

NTCIP 1202 Version 04

Software Requirements Specification (SRS)

Walkthrough Plan

February 16, 2024

In support of: Task Order No. 693JJ322F00212N

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1 Purpose

This document is the Draft SRS Walkthrough Plan (WP) to review the Draft Software Requirements Specification (SRS) for NTCIP 1202 v04.

The SRS WP is submitted as a required deliverable, *SRS Walkthrough Plan*, for Performance Work Statement (PWS) Task 3.2, Walkthrough on Draft Software Requirements Specification [Task 3.2 in the Project Management Plan] for Task Order No. 693JJ322F00212N.

A formal walkthrough is a proven method to validate a product, in this case, the user needs and system concepts for a proposed standard. This document is the WP to be used to review the NTCIP 1202 v04 SRS at a virtual meeting with the NTCIP Actuated Signal Controllers (ASC) Working Group along with additional stakeholders and interested parties. The ASC Working Group is made up of subject matter experts including those from public agencies, manufacturers, software providers, and consulting firms. The committee members may not provide stakeholder representation in all subject areas, so additional stakeholders, as subject matter experts (SMEs), will be invited as necessary.

The purpose of the walkthrough is to allow the ASC Working Group, additional stakeholders, and interested parties to:

- a) Find anomalies
- b) Improve the SRS Content
- c) Consider alternatives
- d) Ensure conformance to standards and specifications
- e) Ensure completeness
- f) Gain a consensus on the user needs and the other material within SRS

The walkthrough will consist of a presentation of the SRS to attendees who may provide comments that may be resolved during the walkthrough or in subsequent activities of the ASC Working Group.

2 Walkthrough

2.1 Time and Location

The walkthrough will be a web-conference of the ASC Working Group, invited stakeholders, SMEs, and association/government liaisons. The walkthrough will be arranged by the Institute of Transportation Engineers (ITE) on Microsoft Teams.

The walkthrough will take place over five days. The walkthrough dates and times are

- Thursday, March 14, 2024. 1:00 PM – 4:00 PM EST
- Friday March 15, 2024. 1:45 PM – 3:00 PM EST (tentative)

2.2 Participants

The participants include the ASC Working Group, additional stakeholders, and other interested parties. The table below lists the voting members of the ASC Working Group

No	Name	Organization	Role
1	Douglas Tarico	Econolite	Co-Chair
2	John Thai	City of Anaheim	Co-Chair
3	Kevin Balke	Texas A&M Transportation Institute	Voting Mbr
4	Matt DeWitt	Florida Department of Transportation	Voting Mbr
5	Michael Robinson	California Department of Transportation	Voting Mbr
6	Ray Starr	Minnesota Department of Transportation	Voting Mbr
7	Christopher Primm	Oregon Department of Transportation	Voting Mbr

No	Name	Organization	Role
8	Dustin DeVoe	Econolite	Voting Mbr
9	Roy Goudy	Nissan	Voting Mbr
10	Ralph Boaz	Pillar Consulting	Voting Mbr
11	Robert Rausch	Transcore	Voting Mbr
12	Jonathan Grant	Yunex Traffic	Voting Mbr

2.3 Walkthrough Materials

The NTCIP 1202 v04 SRS walkthrough materials include:

- a) **Presentation:** The presentation, in PowerPoint/pdf format, includes the agenda for the meeting, a summary of the project and project status, a review of the systems engineering process used for the proposed standard, a review of the draft SRS document and a review of the walkthrough process. This will be provided to the invitees before the walkthrough.
- b) **Draft SRS Document:** Provided at least 10 working days prior to the SRS walkthrough, the SRS includes the Draft ConOps and the Draft SRS requirements derived from the ConOps. In addition to Sections 1 (General information) and 2 (Concept of Operations), the SRS document adds Section 3, containing the Functional Requirements derived from the ConOps, the Protocol Requirements List (PRL), and instructions for completing the PRL.
- c) **Walkthrough Workbook:** Provided 10 working days prior to the walkthrough, the walkthrough workbook guides the walkthrough/review of the draft SRS document. The walkthrough workbook contains all sections to be reviewed during the walkthrough (primarily Section 3), with space provided to capture participants' comments, proposed comment resolution (if provided), action items, and a summary of next steps.

3 Meeting Agenda

A Draft SRS Walkthrough agenda follows.

Table 1 Draft Meeting Agenda

	Item
1	Welcome/Call to Order (Co-Chairs)
2	Introductions (Narla)
3	Antitrust Guidance & Logistics (Narla)
4	Review Agenda (Co-Chairs)
5	Purpose (Co-Chairs) Purpose: Solicit input from attendees on the SRS, Systems Engineering Process (SEP) and implementation perspective.
6	Review Process, Ground Rules, Roles/Responsibilities Review SRS walkthrough process, ground rules, SEP, roles/responsibilities, as well as entry criteria/inputs, and exit criteria/outputs.
6	Walkthrough of Draft SRS Walkthrough Workbook Marking up the Draft SRS Walkthrough Workbook in real-time
7	Next Steps Review the next steps, schedule, and deliverables
8	Adjourn

3.1 Meeting Rules

The following general meeting rules apply to the conduct of an SRS walkthrough.

- a) Show up on time and come prepared

- i. Be prompt in arriving to the meeting and in returning from breaks
 - ii. Be prepared to contribute to achieving the meeting goals
- b) Contribute to meeting goals
 - i. Participate 100% by sharing ideas, asking questions, and contributing to discussions
 - ii. Share your unique perspectives and experience, and speak honestly
 - iii. If you state a problem or disagree with a proposal, try to offer a solution
- c) Stay on point and on time
 - i. Respect the groups' time and keep comments brief and to the point
 - ii. When a topic has been discussed fully, do not bring it back up
 - iii. Do not waste everyone's time by repeating what others have said
 - iv. To manage discussion, it might be appropriate on some issues to use a one minute per person per Requirement rule. Following this 'round' of discussion on a particular Requirement, the Co-Chair(s) effectively 'call the question' (a process adapted from Robert's Rules of Order Newly Revised for walkthrough purposes). Essentially, the Co-Chair(s) announce the end of discussion on a particular Requirement, summarize the walkthrough input concerning that Requirement, and move discussion to the next Requirement in the SRS.
- d) Close decisions and follow up
 - i. Make sure decisions are supported by the group, otherwise they won't be acted on
 - ii. Note pending issues and schedule follow up actions/meetings as needed
 - iii. Identify actions based on decisions made, and follow up actions assigned to you
- e) Record outcomes and share
 - i. Record issues discussed, decisions made, and tasks assigned

3.2 Walkthrough Process

The following procedure will be used:

- 1) Review any comments received prior to the walkthrough
 - Identify resolutions or defer the comments to the appropriate place in the Walkthrough Workbook.
- 2) Perform a review of Draft SRS Document using the SRS Walkthrough Workbook
 - Read sections of the Draft SRS Document identified for review, capturing comments in real-time to reflect inputs from walkthrough participants in the SRS Walkthrough Workbook.
 - Review each new functional requirement proposed for NTCIP 1202 v04 to ensure that it meets the criteria identified in Section 3.5 and, if revisions are necessary, that they are captured in the Draft SRS Walkthrough Workbook.
 - Review the PRL to verify the appropriate User Needs trace to each Functional Requirement.
 - Collect and document new functional requirements as well as user needs proposed by participants as agreed upon by the ASC Working Group.

3.3 Roles and Responsibilities

The roles and responsibilities for the participants during the SRS walkthrough follow.

- a) Walkthrough Leader (Consultant): Lead walkthrough/guide discussion
- b) Recorder (Consultant): Record all revisions with basis of revisions (anomalies)
- c) "Author" (Consultant): Subject Matter Expert on standard details with overview of Standard
- d) Review Team (All others): Identify anomalies, discuss, propose and agree to appropriate resolutions

3.4 Entry Inputs

The inputs to be used during the walkthrough follow.

- a) Draft SRS Document
- b) Inputs (proposed revisions) on the draft ConOps document (if any)
- c) Draft SRS Walkthrough Workbook

3.5 Walkthrough Criteria

3.5.1 Well-Written User Need Criteria

The criteria used to determine if a need is well-written follow.

- a) **Uniquely Identifiable:** Each need must be uniquely identified, that is, each need shall be assigned a unique number and title.
- b) **Major Desired Capability (MDC):** Each need shall express a major desired capability (corridor level) in the system, regardless of whether the capability exists in the current system or situation or is a gap.
- c) **Solution Free:** Each need shall be solution free, thus giving designers flexibility and latitude to produce the best feasible solution.
- d) **Capture Rationale:** Each need shall capture the rationale or intent as to why the capability is needed in the system.

3.5.2 Pattern for Well-Formed Requirements

Well-formed requirements should be:

- a) **Necessary:** Must be useful (traceable to needs)
- b) **Unambiguous:** Susceptible to only one interpretation
- c) **Concise:** Stated in declarative language (“shall statements”)
- d) **Consistent:** Does not contradict itself, nor any other stated requirement
- e) **Complete:** The requirement is stated completely in one place. (Requirements may be grouped.)
- f) **Attainable:** Realistic to achieve within available resources and time
- g) **Testable:** Must be able to determine that the requirement has been met through one of four possible methods (inspection, analysis, demonstration, or test)

3.5.3 Evaluation Criteria for SRS Walkthrough

The evaluation criteria applied to each Functional Requirement during the Walkthrough follow.

- a) Is the requirement well-formed?
- b) Is the requirement feasible?
- c) Is the requirement verifiable, if so, by which method?
 - i. Inspection: Examination of the system using one of your five senses
 - ii. Analysis: Verification of system using models, calculations and testing equipment
 - iii. Test: Verification of system using a controlled and predefined series of inputs to ensure specific and predefined outputs are produced
 - iv. Demonstration: Manipulation of the system as it is intended to verify that the results are as planned or expected
- d) Is the requirement logically consistent with the parent need(s)?
- e) Is the requirement logically consistent with its parent requirement(s) and sibling requirement(s)?

3.6 Walkthrough Procedures

The procedures to be used during the walkthrough follow.

- a) Review any comments received prior to the walkthrough
 - i. Identify resolutions
- b) Perform review of Draft SRS Document using the SRS Walkthrough Workbook

- i. Identify the Functional Requirements from NTCIP 1202 v03 that are proposed to remain in NTCIP 1202 v04 with walkthrough participants and answer the designated questions for each Functional Requirement.
- ii. Read through each NEW Functional Requirement proposed for NTCIP 1202 v04 in the draft ConOps document and answer the designated questions for each User Need. New Functional Requirements proposed for NTCIP 1202 v04 are either to support new user needs for NTCIP 1202 v04 or to replace requirements in NTCIP 1202 v03 that do not follow the recommended changes from NTCIP 9014 Infrastructure Standards Security Assessment (ISSA).
- iii. Capture comments in 'real time' in SRS Walkthrough Workbook to reflect inputs from walkthrough participants.

3.7 Exit Outputs

The outputs of the walkthrough follow.

- a) A marked-up SRS Walkthrough Workbook with inputs provided during the walkthrough that resulted in revisions
- a) Following the SRS walkthrough, an updated SRS document reflecting revisions resulting from walkthrough input
- b) Documented plan for completion of the updated SRS Document.

After the walkthrough, ITE will deliver an SRS Walkthrough Resolution Report which identifies inputs received during the SRS Walkthrough, using track changes in a copy of the Draft SRS Document. An updated Draft SRS Document will follow within 10 business days after the walkthrough.