially create a charter sufficient in scope to avoid formation of a new work team and charter should future release need to include related business processes. Business Scope should include all processes to be addressed, but maybe segmented into phases.

ARTS Technical Committees Development Process

- Technical scope – the specific activities within the business process that will be defined by Use Cases. Technical scope should be comprehensive matching the business scope with use cases developed in phases.
- Dependencies and collaborations – identification of other ARTS work teams and/or technical committees, paid staffing requirements and if appropriate collaboration with partner or external organizations.
- Work Plan – a project schedule defining tasks, assignees and dates to fulfill the Mission. Detail should be provided for phase 1, subsequent phases may be quarterly timeframes.
- Revision History – log of major events in development of the standard through the posting, comment and final approval as a standard by the Board.
- Domain Glossary – precise/clear definition of all entities and special terms included in the completed technical specification.

The charter must be maintained throughout the development process and posted as a separate document for downloading by members and public.

5.1.4 Technical Specification Development Process

- This section defines the steps necessary to develop an ARTS product. The steps follow the Maturity Model described in section 7.1.1 beginning with Working Draft, and proceeding through Last Call Working Draft, Candidate Recommendation, Proposed Recommendation to ARTS Recommendation.
- A. Working Draft (see section 7.1.1 for definition) version of the Technical Specification, defined as a work in progress document, is created according the rules specified in Section 6.1.
 - B. The Technical Committee or Work Team which ever created the Working Draft, (in most incidences a Technical Committee appoints a Work Team to develop standards, by has the option to directly develop within the Technical Committee), conducts the initial review for intellectual property inclusion and infringement, conformance with the approved scope specified in the charter, and technical quality and consistency with other ARTS standards and published guidelines.
 - C. The Work Team votes per “Voting Rules” section 3.6 of this document to approve the Working Draft. When approved by the Work Team, the document is promoted to Last Call Working Draft and is submitted by the Work Team chair to the chair of the appropriate Technical Committee for review and approval. **If the Technical Committee directly develops the technical specification this step is bypassed.**
 - D. The Chair of the Technical Committee will provide the Technical Committee written notice of a Last Call Working Draft review period of no less than 60 days and no more than 90 days. The Technical Committee will review the Last Call Working Draft for intellectual property inclusion; conformance with the approved scope specified in the charter, and technical quality and consistency with other ARTS standards and published guidelines. **After 60 but not longer than 90 days the Chair of the Technical Committee will call for a vote to approve the Last Call Working Draft.**
 - E. The Technical Committee will vote on approving the Last Call Working Draft per “Voting Rules” section 4.5 of this document. **Approval requires a two-thirds vote of Technical Committee membership and can be conducted in meeting or email allowing 7 days for voting.** If the Last Call Working draft is not approved it will be returned to the work team for modification, and reprocessing beginning at step C above. If the specification was prepared by the Technical Committee modifications will be made during the review period step D.
 - F. When the Technical Committee approves the Last Call Working Draft version of the Technical Specification it is promoted to Candidate Recommendation and is posted to the public area of the ARTS web site for member **or** public comment for a period of no less than 60 days and no more than 90 days. **The operational and warehouse data models are only available to ARTS members accordingly they are not posted for public access.** Further, **if the Post Conditions defined below are applicable, the members and/or public review period is reduced to 30 days.**

ARTS Technical Committees Development Process

- G. Comments received by non-members of ARTS must be provided with a signed copy of the “Form of License Agreement for Public Comment and Non-Member Feedback as provided for in the ARTS IP Policy to be received and considered.
- H. All comments received from the website posting are to be logged, documented and acknowledged by the ARTS staff and provided to the Technical Committee
- I. At the end of the member and/or public comment period the ARTS staff will provide all comments to the appropriate Technical Committee for consideration and/or assignment to the work team for creation of a new version of the Technical Specification.
- J. The revised version of the Candidate Recommendation will be submitted to the Technical Committee for vote to promote the Candidate Recommendation to a Proposed Recommendation. If the comments had been assigned to a work team for consideration, the work team must vote to approve the revised Technical Specification to the Technical Committee per “Voting Rules” section 4.5 of this document.
- K. When the Technical Committee approves the Candidate Recommendation for promotion to the status of Proposed Recommendation, then it is submitted to the ARTS Board for approval.
- L. The ARTS Board will review the Technical Specification for inclusion of intellectual property and conformance to the approved scope and within 30 days vote to approve by simple majority to either publish the Proposed Recommendation or send it back to the Technical Committee for modification and approval beginning at step J above.
- M. If the ARTS Board approves the Proposed Standard the Technical Specification is posted to the public area of the ARTS website for member or public comment for a period of no less than 30 days.
- N. All comments are logged, acknowledged and documented by the ARTS staff for consideration by the Technical Committee.
- O. At the end of the second member or public comment period the ARTS Board will consider all comments and decide if the Technical Committee should be directed to make further revisions. If the Technical Committee is directed to make further revision the process begins again at step J above.
- P. When the ARTS Board approves the Proposed Recommendation it will be promoted to an ARTS Recommendation and deemed an ARTS standard once two or more vendors or one retailer has implemented the Proposed Recommendation. With the ARTS Board approval of the Proposed Recommendation the creating work team will be abolished.

Post conditions: Periodically it may be necessary to modify an ARTS standard after approval by the ARTS Board or where it has been accepted as a mature standard as in the instance of the Data Model and UnifiedPOS, as on going maintenance and enhancements are the normal course of business. In these situations since all parties, both ARTS members and the public, have had adequate time to review the standard for intellectual property and technical accuracy during the original approval process, new versions of any previously approved standard will be subject to a 30 day member or public review period prior to general release as a revised standard. To be within this post condition 30 day modification provision, ARTS XML schemas must be within the scope of the original charter, or a new work team will be created and the multiple review process will apply. UnifiedPOS and the Data Model have stated missions within this process document; if these are not altered the 30 day review for modification will apply. Maintenance and enhancement of all Technical Specifications will be provided by the associated technical committee either by direct involvement, creation of a new work team or assignment to ARTS staff under technical committee oversight.

5.1.5 Deliverables

The Technical Specification Development Process results in one or more Technical Specifications adhering to the rules defined in Section 7.1.3.

5.2 Technical Specification Submission Process

5.2.1 Overview

This process is used by companies or associations to submit technical materials as input to ARST Technical Committees. Any materials submitted the property of ARTS. Parties providing materials must complete a “Transfer of Property Form”. Software code may not be submitted for incorporation in to an ARTS Specification.

All accepted submitted materials will be assigned to a Technical Committee for development into a Technical Specification.

ARTS is not obligated to accept submissions. If a submission is accepted the contributor will be acknowledge on the ARTS website and in other ARTS documents and presentation unless the submitter requests to remain anonymous.

Representatives of the submitting organization may participate on the work team if one is created to use the submission the development of the Technical Specification.

5.2.2 Process Flow

The following section summarizes the main process flow for submitting materials for use in developing an ARTS technical specification.

Preconditions: An organization has approached the ARTS Board or Executive Director with materials to submit as input into a Technical Specification. These materials must be relevant to the scope and mission of ARTS and the organization must be willing to submit them under the terms of the ARTS IP Policy. Software code may not be submitted for incorporation in to an ARTS Specification.

- A. The submitting organization completes a “Property Transfer Form” granting all right to ARTS.
- B. The submitting organization submits the submission document and supporting materials to ARTS and complies with all legal transfer of ownership provisions as defined by NRF-ARTS attorneys.
- C. The ARTS Board reviews the submission and votes to accept the submission.

5.2.3 Deliverables

The deliverable resulting from this process is the Technical Specification Submission Document, which includes the following information:

- Submission Overview
- Scope of Request
- IP Position Statement
- Artifact Inventory
- Contacts

The submission document must be signed by an authorized agent of the submitting organization to indicate the organization’s willing submission of the document to ARTS. The document must include a statement regarding the intellectual property status of the work submitted.

5.3 Technical Report Development Process

5.3.1 Overview

Technical Reports are the published output of sub-committees formed by the Board or technical committees. This Process document is an example of an ARTS Technical Report. Technical Reports are more volatile than Technical Specifications as they are not put into production use by retailers, but are rather used as source documents to assist in the development of Technical Specifications. Since Technical Reports are subject to frequent change, their development process is abbreviated. That development process is described here.

5.3.2 Process Flow

The following chart summarizes the main process flow for creating a new version/revision/modification of a Technical Report:

Preconditions: None.

- A. A Subcommittee creates a working draft of a Technical Report.
- B. The Subcommittee votes to submit the Working Draft for Technical Committee comments. The vote need only pass by a simple majority of voting members of the Subcommittee.
- C. The Subcommittee presents or posts the working draft of the Technical Report to the full Technical Committee and makes it available for review on the Collaboration Area of the ARTS website for no less than 14 days.
- D. The Subcommittee collects and considers all input on the Technical Report and creates a new Proposed Report for consideration by the Technical Committee.
- E. The Subcommittee presents or posts the new Proposed Report for vote as an approved ARTS Technical Report. The motion must be approved according to the Voting Procedures for "policy" matters as defined in Section 3.6.
- F. If the Technical Committee votes to approve the adoption and publication of the Technical Report then it is updated to reflect its new status and posted to the ARTS Collaboration Area of the ARTS website.

Post conditions: New Technical Report is available for use by the Technical Committee, Subcommittees and Work Teams.

5.3.3 Deliverables

The Technical Report Development Process results in one or more Technical Reports adhering to the rules defined in Section 7.1.5.

5.4 Development Rules

The following rules apply to all work teams and can only be overridden by the Technical Committee with a vote according to the Voting Procedures for "policy" matters as defined in Section 3.15.

5.4.1 Best Practices

All Technical Specifications produced by Work Teams should adhere to industry accepted Best Practices or those developed by ARTS. The rationale for any known exceptions should be documented as issues during the review process so that approval decisions will be fully enlightened.

5.4.2 Public Comment Response

Work Teams and Sub-Committee that publish artifacts for public comment must record all accepted comments in a separate Comment Tracking Document and respond to those comments in the same Comment Tracking Document. Comments from non ARTS member companies will only be accepted if submitted with a Comment Form as prescribed in the ARTS IP Policy. The comment, originator, comment date and response must appear in the Comment Tracking Document. The Comment Tracking Document must be posted on the public web site with the document under review by the end of the review period for the document under review.

5.4.3 Public Posting of Work Product

Technical reports may be published to the public only upon approval of the Technical Committee and or ARTS Board of Directors.

6. ARTS STANDARDS LIFECYCLE MANAGEMENT

ARTS Standards Lifecycle Management defines the process of updating ARTS standards as a continuously repeating cycle of inter-related steps: definition, design, development and release. Each of these steps needs to be carefully monitored and controlled.

6.1 Overview

The ARTS Standards Lifecycle Management establishes the policy to control changes to the ARTS standards thereby providing implementers a vehicle to plan corresponding changes to applications built on the standards. The Data Model, UnifiedPOS and Board approved ARTS XML specifications are now mature standards developed over many years by more than a hundred contributors and have been implemented in applications and data architecture by many companies around the world. This Lifecycle Management policy recognizes that these standard specifications are now production products and ARTS must utilize great care to control change so that implementers will not be adversely impact with new releases. The intent is to encourage additional implementations while continuing to enhance the standards to support all retail segments.

6.2 Problem/Enhancement Definition

All proposed changes to the ARTS standard specifications will be documented, review and provided a disposition. Bugs, problems, comments and enhancement requests are submitted to ARTS following the process defined in Section 5.1.4 and logged into the ARTS Issue Management System.

The appropriate ARTS Technical Committee will perform an Impact Analysis by reviewing the issues in the ARTS Issue Management System and make a determination as to their impact following the versioning guidelines identified in Section 6.1.3.

Based on the Technical Committee Impact Analysis, the issue will be assigned to be included in the appropriate future releases of the standard specification and documented in the ARTS Issue Management System. This list of proposed changes will be available to ARTS members for comments. Roadmap Report will be generated from the ARTS Issue Management System showing open issues and their assignment for future releases of the standard specification. The Roadmap Report will be provided to the Executive Director for presentation to the ARTS Board for approval of issue to be included in the subsequent release of the standard.

New releases will be classified as Major (Section 6.1.3.2), Minor (Section 6.1.3.3) or Fix versions (Section 6.1.3.4). The proposed list of enhancement to for each release and the version will be posted for member review and comment.

The normal development time for a new release is 9 to 12 months. Thus members will in most instances have 9+ months from the time the list of proposed enhancements are publish until the last call working draft is posted for the required 30 day review. Minor “fix” release will take significantly less time.

Every effort will be made in all releases to avoid breaking backward compatibility. In the rare instance this does occur, additional review and comment periods will be provided to the member following the full development cycle documented in section 5.1.4 (F-P) of the Process.

6.3 Design

The design steps involve business modeling of an issue thru use case analysis to help identify the context, data and relationships involved in resolving an issue. The design steps further involves coordination with the other ARTS Technical Committees to ensure changes to one standard are fully coordinated and compatible with related ARTS standards. During the design process, synchronization with the ARTS Dictionary is mandatory to maintain consistency throughout ARTS.

6.4 Development

ARTS staff or assigned member volunteers will take the output from the design stage to update the standard and the Dictionary and supporting documentation. Output will then be reviewed and promoted following Section 5.1.4.

6.5 Release

Each new release of an ARTS standard will include documentation of all the changes with appropriate examples of how to implement the change from the previous to current version.

Where designated by the Board or Executive Director new releases by one technical committee will be coordinated with the release of other ARTS standard to guarantee synchronization of appropriate ARTS standards.

7. ARTS DELIVERABLES

7.1 Deliverable Artifacts

There are four categories of deliverables published by ARTS:

- Technical Specifications are Data Model, XML schemas, UnifiedPOS API and other specification approved and authorized by the ARTS Board.
- Technical Reports are supporting materials for Technical Specifications such as guidelines, dictionaries and process documents.
- White Papers are educational and informational materials produced by ARTS for public use.
- Reference Materials are supporting materials for ARTS Technical Committees and they include glossaries and membership lists.

7.1.1 *Artifact Maturity Levels*

All technical specifications must follow a maturation process that starts with an artifact in a draft status as it is developed by the subcommittee or work team and ends with a recommended status for use by the public. The maturity levels specified here are based on the W3C Recommendation Track. The maturity levels for an ARTS technical deliverable are:

7.1.1.1 Working Draft

A deliverable begins as a working draft within an ARTS Work Team. A working draft is generally a work in progress and is not yet ready for consideration by the Technical Committee for promotion outside of the authoring group. A working draft is an internal work team document and is not for use outside of the authoring group.

7.1.1.2 Last Call Working Draft

A last call working draft is a deliverable promoted by the authoring group for comment and consideration for promotion to a candidate recommendation. The last call working draft is a technical committee internal document that is submitted for comment to all participants on the authoring technical committee.

7.1.1.3 Candidate Recommendation

A candidate recommendation is a deliverable that has been approved by the technical committee for publication to the members or public for comment.

7.1.1.4 Proposed Recommendation

A proposed recommendation reflects the consideration of all internal and accepted public comments on a candidate recommendation. A proposed recommendation must be approved by the ARTS Board prior to publication. Final comments are solicited on this version of the document before it is considered for ARTS Recommendation. A proposed recommendation must be implemented by two or more vendors or at least one retailer prior to consideration for promotion.

7.1.1.5 ARTS Recommendation

An ARTS recommended deliverable is voted by the technical committee as ready for production use by retailers and as such it reflects all input on the proposed recommendation of the deliverable.

7.1.2 Document Naming

All ARTS deliverables use the following naming convention designed to reflect the document maturity level, the unique document identifier and the date of the document revision:

documentMaturity-documentID-documentDate.fileExtension.

where:

documentMaturity reflects the maturity level of the current version of the document. The status must be one of the following:

- WD (Working Draft)
- LC (Last Call Working Draft)
- CR (Candidate Recommendation)
- PR (Proposed Recommendation)
- RC (ARTS Recommendation)

documentID is the unique report ID or name assigned to the document by the Sub-Committee or Work Team. The document ID must be unique within the scope of the ARTS Technical Committee. The document ID should reflect the type of document (specification, report, white paper or reference) in the ID. The document ID should be descriptive, but the ID must not exceed 20 characters. Dashes must be used instead of spaces between words in the report ID.

documentDate is the date of the last revision of the file. The date format must be *yyyymmdd*, where *yyyy* is the four-digit year, *mm* is the two-digit month, and *dd* is the two-digit day.

fileExtension is the required file extension for the type of deliverable represented by the file (doc for documents, pdf for Adobe Acrobat files, etc.).

An example of this naming convention is: *LC-Development-Process-20011201.doc*, where “LC” indicates the document has the maturity status of Last Call Working Draft, “Development-Process” is the document identifier, “20011201” indicates the current revision of the document was completed on December 1, 2001, and “.doc” indicates the file is a document (Microsoft Word).

7.1.3 Versioning Guidelines

7.1.3.1 Goals of the ARTS Versioning Methodology:

The ARTS versioning guideline are intended to manage changes to existing standards to the pace of implementations, identify changes that require retesting for conformance, and allow errors and oversights to be swiftly corrected.

7.1.3.2 Major Version:

The Technical Committees shall approve the creation of a work team to develop a Major Version.

A Major Version shall be predicated upon additions or changes which reflect additional business requirements that break backwards compatibility or ARTS decides a Major Version is warranted.

A new Major Version of an existing standard should be created no sooner than every twelve months.

Major Versions shall be numbered in the sequence 1.0, 2.0, 3.0 etc. and shall include revisions to all documentation. Such documentations will clearly identify (by use of change bars or text color) differences from the previous version.

7.1.3.3 Minor Version:

A Minor Version shall be predicated upon additions or changes which reflect additional business requirements that are within the scope of the original charter but do not break backwards compatibility. Minor version will break forwards compatibility in that the new functionality will not work with previous version and do require changes to conformance testing.

ARTS Technical Committees Development Process

Minor Versions are created by the appropriate work team on a frequency they determine.

Minor Versions shall be numbered in the sequence 1.1, 1.2, 1.3, etc., with the number before the first decimal point being the number the current Major Version.

7.1.3.4 Fix Version:

Fix Versions are to provide corrections due to oversight or identified bugs.

Fix Versions are authorized by the ARTS Executive Director, created by ARTS staff and provided to the appropriate technical committee for review prior to release.

Fix Versions shall be numbered in the sequence 1.1.1, 1.1.2, 1.1.3, etc., with the number before the last decimal point being the number of the last Minor Version.

7.1.3.5 Versioning Summary for all Technical Specifications

01.00.00 Major	1.XX.00 Minor	1.00.XX Fix
Breaks backward compatibility. Requires a new Charter. Requires modification to all segments of the documentation.	Adds a new use case or device or subject area. Requires modification to conformance.	Staff Fixes Problem. No Expanded Scope or intent. No impact to Conformance. Corrections do to oversight.

7.1.4 Technical Specifications

Technical Specifications are the output of the Technical Specification Development process. Technical Specifications must follow the document format indicated in the ARTS Document Template for the various Technical Committees. The content of a Technical Specification includes:

- Abstract of the technical specification
- Revision history
- Referenced documents (must include a reference to the Work Team Charter)
- Business justification
- Specification scope
- Supported use cases
- Technical content
- Domain glossary
- Appendix:
 - Documented submissions
 - Contributed intellectual property
 - Cumulative meeting minutes
 - Membership roster

Until the document has reached the Proposed Recommendation status an additional section of the document should be added for Collaboration Notes, which will include comments, issues, and notes for peer work teams that require attention from the noted group within ARTS. This section must be removed prior to publication as an ARTS Proposed Recommendation.

All Technical Specifications use the ARTS document naming convention.

ARTS Technical Committees Development Process

All ARTS standard specifications and guideline related documents must contain this copyright notice:

Copyright © National Retail Federation (date). All Rights Reserved. This document may be copied or used for purposes consistent with adoption of the ARTS Standards. However, any changes or inconsistent uses must be pre-approved in writing by the National Retail Federation. Moreover, this document may not be modified in any way (such as by removing the copyright notice or references to the NRF, ARTS, or its committees), except only as needed for the purpose of developing ARTS standards using procedures approved by NRF, or as required to translate it into languages other than English.

The following disclaimer shall be included in all ARTS Specifications, guidelines and related documentation:

THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN IS PROVIDED ON AN “AS IS” BASIS AND THE ASSOCIATION FOR RETAIL TECHNOLOGY STANDARDS (“ARTS”) AND THE NATIONAL RETAIL FEDERATION (“NRF”) DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

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7.1.5 Technical Reports

Technical Reports are the output of the subcommittees of the technical committees or ARTS Board. Technical reports include best practices guidelines, white papers, and reference materials. Specific examples of technical reports are ARTS Data Dictionary, ARTS Process document and ARTS XML Best Practices. All Technical Reports must use the general document format indicated in the Technical Report Template. All Technical Reports must receive the approval, by vote, of the appropriate technical Committee and ARTS Board for publication on the ARTS web site.

7.2 Process Support Documents

The following is a list of process related documents and templates currently available. All documents and templates are published in Microsoft Word and PDF formats. All documents and templates may be found on the ARTS members’ only area of the ARTS website.

Document ID	Deliverable
ARTS Development Process	ARTS Technical Committees Development Process
Technical-Specification-Template	Technical Specification template
Technical-Report-Template	Technical Report template
ARTS XML-Document-Template	General documentation template
White-Paper-Template	White Paper template
Submission-Template	Technical Specification Submission template
ARTS-IP-Agreement	ARTS Intellectual Property Agreement

7.3 Development and Publication Tools

All artifacts and deliverables must be published in a format usable by the majority of the membership base. To this end, the following tools are recommended for use in creating and maintaining deliverables:

Deliverable/Artifact	Format	Recommended Tools
Working Documents	RTF, DOC	Microsoft Word
Working UML Models	XMI, MDL	Rational Rose, Popkin System Architect, Visio
XML Schemas	XSD	XML Authority
Externally Published Documents	PDF	Adobe Acrobat

7.4 Work Product Posting Rules

All work products are to be posted in the appropriate technical committee work area on the ARTS website at <http://www.nrf-arts.org>. Specifications, technical reports and other work products will be posted on the ARTS website www.nrf-arts.org in either the public or member's only areas as determined by the ARTS Board or as prescribed in the ARTS IP Policy.

8. REVISION HISTORY

1. LC-Development-Process-20011010.doc: Initial version of the Last Call Working Draft submitted to the Technical Committee for review
2. LC-Development-Process-20011201.doc: Revised version reflecting input collected during the review of the initial LC version.
3. Development-Process-20030210.doc: Revised voting rules based on input from the technical committee.
4. Development-Process-20050405.doc: Revised Process for IP Policy
5. Development-Process-20060309.doc: Revised for Review of Approved Standards, see 5.1.4 Post Conditions
6. Development-Process-20070516.doc: Revised to change IXRetail to ARTS XML.
7. ARTS Consolidated-Process-20081030.doc: Solution Center
8. ARTS Consolidated-Process-20091130.doc: Change for TC Vice Chairs and Board Sponsors
9. ARTS Consolidated-Process-20110909.doc: Change to clarify voting and DMC approval process.

9. ISSUES

1. Referenced support documents must be created and approved.

10. GLOSSARY

The following terms are used in this document and their intended definitions are given below.

Term	Definition
Application	An integrated grouping of one or more application units that provide a business service.
Application Unit	An atomic application module that maps to a business activity. The granularity of an application unit is bounded on the lower end by its coupling with other application units and on the upper end by its functional cohesiveness. A unit of software that cannot stand alone and communicate with other units through messaging is too small and a unit that can be divided into two or more units is possibly too large.
Artifact	A piece of information that is used or produced by a software development process, such as an external document or a work product. An artifact can be a model, description, or software.
Actor	An abstraction for entities outside a system, subsystem, or class that interact directly with the system. An actor participates in a use case or coherent set of use cases to accomplish an overall purpose.
Business Process	A related group of activities performed within the business enterprise that has a defined beginning and ending.
Class Diagram	A UML diagram used to illustrate the static relationships between classes of objects

	within a system.
Collaboration Diagram	A UML diagram used to illustrate the collaboration between classes of objects within a system.
Common Data	Standardized, reusable data definitions that may be use within context specific messages.
Document	A structured collection of elements that represents a message?
Element	<p>Elements are the most basic building blocks of XML documents. They can be used to both contain information and define structure. An element starts out with a starting tag and ends with a corresponding ending tag.</p> <p>Example:</p> <p>A simple element: <code><Address>111, Main Street</Address></code></p> <p>A structured element: <code><Address> <StreetAddress>112, Main Street </StreetAddress> <City> Mudy Waters</City> <State>Fl</State> <ZipCode>55544</ZipCode> </Address></code></p>
Fragment	A structured element. See the definition for element.
Message	An XML document that includes elements and attributes that communicate routing and context and an XML business document to which the routing and context apply.
Retail Enterprise Model	A collection of UML models representing an abstraction of a retail enterprise.
Retail Process Model	A collection of UML models representing an abstraction of the key business processes in use within a retail enterprise.
Schema	A structural specification format for XML documents.
UML	Unified Modeling Language. UML is a collection of interrelated standard notations for modeling organizations, processes, systems, objects and application behavior.
Use case	The specification of sequences of actions, including variant sequences and error sequences, that a system, subsystem, or class can perform by interacting with outside actors.

11. APPENDIX

Appendix 1 **Business Value Proposition Example:** October 30, 2008:

Topic: Workforce Management (WFM)

Problem: Do you need to lower payroll cost without reducing customer service?

Solution: Workforce management applications create work schedules to the expected sales transactions and can link directly to time management and payroll application.

Measure: Payroll savings (2+% savings is common)

ARTS Support: ARTS has developed a request for proposal (RFP) to help you select the best WFM application for your business model and the Associate and Timepunch XML schemas have been developed to help you implement the selected WFM application quickly at less cost.

Direct web link: WFM RFP introduction and or WFM schema charter.